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PUBLICATIONS

ON GENERALIZED ORDER-K FIBONACCI SEQUENCE WITH Applications

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Abstract. In this article, we present an innovation technique to find out the terms of generalized order-k Fibonacci numbers and Fibonacci type sequence.We willprove some formula for K- Fibonacci number by using the converse of different Hessenbergand triangular matrices. In calculation, as a substitute of obtaining the n-thappearance only.We show the application of Fibonacci sequence using number i.egolden ratio.Finally, we are able to resolve consecutive$(n + 1)$ terms of these sequence by means of this technique concurrently.
Keywords. Fibonacci numbers, Fibonacci sequences, Golden ratio,Triangular matrix.

Introduction and Preliminaries
Here is completelyacurious in the concept and submissions of Fibonacci numbers and their generalization. It isdefined generalized order-k Fibonacci number as
$F_{k,n} = \sum_{j=1}^{k} F_{k,n-j} (1)$
For $n > k \geq 2$, with limitsituations:$F_{k,1} = F_{k,2} = F_{k,3} = \cdots = F_{k,k-2} = 0 \ and \ F_{k,k-1} = F_{k,k} = 1$.
Laterconnivinga littleword of these orders by reappearance relation is exacttesting, there is aessential to find other methods.Numerous researchers foundterms of Fibonacci numbers and generalized order-k Fibonacci numbers byusing determinant of different Hessenberg matrices. For example[12] gave some determinantal and permanentalillustrations of generalized order-k Lucas andFibonacci numbers and foundBinet's formula for these orders by using our symbol.[6] we then study the relationship between the Hassenberg matrices and generalized Fibonacci-Like sequences.Yilmaz and Bozkurt [10] we study the Pell sequence and Perrin and derive some relationship between these sequence and determinants of one kind of Hessenberg matrices.Kaygısızand Şahin [3-4] gave some determinantal and permanentalsymbolsof generalized Lucas polynomial by using many Hessenberg matrices. Li et al. [7]Examine the LU factorization of Fibonacci-Hessenberg matrices which enable us to invention the determinant of innovative class of Hessenberg matrices. In [5], authors defined two (0 ,1)-matrices and showed that the permanents of these matrices are the generalized Fibonacci and Lucas numbers. Chen and Yu [1] Present three Hessenberg matrices

$$H = \begin{bmatrix} h_{11} & h_{12} & 0 & \cdots & 0 \\ h_{21} & h_{22} & h_{23} & \ddots & \vdots \\ \vdots & \vdots & \ddots & \ddots & 0 \\ h_{n-1,1} & h_{n-1,2} & \cdots & h_{n-1,n-1} & h_{n-1,n} \\ h_{n,1} & h_{n,2} & \cdots & h_{n,n-1} & h_{n,n} \end{bmatrix},$$

IMPACTS ON LANGUAGE LEARNING

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Abstract
Cultural diversity does not mean only differences in dress and language. It also includes different ways of thinking, managing and communicating. The relationship between communication and culture is very complex and intimate. Cultures are created through communication; that is, communication is a means of human interaction through which cultural characteristics are created and shared. People use language to communicate purposefully, and learning a new language involves learning how to use words, rules, and knowledge about the language and use it to communicate with speakers of that language. In this article, the first part attempts to illustrate the communication and transformation of culture; the second part focuses on the ways in which people's worldviews influence language learning, understanding and interaction; the third section discusses the different cultural stratifications between the values of Eastern and Western cultures.
Keywords: Cultural diversity, Communication, Learning, Cultural stratifications

Introduction
Culture is a word with many shades of meaning. It is defined in Longman Dictionary of Language Teaching & Applied Linguistics as the total set of beliefs, attitudes, customs, behavior, social habits, etc. of the members of a particular society. Indeed, the origin of language, understood as the human capacity of complex symbolic communication, and the origin of complex culture is often thought to stem from the same evolutionary process in early man. Culture is a word with many shades of meaning. It is defined in Longman Dictionary of Language Teaching & Applied Linguistics as the total set of beliefs, attitudes, customs, behavior, social habits, etc. of the members of a particular society. The specifics of the relationship between language change and cultural change are mediated by an intricate array of factors, including local cultural resources, rights, and persons and the ways that local details of drift in language change are linked to these by language ideologies. Language and culture then both emerged as a means of using symbols to construct social identity and maintain coherence within a social group too large to rely exclusively on pre-human ways of building community such as for example grooming. Since language and culture are both in essence symbolic systems, twentieth century cultural theorists have applied the methods of analyzing language developed in the science of linguistics to also analyze culture. Hence, culture is more than a collection of disconnected acts and beliefs; rather, it should be seen as an integrated set of norms or standards by which human behaviors, beliefs, and thinking are organized.
In general terms, culture is most commonly viewed as that pattern of knowledge, skills, behaviors, attitudes and beliefs, as well as material artifacts, produced by a human society and transmitted from one generation to another. Cultural pluralism is referred to as an idea that seeks to encourage cultural diversity and establishes a basis of unity so that America can become a cohesive society whose

ERROR ANALYSIS: A TOOL TO IMPROVE ENGLISH COMMUNICATION SKILLS

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Abstract

In the quest to refine the effectiveness of Business English language courses for Bachelor's students, an intricate evaluation unfolded within the corridors of Mohammad Ali Jinnah University Islamabad. Here, amidst the academic tapestry, a meticulous dissection of the writing component of a four-month Business Communication course was meticulously orchestrated.

Rooted in the belief that mastery of English writing is a nuanced art, the endeavor embarked on a journey to decipher, categorize, and analyze the tapestry of errors woven by English as a Second Language (ESL) learners. This journey held a profound promise: to sculpt a tailored approach to instruction, one that would hone in on the specific errors most prevalent among ESL students, thus igniting a transformative shift in teaching efficacy.

With an unwavering commitment to precision, the study navigated the intricate landscape of error analysis, unveiling a mosaic of recurring imperfections within the creative compositions of students. Amidst this canvas of expression, verb tense errors emerged as the resplendent stars, casting their shadows over the past and present tenses with unparalleled frequency. Yet, amidst the constellation of errors, a hierarchy emerged, with errors stemming from Second Language Influence reigning supreme, followed closely by the echoes of First Language interference.

Armed with these revelations, the subsequent chapters of the semester unfurled with purpose and precision. Guided by the beacon of insight gleaned from error analysis, educators embarked on a voyage of targeted remediation, sculpting bespoke interventions that honed in on the identified error categories. This strategic approach not only salvaged precious instructional time but also kindled a newfound vigor within the corridors of Business English education, empowering MAJU students to traverse the linguistic landscape with newfound confidence.

WRITING SKILLS - A REVIEW

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Abstract
Writing is one of the central pillars of language education and should be the main concern and concern of teachers, students and researchers. Intended as a writing prompt, this paper explores issues related to teaching and assessing the writing skills of non-native students. It examines non-native speakers' expectations of writing quality and performance on tests of writing proficiency. Finally, he tries to ring this skill, which, despite its importance, has been neglected in the acquisition of a foreign language.

Keywords: language, English, teacher, student, writing, skills

General background.
Of all the language skills, writing is the most difficult challenge for language teachers because students have less experience with written expression. Stimulated by audio-visual materials throughout their lives, students are novices in the discipline of writing. Making writing an ongoing part of foreign language acquisition from the first day in class will help ensure student success.

The purpose of learning a language is to improve the learner's four skills of listening, speaking, reading and writing, to achieve the ultimate goal of mastering the language. Every time skills are mentioned, they are ordered according to the moment they occur in the teaching-learning process. Writing is the skill that has to be well approached only after the other previous three have already been employed. Nevertheless, it seems that because it is the last one in the series, most of the times it remains neglected.

Why are writing skills important?
First of all, writing skills help the learner to become independent, comprehensible, fluent and creative in writing, important abilities which help learners put their thoughts in a meaningful form and to mentally tackle the message in a proper manner.

When it comes to writing in a foreign language, it is even more challenging. Writing English clearly is an important goal for all English learners. It is not only because writing well- be it your own language, or a foreign one - clarifies your mind and orders your thoughts, but also because the ability to represent yourself well on paper will help you secure a job in the future. Most multinational firms use English to communicate with clients. Professional staffs regularly have to write documents in English, although they are not native speakers. Despite having a good level of spoken English, many of them have not considered the elements of good writing. Therefore, most of them tend to write as they speak, or to translate from their first language. The outcome is documents which are unclear to the reader or use an inappropriate style. There are also often grammatical mistakes caused by first language interference.

Moreover, how you write, the style, cohesion, tone, attitude say a lot about you as a person, and headhunters, employers know this. It is not just what is on the paper that distinguishes one resume from another in a competitive job market. Presentation, clarity, and professionalism in a foreign language can

TIMBER-STEEL-COMPOSITE BEAMS FOR FRAMED STRUCTURE

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Abstract — Due to improvements in the use of recyclable materials in construction, timber–steel composite (TSC) beams demonstrate high potential for future construction. In this study, a proposed simulation modeling, which was adopted from the simulation modeling of a steel C-shape composite, was applied to estimate the Strength of TSC beams. The strength of e beam could be determined. However, connection at the web and fastened with screws and nails at the flange, respectively, revealing, the strength of the TSC beams with connection at the web that were fastened by screws was approximately 15% higher than that of TSC beams. For connection of timber steel beam system with connectors bolts and screws taken. For that Gun driven nails method which are developed for the connection of steel-steel plates as same it can also be used for timber-steel connections the assembling can be implement.

The composite elements both in horizontal and in vertical direction have an increased load bearing capacity without increasing cross sections. High loads can be transmitted with simple connections which accelerate the construction time. The total weight stays very low which is advantageous in case of earthquake. In case of fire the steel members are protected by the wooden elements and the temperature of the wood cross sections increase less rapid. Steel timber structures present a light, fast and clean construction method.

Index Terms— Timber, Steel, Flitch-beam, composite beam.

I INTRODUCTION

Composite construction combines the structural and architectural features of components made from different materials. In Composite construction, various materials may work independently or act together homogeneously, but are always better than a single material.

During the last decade a lot of research has been done on applications of composite structures; however, the available information and details for steel and timber composite structures are dispersed and not readily accessible to builders. The major aim of this project is to perform a detailed study on existing composite steel and timber structures and identify current engineering techniques of hybridization along with the benefits and challenges associated with them. The literature review has highlighted the opportunity for steel – timber composite buildings and existing knowledge gaps. Moreover, technical software packages are investigated and their advantages and limitations in terms of predicting structural responses of composite systems are discussed.

Timber member reinforced with steel plates (C-section) are another type of composite steel timber beams. This type of wood member reinforced by steel plates on top and bottom or reinforced with steel plate in between. Alternatively the Timber member can be reinforced by attaching channels to opposite sides of an existing Timber beam. Advantages of such members include increased in fire resistance, improved buckling capacity, and increased in bending strength.

When combining the Timber with the inserted steel it is essential to have clearance to allow for possible dimension change of steel and

STUDIES ON EFFECT OF INDUSTRIAL AND ENVIRONMENT WASTE MATERIAL ON PAVER BLOCKS

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Abstract— Concrete paving blocks are ideal materials on the footpaths and roads for easy laying, better look and finish. In this paper, the issues of environmental and economic concern are addressed by the use of copper slag as partial replacement of fine aggregates in concrete. Fine aggregates were replaced by copper slag as 10,20,30,40,50 percentages by weight for M-25 mix. The copper slag material used was obtained waste collectors. The study indicated that copper slag can effectively be used as fine aggregate replacement (up to 50%) without substantial change in strength. The recycled or the demolished coarse aggregate will be replaced the aggregate in the concrete. The concrete specimens were tested for compressive strength and water absorption at 7 ,14 and 28 days of age and the results obtained were compared with those of normal Paving block.
Keywords - concrete, copper slag, paving blocks

I. INTRODUCTION

Concrete is the man-made material widely used for construction purposes. The usual ingredients in concrete are cement, fine aggregate, coarse aggregate, and water. It was recognized long time ago that the suitable mineral admixtures are mixed in optimum proportions with cement improves the many qualities in concrete. With increasing scarcity of river sand and natural aggregate across the country, researches began cheaply available material as an alternative for natural sand. Utilization of industrial waste or secondary material has increased in construction field for the concrete production because it contributes to reducing the consumption of natural resources.

In India, there is great demand of aggregates mainly from civil engineering industry for road and concrete constructions. But, now days it is very difficult problem for availability of fine aggregates. So researchers developed waste management strategies to apply for replacement off-Line aggregates for specific need. Natural resources are depleting worldwide while at the same time the generated wastes from

the industry are increasing substantially. The sustainable development for construction involves the use of nonconventional and innovative materials, and recycling of waste materials in order to compensate the lack of natural resources and to find alternative ways conserving the environment.

Composition of Concrete

There are many types of concrete available, created by varying the proportions of the main ingredients below. In this way or by substitution for the cementitious and aggregate phases, the finished product can be tailored to its application with varying strength, density, or chemical and thermal resistance properties.

MANUFACTURING OF BRICKS USING LATERITE SOIL (TILLA SOIL)

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Abstract:- House is the third need of human in the world. While considering about India the population is increasing day by day which required Food, Cloths & shed / house for living. Affordable housing is needed in many countries of the world especially the developing ones. Building material makes up for 75%of the total cost of construction. The high demand for housing has increased the use of conventional building material which causes various environmental problems. To address these situations, attention has been focused on low- cost alternative building materials using industrial, agricultural, and natural wastes. Using the waste as substitute raw material in manufacturing of building products is an innovative way of waste utilization. In this paper we have given a thrust on the use of waste material such as fly ash, Rice husk with other raw materials to manufacture a masonry unit. And the results of experiments conducted for various percentages of laterite soil, cement and rice husk mixed with varying percentages of fly ash. Objective of this study is to obtain a best percentage of fly ash that can be added with soil and cement as stabilizing agent to manufacture bricks at a low cost which can fulfill the requirement of homeless people in the rural and urban parts of the country. Hence bricks in different percentages of fly ash, soil, cement and rice husk mix were added in this manufacturing process.

The laterite soil was collected from Dhumnsur Village Taluka Humnabad in the Bidar district. Bricks of 2.5% of cement and 3% of rice husk by weight of the soil & varying percentage of fly ash (2.5%, 5%, and 7.5%) with weight of the soil are used and different mix proportions of bricks were prepared and tested for compressive strength in the compressive testing machine (CTM) and water absorption test for 3days. After testing the bricks for 3 days we noticed that the best quality of brick with high compressive strength & The better degree of compactness of bricks by water absorption test were obtained for a mix proportion of Cement: 2.5% Rise husk: 3% Fly ash: 7.5% .

By this study we concluded that the addition of excess fly ash reduces the compressive strength of the brick and should be added in desired quantity. Addition of desired quantity of fly ash can result in better bonding of the raw materials and give a better-finished product with sharp and fine edges. Bricks have the compressive strength that satisfies IS code limits

Key Words: Laterite soil, cement, fly ash, rice husk, compressive strength.

1. INTRODUCTION

A house is one of the major amenities for the human being everywhere in the world. Different types of materials and method are adopted for constructing a house or a building. As far as country like India is concerned, low cost materials and its availability is the main factor controlling the selection of material and mode of construction. In olden

days mud walled houses were used by poor people in rural areas.

Brick is one of the most important materials for the construction industry. The conventional method of bricks production has brought undeniable shortcomings. The consumption of earth-based materials as clay, shale and sand in brick production resulted in resource depletion, environmental degradation, and energy

MECHANICAL PROPERTIES OF CONCRETE WITH PARTIAL REPLACEMENT OF PORTLAND CEMENT BY CLAY BRICK POWDER

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Abstract— Concrete is the most undisputable and indispensable material being used in infrastructure development throughout the world. Umpteen varieties of concretes (FAC, HVFAC, FRC, HPC, HSC, and others) were researched in several laboratories and brought to the field to suit the specific needs. Although natural fine aggregates (i.e., river sand) are so far and/or will be superior to any other material in making concrete, their availability is continuously being depleted due to the intentional overexploitation throughout the Globe. Hence, partial or full replacement of fine aggregates by the other compatible materials like sintered fly ash, crushed rock dust, quarry dust, glass powder, recycled concrete dust, and others are being researched from past two decades, in view of conserving the ecological balance. This study aimed to investigate the suitability of using ground clay brick GCB in concrete. Crushed clay brick originated from demolished masonry was ground in the laboratory and added to cement-based mixtures as partial cement replacement. Three replacement levels, 10%,20% and 30%, were compared with the control. The tests on concrete showed that the mechanical properties (compressive, flexural and splitting tensile strengths) of concrete containing ground brick were well comparable to those of the concrete without ground brick. The study undertaken proved that, when it is finely ground, clay brick obtained from demolished masonry can be recycled as a pozzolanic cementitious material in concrete. Conclusively, using waste bricks can be an effective measure in sustainable development.

Keywords— Ground clay brick, Concrete, Compressive Strength, flexural strength.

I.   INTRODUCTION

Concrete is one of the oldest and the most widely used construction material in today's world. It is easily obtainable, relatively cheap, strong, and durable. On the other hand, the concrete industry is one of the major consumers of the natural resources. The annual concrete production is estimated as 11 billion metric tons,70–75% of the number is aggregate (mostly natural rock); 15% is water; and 10–15% is cementitious binder. The majority of the cementitious binder used in concrete is based on Portland cement clinker which is an energy-intensive process. Global cement production was 2.3 billion tons in 2005 which is almost four times the number in 1970. One ton of cement production is responsible for one ton of CO_2 emission: half of the CO_2 is from the chemical process of clinker production, 40% from burning fuel, and the remaining 10% is split between electricity use and transportation. According to the recent data, cement clinker production is the largest CO_2 source among industrial processes: it contributes about 4% of global total CO_2 emissions from fuel use and industrial activities. In the backdrop of such a bleak atmosphere, there is a large demand for alternative materials from industrial waste.

A.   Objective of the Study
•   To evaluate the utility of brick powder as a partial replacement of cementitious in concrete.

PERFORMANCE AND COMPARING RCC BEAM WITHPOST TENSION BEAM USING DYNAMIC LOAD CONDITION OF LARGER SPAN STRUCTURE

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Abstract:- In ordinary Reinforced cement concrete beam, compressive stresses are taken up by concrete and tensile stresses by steel alone. The concrete below the neutral axis is ignored since it is weak in tension. Although steel takes up the tensile stresses, the concrete in the tensile zone develops minute cracks. The load carrying capacity of such concrete sections can be increased if steel and concrete both are stressed before the applications of external loads. This is the concept of prestressed concrete. Internal prestressing can be done by two methods Pre-tensioning and Post-tensioning. In Pre-tensioning system, the tendons are first tensioned between rigid anchor blocks cast on ground or in a column or unit-mould type pre-tensioning bed, prior to the casting of concrete in the moulds. In Post-tensioning, the concrete units are first cast by incorporating ducts or grooves to house the tendons. When the concrete attains sufficient strength, the high-tensile wires are tensioned by means of jack bearing on the end face of the member and anchored by wedges or nuts. The space between the tendons and the duct is generally grouted after the tensioning operation. Referring particularly to post tensioning applications, it is generally recognized how it opens the possibility to improve economy, structural behaviour and aesthetic aspects in concrete solutions. As in modern days post tensioning has been most economical method when compared to the RCC works. The study is subjected to evaluation of performance of RCC deep beam and PT beam slab with multi-storey building system with seismic loading performance using analysis tool ETABS.

Keywords *RCC Beam, ETABS, PT Beam, Storey displacement, Storey Shear, Storey Drift.*

I. INTRODUCTION

RCC Structures are commonly utilized for residential and industrial buildings in Asian countries. For small span buildings, PT beams are rarely used. There was a huge disadvantage of expert staff for Pre-Stressing job two decades ago. However, there are currently a significant number of agencies for the execution of a comparable work. Due to deflection limitations in RCC Beams, the depth of the beam increases as the span increases. The depth of the beam is reduced in pre-stressed sections, therefore pre-stressed beamsare less expensive for long spans.

PSC is the most recent main type of structural engineering construction introduced. Because the technology is currently available on the market in both developed and developing countries, it has become a well-established construction technique. Today, prestressing is employed in buildings, subterranean structures, communication towers,

PERFORMANCE EVALUATION OF M35 GRADE CONCRETE PAVER BLOCKS USING COAL BOTTOM ASH AS PARTIAL REPLACEMENT OF FINE AGGREGATE

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Abstract—Concrete is the world's heavily consumed constructional material which is being used for thousands of years. It is manufactured from four main ingredients; cement, water, fine aggregates and coarse aggregates. Concrete paver blocks are unreinforced solid small elements used for surface course of pavements. Holland was the first country introducing the paver blocks as replacement of paver bricks which had become scarce due to the post-war building construction outreach. Concrete industries are manufacturing concrete and supply aggregates and other construction materials. In spite of having many advantages, it has some deficiencies as well. For instance, high usage of natural sand, which is the main raw material used as fine aggregate in the production of concrete, its natural resources are getting depleted gradually. Thus for sustainable development, considerable improvements are required in productivity, energy efficiency and environmental performance. To achieve sustainability, in this study, coal bottom ash, which is a coarse granular material and incombustible by- product from coal burning furnaces is used as a partial replacement for fine aggregate for making concrete paver blocks.

Keywords—Concrete paver blocks; Coal bottom ash; Aggregates; Sustainability.

I. INTRODUCTION

Energy is the main backbone of the modern civilization of the world. The prevailing source of energy is the electric power from thermal power plants. India depends primarily on coal for the requirement of power. Over 70% of its electricity generated is by combustion of fossil fuels. Out of which almost 61% is contrived by coal-fired plants, which results in the origination of about 100 tons of ash [1]. The India's current annual production of coal ash is about 100 million tons per year. This ash is of two types; fly ash which is 80 percent and bottom ash as 20 percent [2]. Fly ash is the finer particle ash that rises up with the flue gases. It has pozzolanic properties that reacts with calcium hydroxide, and can be used as a partial replacement for cement. While bottom ash is coarse granular and incombustible by-product, which does not rise but drops in to the bottom of the furnace. Figure 1.3 shows the process in which bottom ash is produced [3]. About thousand million tons of bottom ash is produced every year in India. The disposal of bottom ash is a great challenge to the thermal plant authorities. The problem in disposing off this huge waste material has led the researchers to focus on the alternative use of this waste material. The appearance and particle size of coal bottom ash is similar to that of river sand [4], hence can be selected as a partial replacement of fine aggregate.

II. LITERATURE REVIEW

Aggarwal P. et al; [5], studied the effect of bottom ash as replacement of fine aggregates in concrete at 10%, 20%, 30%, 40% and 50% replacement level. OPC 43 grade cement was used as a binding material. It was observed that the workability decreases with increase in the percentage replacement of bottom ash in concrete.

RETROFITTING OF BEAMS IN A RCC STRUCTURE SUBJECTED TO MODIFIED FORCES IN THE FORM OF AN ADDITIONAL STOREY

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.Abstract-Retrofitting of constructions subjected to additional loads is a problem of social significance. Usually people construct the structure to achieve their present needs but with the passage of time they realize that their demands have increased and there is a need for the addition/alteration of the current structure. This demand can be fulfilled by constructing a new storey. However, provision for additional load due to the new construction over existing structure was not made in the structural design of the old structure. Therefore, the construction of new storey requires the strengthening of the old structure. In this paper the structural behaviour of an RC frame under the additional load in the form of a new storey is studied. The analysis of the structure is performed by using structural analysis software i.e. STAAD Pro. The analysis results of existing and proposed structure are compared to evaluate the increase in structural forces due to the construction of a new storey. The results indicates that the significant increase is found in the shear force and bending moment in beams. The weakand deficient beams are identified and strengthened for the additional loads and additional moments. The strengthening of beams is done by placing the steel plates at top and bottom of the beams, connected with the help of shear connectors.
Keywords-Concrete; Steel; Jacketing; Strengthening.

I.   INTRODUCTION

Retrofitting is the process of modifying something after it has been manufactured. This is done with the probability of improving the performance of the building. Concrete is one of the most common building materials and is used both for buildings, bridges and other heavyweight structures. Normally, structures of concrete are very durable, but sometimes they need to be strengthened. The reason for it may be cracking due to environmental properties that a bridge is to be used for heavier traffic, newbuilding codes, or damage as a resultant of earthquakes.

The need for retrofitting in existing building can arise due to any of the following reasons:
•   Building not designed to code
•   Subsequent updating of code and design practice
•   Subsequentupgrading of seismic zone
•   Deterioration of strength and aging
•   Modification of existing structure

•   Additional loads
•   Change in use of the building, etc.

Fig.1Steelplates

REUSING PLASTIC WASTE IN PAVER BLOCKS

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Abstract: The aim of this project is to partially replace cement with non-recyclable plastic waste (polythene bags, lessthan 40 microns) in paver blocks and to reduce the cost of paver blocks when compared to that of conventional concrete paver blocks. At present nearly 56 lakh tonnes of plastic waste is produced in India per year. The degradation rate of plastic waste is also a very slow process. Hence the project is helpful in reducing plastic waste as well as reusing it to make objects for efficient and optimum utility. In this project we have used plastic waste in different proportions with fine aggregate and cement. The paver blocks were prepared and tested and the results were discussed. In many developing countries low-density polyethylene (LDPE) sheets, bags and water sachets are a major waste problem because local collection and recycling systems do not exist. As a result, LDPE has no value and is dumped causing aesthetic, environmental and public health issues. The application of this technology is an example of a community-driven waste management initiative that has potential to impact on the global plastics waste crisis because it can transform waste LDPE and other readily available types of plastics into a valuable local resource.

Keywords: LDPE (Low density polythene), paver blocks, optimum utility, waste management.

1.0 INTRODUCTION

Paver block paving is versatile, aesthetically attractive, functional, and cost effective and requires little or no maintenance if correctly manufactured and laid. Most concrete block paving constructed in India also has performed satisfactorily but two main areas of concern are occasional failure due to excessive surface wear, and variability in the strength of block. Natural resources are depleting worldwide at the same time the generated wastes from the industry and residential area are increasing substantially. Sustainable development for construction involves the use of Unconventional and innovative materials, and recycling of waste materials in order to compensate for the lack of natural resources and to find alternative ways of conserving the environment. Plastic waste used in this work was brought from the surrounding areas. Currently about 56 lakh tonnes of plastic waste dumped in India in a year. The dumped waste pollutes the surrounding environment. As a result it affects both human beings and animals in direct and indirect ways. Hence it is necessary to dispose of plastic waste properly as per the regulations provided by our government. The replacement of plastic waste for cement provides potential environmental as well as economic benefits.

2.0 BACKGROUND

Polyethylene (PE) is one of the most versatile and widely used thermoplastics in the world because of its excellent properties like toughness, near-zero moisture absorption, excellent chemical inertness, low coefficient of friction, ease of processing and unusual electrical properties. During the last few decades, polymer-matrix composites (PMCs) have beenof interest to industry and academia, especially in the areas of automotive, aerospace, electronic systems, medical products, civil construction, chemical industries, and other consumer applications Paver block paving is versatile, aesthetically attractive, functional, and cost effective and requires little or no maintenance if correctly manufactured

RIVER CLASSIFICATION FOR REMOTE SENSING IMAGERY USING SVM

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Abstract—River extraction accuracy is linked to agriculture, socioeconomics, the environment, and ecology. It aids in the early detection of major natural disasters such as floods, which result in huge loss of life and property. A large number of river- extraction approaches have been proposed as remote-sensing and information technologies have developed and become more prominent. KNN and PCA have traditionally been used to extract rivers. However, the majority of them are susceptible to noise interference and perform poorly in a huge data setting. A river extraction method based on Support Vector Machine is presented to address these issues. Image Classification is done using SVM. The river network was mapped using these technique with automatic feature extraction from a high-resolution Remote sensing image. To analyse performance indicators such as accuracy, IoU score, Kappa Coefficients, Recall, Precision and F1-score a research is conducted on SVM algorithm.

Keywords—SVM, Remote Sensing Image, Image Classification

River dynamics can be seen more effectively using remote sensing equipment. Remote sensing is far more efficient than traditional in situ measurements since it can continuously scan the Earth's surface at numerous scales. Remote sensing data sets provides temporally frequent observational data and spatially explicit data of a variety of physical attributes about the Earth's surface, which can be used to map the extent of water bodies at regional or global scales, as well as to monitor their dynamics at regular and frequent time intervals. Such quick alterations could be revealed through remote sensing. These issues make it critical to look into data collection methods that reduce the reliance on empirical relationships between flows and permanent flow proxy observations (typically water levels), eliminate or reduce the need for contact with water during surveys and permanent observations, and finally, lower the costs of such observations.

I. INTRODUCTION

The lack of continuous, accurate river flow data is a major stumbling block to understanding water resource availability and hydrological extremes. This is especially true for rivers that are isolated, difficult to reach, morphologically dynamic, and hence rapidly changing. Over the last few decades, the state of global river discharge monitoring has deteriorated. This is despite the fact that these data are critical for river flow forecasting. Water resources in poorly gauged river basins may be strategic, but data collection can be difficult due to factors such as low accessibility, considerable seasonal variability, and the presence of huge wild animals in some parts of the world. When it comes to data collecting in locations like this, financial and physical resources aren't the only issue; changes in river geometry necessitate more frequent fieldwork to update stage discharge correlations than in other river systems.

River networks are dynamic in nature, shrinking, expanding, or changing their appearance or flow course over time as a result of many natural and human-induced processes. Changes in water bodies have an impact on other natural resources and human assets, as well as the environment. Changes in the volume of surface water frequently have major repercussions. Flooding can occur in extreme

RUNOFF DEPTH ESTIMATION USING RS & GIS - NRCS-CN METHOD

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Abstract:- Estimation of Runoff depth is essential for the water resources planning and rainwater conservation techniques. Tiruchirappalli district is a semi-arid region which is selected for the study. River Cauvery flows seasonly over the district. hence rainwater conservation become necessary to overcome the demand. GIS based NRCS-CN method is used for the runoff depth estimation. For the assessment of runoff depth, base map, land use map, soil map was created in Arcgis10.5. After the intersection of these thematic maps with rainfall map, CN value is assigned and CN map was generated. By mathematical calculations, spatial distribution of runoff depth over the district was obtained.

Key words: Land use, Soil Texture, Rainfall, Runoff Depth, NRCS-CN method, Remote Sensing (RS) and Geographic Information System (GIS).

1. INTRODUCTION

between October and December because of the north- east monsoon winds, and from December to February the climate is cool and moist (census, 2011). The district has a high mean temperature and a low degree of humidity. The location map of study area is shown in the figure 2.1.

Water is fundamental for all living things and is utilized in various courses, such as, food production, drinking, domestic, industrial, power production and recreational utilize. As per the World Bank report (Anon., 2002), India will be water stress zone by the year 2025 and water scare zone by 2050. The water table is abruptly falling with unregulated over exploitation of Groundwater. The rainwater conservation schemes are relatively equitable and environmentally sound (J.P. Singh, 2009). For any rainwater conservation practices, runoff depth estimation is necessary to make decisions and planning over the various water conservation
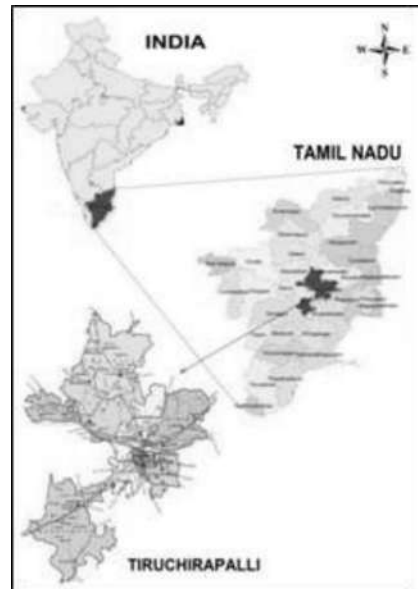

Figure 2.1 Location map of Tiruchirappalli district

Data Source
The data used for this study are discussed as

methods. Hence runoff depth was estimated for Tiruchirappalli district using GIS based NRCS- CN method.

2. MATERIALS AND METHODS
2.1 Description of the Study Area

A REVIEW OF BLOCKCHAIN IN THE METAVERSE

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Abstract
The metaverse has emerged as the new standard for social networks and three-dimensional (3D) virtual worlds when Facebook formally rebranded itself as Metaverse in October 2021.
The metaverse uses a variety of relevant technologies to provide consumers with tailored, 3D immersive experiences.In the metaverse, consumers' digital content and data security is a natural concern despite its widespread attention and advantages. Because of its unique characteristics of decentralization, immutability, and transparency, blockchain is a possible answer in this area. We hope to offer a comprehensive overview of blockchain's metaverse applications so that readers can gain a deeper understanding of the technology's place in the metaverse. the metaverse's technical difficulties and thereafter emphasize how blockchain might be useful.We also look at how blockchain affects important metaverse enablers like digital twins, big data, artificial intelligence, multi-sensory and immersive apps, and the Internet of Things. Also, we offer some significant initiatives to highlight how blockchain is used in metaverse services and applications. Finally, we outline some encouraging avenues for future research and development that will advance the usage of blockchain in the metaverse.
Keywords: - Blockchain, metaverse, privacy, Vertical Applications

INTRODUCTION
The metaverse is the next phase of digital evolution that can revolutionize the digital adoption to a staggering level and extends the domain of services beyond the standard systems with online access. Digitization of services has become the trend for improving the efficiency in the fields of businessentertainment, education, or any other system that can be integrated with online access over the past few decades. These services and systems were improved to its maximum potential with the capabilities provided with digital systems and online storage/ processing facilities at remote data centres and cloud platforms. With the efficiency, performance, and quality of the service access reaching to its highest potential, the perspective has been shifted towards the consumer experience. Thus, the demand for improved service experience with more interactive capability is ever increasing and service providers are keen on elevating their existing standards to the next level. In fact, consumers are demanding haptic and immersive capabilities with their digital interfacing, where such traits are only possible with the emerging technologies of Virtual Reality (VR), Augmented Reality (AR), Mixed Reality (MR), and Extended Reality (XR) [1].
The metaverse is the solution that Amalga mate all these pertinent technologies in the global context. This concept creates a simulated digitized environment that can be endured as an immersive virtual world for its prosumers. Users can interact with this virtual eco system through their digital avatars in compliance to the duality principle [2]. Concretely, the avatars are the virtual embodiments of the users, and has the same legal authority in the metaverse as one's legal rights in the real world; this makes the avatar warranted for any transactions made within the virtual domain and restricts from repudiating any committed action. The access can be gained by any person having a VR/ AR enabled immersive device, such as a headset or a glass under the minimal capability [3]. On the contrary, full-

IOT AND ITS IMPACT IN HEALTH INDUSTRY, A THEORETICAL STUDY

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Abstract
A network of things are physical objects with sensors interconnected, and networked through internet is known as the Internet of Things (IoT). It allows for the collection, transmission, and storage of data without the need for human-to-human or human-to-computer interaction. In order to diagnose, treat, and monitor patients in and out of the hospital, as well as to proactively anticipate health risks, the Internet of Things (IoT) holds great potential for streamlining and improving the delivery of healthcare. Globally, policymakers and decision-makers are putting rules into place to use technology to provide healthcare services, especially in light of the recent COVID-19 pandemic.Understanding how established and emerging IoT technologies might help health systems provide safe and effective treatment is becoming more and more critical. This perspective paper aims to give an overview of the state of IoT technology in healthcare today.

Keywords:
Internet of Things, healthcare, protocols, cloud

Introduction

The Internet of Things (IoT) refers to the network of physical devices, vehicles, appliances, and other objects embedded with sensors, software, and connectivity that enables them to collect and exchange data. These devices can communicate with each other and with the cloud [5], allowing for seamless integration and automation.In the smart health industry, IoT is revolutionizing the way healthcare is delivered[3]. By connecting medical devices, wearables, and other healthcare equipment, IoT enables real-time data collection and analysis, leading to improved patient care and outcomes. This interconnectedness has the potential to transform the healthcare landscape, making it more efficient, accessible, and personalized. IoT in healthcare is not just about devices, but also about the data they generate. With the vast amount of data collected from patients, healthcare providers can gain valuable insights into patient behavior, treatment effectiveness, and population health trends. This data-driven approach allows for proactive and preventive care, reducing hospital readmissions and emergency visits. Implementing IoT in the smart health industry requires a secure and reliable infrastructure, as well as robust data analytics capabilities. It also calls for collaboration between healthcare providers, technology companies, and regulatory bodies to ensure privacy and compliance.

The role of IoT in the smart health industry

IoT plays a crucial role in the smart health industry by enabling connectivity, data exchange, and automation. It facilitates seamless communication between healthcare providers, patients, and devices, leading to improved care coordination and patient engagement.One of the key roles of IoT in healthcare is remote monitoring. With IoT-enabled devices, patients can be monitored from the comfort of their homes, reducing the need for hospital visits and allowing for early intervention in case of emergencies. For example, wearable devices can track vital signs, medication adherence, and physical activity, providing valuable data to healthcare professionals for timely intervention.

IoT also enables real-time communication and collaboration between healthcare providers. Doctors can access patient data, test results, and medical histories remotely, allowing for faster diagnosis and

OPPORTUNITIES AND DIFFICULTIES WITH PREDICTIVE MODELS IN SOFTWARE ENGINEERING

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Abstract
In numerous software engineering domains, predictive models are among the most crucial methods that are frequently utilized. Several primary studies have been conducted in a variety of study disciplines, such as software requirements, software design and development, testing and debugging, and software maintenance. These studies utilize predictive models and present well-preformed investigations and well-designed works. By reviewing a corpus of 139 works on predictive models, this paper represents an initial attempt to methodically arrange information in this field. In addition to classifying the various models and techniques, we also outline the range of important application areas, examine research findings, and discuss the essential models and approaches used. We categorize the various models, highlight the breadth of important application areas, explain the main models and methodologies, and evaluate research findings. In light of our findings, we also suggest a number of ongoing issues that require further investigation and offer a suggested study agenda for them.

Keywords: Predictive models, machine learning, software engineering
INTRODUCTION
Researchers have developed automated methodologies to improve software engineering tasks. Key reasons are usually to save developer time and effort and to improve the software quality in terms of stability, reliability, and security. Many of such studies have resulted in great improvements in various tasks [9, 62, 116, 136, 158]. A key technology, the predictive model, has been developed to solve a range of software engineering problems over several decades. The use of predictive models is in fact becoming increasingly popular in a wide range of software engineering research areas. Predictive models are built based on different types of datasets – such as software requirements, APIs, bug reports, source code and run-time data – and provide a final output according to distinct features found in the data. There are various predictive models commonly used in software engineering tasks that contribute to improving the efficiency of development processes and software quality. Common ones include defect prediction [136], API issue classification [60], and code smell detection [102]. Despite numerous studies on predictive models in software engineering, to the best of our knowledge, there has been no systematic study to analyze the use of and demonstrated the potential value of and current challenges of using predictive models in software engineering. There is no clear answer as to which software engineering tasks predictive models can be best applied and how to best go about leveraging the right predictive models of these tasks. Answering these questions would be beneficial for both practitioners and researchers, in order to make informed decisions to solve a problem or conduct research using predictive models. This paper contributes to the research on predictive models by performing a comprehensive systematic survey of the domain. At first we recorded all titles of papers published in top software engineering venues, such as ICSE, ASE, FSE, TSE, TOSEM, and EMSE from 2009 – 2019. We performed searches on the title and abstract of each paper and collected over 2,000 papers containing our target search terms. We then carefully read the abstract and introduction

FACE DETECTION USING CONVOLUTION NETWORK

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Abstract
Face detection system in most academic and office environments is presently achieved primarily by a manual method where the user has to input their attendance into the system. Human error can occasionally occur while using the manual technique, which further reduces efficiency and lengthens processing times. The proposed solution involves designing a smart face identification-based management system that considers distance and background brightness, capturing attendance and timestamps for identification. For multiscale testing, the face is first scaled in this way to three distinct sizes: 256, 384, and 512 pixels. The overall outcome size descriptor is the overall mean for these characteristic vectors, and the deep convolution neural network calculates 22 facial features in 128 distinct embeddings in 22-deep network layers. The pose of the 2D face from −20 to +20° provides identification with 98% to 99% accuracy in low computation time. Another feature of the proposed system is that it is able to accurately perform identification with an accuracy of 98.82% from a distance of 5 m under optimal light conditions. In addition, the accuracy changes with light intensity, ranging from 96% to 99% under 100 to 1000 lumen/m2, respectively. The proposed paradigm shortens computation times while simultaneously increasing identity and accuracy under practical circumstances.
Keywords:
Smart face, deep convolution, multiscale, 2D face

1. Introduction
Management systems are essential in public and educational sectors for analyzing candidate performance. Traditional methods like registers and sheets are obsolete, and advanced methods like RFID and biometrics face time wastage and manipulation. A smart system is needed for marking and recording, saving authentic records for future analysis. Human errors can be made during repetitive tasks, making it necessary to implement a smart system for efficient and accurate attendance tracking. In addition to reducing errors, the proposed system for management is also more feasible than other methods. For example, the biometric system needs more hardware, and its maintenance is also difficult. The automatic system can resolve a crucial issue within the manual one that occurs when a person transfers the information from the sheet into the system. The face identification method has many steps which include capture, extraction, comparison, and matchmaking. An automated and computerized attendance information and management system with enhanced face identification has been proposed. The initial steps include database creation, face identification, feature engineering, and categorization stages followed by the last stage, i.e., post-processing phase [1]. Facial images of students are stored in a database, and candidates are identified using a camera. The camera captures images of candidates, identifying countenances and marking their identity. This method saves time compared to manual management and allows for easy sorting if needed.

There have been many types of research work on surveillance systems that have been done on various devices; most of them were embedded systems based on GPU as well as FPGA [2]. The most effective and powerful GPUs [3] have been utilized to implement the rules of the monitoring mechanism for

SCALABLE ROBOTICS TRANSFORMER FOR REAL-WORLD CONTROL

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ABSTRACT
Modern machine learning models can perform at a high level when solving specific downstream problems either zero-shot or with tiny task-specific datasets by transferring knowledge from vast, diversified, task-agnostic datasets. While other domains like computer vision, natural language processing, and speech recognition have shown this capability, robotics is still awaiting proof. In robotics, the models' generalization abilities are especially important because real-world robotic data collection is challenging. We introduce a model class in this research called Robotics Transformer that has interesting scalable model features. Our study validates our findings by examining various model classes and their capacity to generalize in relation to data volume, model complexity, and data diversity. The data is gathered through extensive research using actual robots carrying out real-world activities.

INTRODUCTION

End-to-end robotic learning, with either imitation or reinforcement, typically involves collecting task-specific data in either single-task (Kalashnikov et al., 2018; Zhang et al., 2018) or multitask (Kalashnikov et al., 2021b; Jang et al., 2021) settings that are narrowly tailored to the tasks that the robot should perform. This workflow mirrors the classic approach to supervised learning in other domains, such as computer vision and NLP, where task-specific datasets would be collected, labelled, and deployed to solve individual tasks, with little interplay between the tasks themselves. Recent years have seen a transformation in vision, NLP, and other domains, away from siloed, smallscale datasets and models and towards large, general models pre-trained on broad, large datasets. The keys to the success of such models lie with open-ended task-agnostic training, combined with high-capacity architectures that can absorb all of the knowledge present in large-scale datasets. If a model can "sponge up" experience to learn general patterns in language or perception, then it can bring them to bear on individual tasks more efficiently.

While removing the need for large task specific datasets is appealing generally in supervised learning, it is even more critical in robotics, where datasets might require engineering-heavy autonomous operation or expensive human demonstrations. We therefore ask: can we train a single, capable, large multi-task backbone model on data consisting of a wide variety of robotic tasks? And does such a model enjoy the benefits observed in other domains, exhibiting zero-shot generalization to new tasks, environments, and objects? Building such models in robotics is not easy. Although recent years have seen several large multitask robot policies proposed in the literature (Reed et al., 2022; Jang et al., 2021), such models often have limited breadth of real-world tasks, as with Gato (Reed et al., 2022), or focus on training tasks rather than generalization to new tasks, as with recent instruction following methods (Shridhar et al., 2021; 2022), or attain comparatively lower performance on new tasks (Jang et al., 2021).

The two main challenges lie in assembling the right dataset and designing the right model. While data collection and curation is often the "unsung hero" of many large-scale machine learning projects (Radford et al., 2021; Ramesh et al., 2021), this is especially true in robotics, where datasets are often robot-specific and gathered manually (Dasari et al., 2019; Ebert et al., 2021). As we will show in our

CHATGPT FOR ROBOTICS: DESIGN PRINCIPLES AND MODEL ABILITIES

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Abstract:
An experimental investigation on the applicability of OpenAI's ChatGPT [1] for robotics applications is presented in this paper. We present a method that enables ChatGPT to adjust to various robotics tasks, simulators, and form factors by combining design concepts for quick engineering with the development of a high-level function library. We concentrate our analyses on how well various dialog methods and prompt engineering techniques work when applied to different kinds of robotics jobs. We examine ChatGPT's usage of task-specific prompting functions, closed-loop reasoning through dialogues, and free-form dialogue, as well as its ability to analyse XML tags and synthesize code. A wide spectrum of robotics activities is covered by our research, from simple tasks like fundamental logical, geometrical, and mathematical thinking to more complicated areas like aerial navigation, manipulation, and embodied agents. It can be demonstrated that ChatGPT is capable of handling multiple tasks of this nature, and that its primary mode of interaction is natural language commands. Apart from these investigations, we present an open-source research instrument named Prompt Craft, comprising a platform where scholars can cooperatively submit and select exemplary prompting schemes for robotics applications. Additionally, it includes a model robotics simulator that integrates ChatGPT, facilitating users' initial experiences with ChatGPT for robotics.

Introduction
The rapid advancement in natural language processing (NLP) has led to the development of large language models (LLMs), such as BERT [2], GPT-3 [3], and Codex [4], that are revolutionizing a wide range of applications. These models have achieved remarkable results in various tasks such as text generation, machine translation, and code synthesis, among others. A recent addition to this collection of models was the OpenAI ChatGPT [1], a pretrained generative text model which was finetuned using human feedback. Unlike previous models which operate mostly upon a single prompt, ChatGPT provides particularly impressive interaction skills through dialog, combining text generation with code synthesis. Our goal in this paper is to investigate if and how the abilities of ChatGPT can generalize to the domain of robotics. Robotics systems, unlike text-only applications, require a deep understanding of real-world physics, environmental context, and the ability to perform physical actions. A generative robotics model needs to have a robust commonsense knowledge and a sophisticated world model, and the ability to interact with users to interpret and execute commands in ways that are physically possible and that makes sense in the real world. These challenges fall beyond the original scope of language models, as they must not only understand the meaning of a given text, but also translate the intent into a logical sequence of physical actions. In recent years there have been different attempts to incorporate language into robotics systems.

These efforts have largely focused on using language token embedding models, LLM features, and multi-modal model features for specific form factors or scenarios. Applications range from visual-language navigation [5, 6], language-based human-robot interaction [7, 8], and visual-language manipulation control [9, 10, 11]. However, despite the potential advantages of using LLMs in robotics, most of the existing approaches are restricted by a rigid scope and limited set of functionalities, or by their open-loop nature that does not allow for fluid interactions and behaviour corrections from user

UNDERSTANDING THE BASIC CONCEPTS OF CLOUD COMPUTING AND ITS TYPE

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Abstract:
This paper presents a mechanism of Cloud Computing by clarifying its ideas, types, applications. Cloud computing is anything but a shiny new innovation, however today it is quite possibly the most arising innovation because of its strong and significant power of progress the way information and service are made due. Cloud computing has turned into the trendy expression in the computing scene. Cloud computing is the most recent exertion in conveying computing assets as a service. It addresses a shift away from computing as an item that is bought, to computing as a service that is conveyed to customers over the web from huge scope server farms - or "clouds".

Keywords: Cloud Computing; Mechanism of Cloud Computing; Types Concepts of Cloud Computing.

1. Introduction:

The delivery of numerous services over the Internet is known as cloud computing. Devices and applications such as data storage, servers, data sets, systems management, and programming are included in these assets. Cloud computing refers to the delivery of a variety of services over the Internet, such as data storage, servers, data sets, systems administration, and programming. The ability to save documents to a remote data set and retrieve them on demand is made possible by cloud-based capacities. Cloud computing has arisen as another computing worldview in which there are two kinds of players. Cloud service suppliers and cloud end-clients. The cloud means to give the shopper or end-client, computing climate with QOS (Quality of Service) and in light of the unique necessities, and benefits for the cloud service suppliers. The National Institute of Standards and Technology (NIST) characterizes cloud computing as "Cloud computing is a model for empowering helpful, on-request network admittance to a common pool of configurable computing assets (for example networks, servers, capacity application and services) that can be quickly provisioned and delivered with negligible administration exertion or services up plier connection". Cloud computing uses dispersed assets by joining them to tackle complicated, huge scope calculation issues and to accomplish higher throughput.

Cloud computing has recently risen to popularity and established itself as a prominent IT trend. While industry has been driving the Cloud research agenda at breakneck speed, the scholarly community has just recently joined, as evidenced by the dramatic rise in Cloud Computing studios and symposia. Recently, many

Computing have been brought out, and an ordered audit has become necessary, which investigates the examination done and specifies the upcoming exploration strategy. We conducted a systematic evaluation of all peer-reviewed scholarly research on cloud computing in order to clarify the specialized issues discussed in this study.

BLOCK CHAIN WITH CLOUD COMPUTING AND BIG DATA

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Abstract
 Block chain technology is a widely used emerging technology. It can integrate cloud computing technology and big data to form a distributed cloud computing system. In addition, local cloud computing is also widely used, and there are many big data in these applications. Block chain and local cloud computing technology offers safe and reliable information exchange for data exchange. This article aims to study how to analyze and research the application analysis method of big data based on blockchain technology and improve the classical a priori algorithm (CAA). This article compares and analyzes the performance of CAA and improved apriori algorithm (IAA) in big data applications. When the number of key words in the query are 20 and 100, the result search time of the CAA are 1.08 and 9.24 s, respectively, and the IAA are 0.76 and 7.58 s, respectively. The result search cost of the CAA is 12.43 and 91.55 kB, respectively, and the IAA is 5.05 and 63.72 kB, respectively. It is not difficult to see that applying the IAA to the block chain-based government data-sharing scheme had relatively excellent performance and was worth further promotion and application. Keywords: apriori algorithm, big data application, blockchain technology, data mining, government data security, localized cloud computing

1 Introduction
 The distributed computing system based on block chain technology has the characteristics of security, stability, and information tamper-proof. Combined with cloud computing technology, it can effectively solve various problems of the cloud on the information system. The combination of blockchain and cloud technology can solve the trust problem of enterprises and public institutions in the cloud and realize the migration of information systems of various units to the cloud on the premise of existing resource investment. In addition, the idle resources (computing, storage, broadband) of all departments would be collected and distributed to the institutions and companies that need resources and a certain amount of compensation would be given according to their respective contributions, thus forming a new business model. In order to understand the data stored in the cloud, users can download the cloud data to the local for detection. However, this method would cause many network resource consumption, thus weakening the advantages of the cloud computing business. Particularly, for the storage of many cloud data, the feasibility of this scheme is lower. In addition, from the perspective of users, cloud service providers are not trustworthy because they would not warn users to avoid damaging their own reputation without damaging the integrity of users' information. From the perspective of cloud service providers, users are also unreliable, because they can claim against cloud computing providers through forged data integrity. Therefore, in order to avoid conflicts, both parties need to have a mutually recognized third-party organization or mechanism. With the advancement of society, the research of big data applications has gradually increased. Sandhu discussed the definition, classification, and characteristics of big data, as well as various cloud services, and compared and analyzed various cloud-based big data frameworks. Various research challenges were defined in terms of distributed database storage, data security, heterogeneity, and data visualization [1]. Varatharajan et al. used the support vector machine model and the weighted kernel function method to classify more features in the input electrocardiogram signal in cloud computing. The sensitivity, specificity, and mean square error were calculated to prove the effectiveness of the proposed linear discriminate

INDUSTRIAL METAVERSE ERA: BLOCKCHAIN INTEGRATION

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Abstract
A distributed and decentralized database, or "distributed ledger," that is shared by all of the nodes in a computer network is what blockchain can be realized as. A distributed, democratized database system for digitally storing information is called a blockchain. Due to the focus on digitizing production and manufacturing systems and networks under the framework of Industry 4.0, Big Data sets are essential for every manufacturing activity. As a result of ongoing actions and processes, big data sets are emerging as a valuable resource. Cyberattacks are a real possibility, though. Blockchain is an innovative, safe information technology that fosters industrial and commercial innovation. But current constraints on scalability, adaptability, and other aspects of blockchain technologies and cyberspace defence. Thus, as a subset of Society 5.0, Industry 5.0 presents the implications of blockchain technology for tackling the increasing cybersecurity barriers toward safe and intelligent production in this literature study.

Introduction
Blockchain technology can be defined as a growing list of records, which are known as blocks. The innovation of blockchain technology, beyond the creation and maintenance of a continuous list of records, is the improvement of digital transaction security and anonymity based on the implementation of cryptography algorithms. For a peer to insert a new block into the blockchain, that specific block must be followed by a cryptographic hash (i.e., a unique code) that is connected to the preceding block. Each new block consists of two key parts, namely the block header and the block body. The structure of the block header includes the version number, a timestamp, a target hash bit of the current block, a nonce, the hash value of the previous block, and a Merkel root. The detailed data of transactions are stored in the block body. More specifically, additional attributes, such as a timestamp, and transaction data are also included in the new block, thus ensuring the continuity of the information. Consequently, it becomes apparent that the blockchain is by definition resistant to modification of its data. Timestamping and hashing processes are required before a new block is added to the chain; thus, the data of the blockchain can be traced back and are transparent to everyone who participates in the blockchain. Essentially, the blockchain can also be considered a distributed, shared database. In Figure 1, the operating principle of the blockchain for the addition of new blocks is described.

AN OVERVIEW OF APPLICATION RESEARCH USING SMART CONTRACTS IN BLOCKCHAIN TECHNOLOGY

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Abstract
Smart contract technology is constantly evolving and improving, and this has led to the rapid global development of the blockchain business. As a result, this study examines the advancement and difficulties of smart contracts by providing an overview of their operation and the current state of application research. First, we outline the paradigm and guiding principles of blockchain smart contracts for the overall architecture. Next, we examine how smart contracts are deployed using Ethereum, Hyperledger Fabric, and EOSIO, and we perform a technical comparative study. Using the Byteball, InterValue, and IOTA platforms as illustrations, we present the DAG-based blockchain smart contract deployment procedure and its possible applications in the fields of Blockchain Oracle, action system, and other apps.

Keywords Blockchain, DAG-based blockchain, Internet of things, Block Chain Oracle

Introduction
With the rapid development of cryptocurrencies such as Bitcoin and the application of blockchain technology in industries such as finance, Internet of things (IoT), cloud computing and supply-chain, blockchain has gradually attracted global attention [1]. Blockchain provides a programmable environment for smart contracts as an emerging technology with great potential. Taking advantage of blockchain, smart contract has been widely used in blockchain. Smart contract can not only change the existing business model, but also bring a lot of convenience to public life in reality. The concept of ''smart contract'' was first proposed by Nick Szabo in 1995 [2], specifically defined as ''a smart contract is a set of commitments defined in digital form, including the agreement that the participants in contract can implement these commitments''. Smart contract is a computer protocol designed to disseminate, verify or execute contracts in an information-based manner. It allows trusted transactions without a third party and these transactions are traceable and irreversible, which purpose is to provide better security than traditional contracts and reduce other transaction costs related to contracts. Therefore, smart contract characterized by the high efficiency of development, lower maintenance cost and high accuracy of execution fit perfectly with the blockchain technology. It can be said that smart contract is one of the key features of blockchain technology [3]. As a core technology of blockchain, smart contract based on blockchain has been widely used in blockchain projects with strong influence such as Ethereum and Hyperledger. The emergence of blockchain technology defined smart contract and made it possible. Smart contract is an embedded programming contract that can be built into any blockchain data, transaction or asset to form systems, which to form systems, markets or assets controlled by the program [4]. It not only provides innovative solutions for the financial industry, but also plays an important role in the management of affairs as information, assets, contracts, supervision, and others in the social system. According to the progressive history of blockchain technology, the development of smart contract can be divided into three stages, as shown in Fig. 1: in blockchain 1.0, the representative application is Bitcoin, which the contract for it is mainly used to achieve digital currency transaction, and its function is relatively single. And RSK (rootstock), the smart contract

USING VOICE RECOGNITION SOFTWARE IN LEARNING OF HINDI AS A NATIONAL LANGUAGE

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1. Abstract

This paper is based on the notion that what matters most in language learning is communication. We argue that if a learner can speak what can be understood by native speakers while at the same time understanding what the native speaker says, then we can conclude that this learner has successfully acquired the target language. We present a set of ideas based on the voice recognition exercise which was done with 20 students from different states of India who had studied Hindi as a National language for three months. A voice recognition application on smart phones and tablets was used for pronunciation practice purpose in order to boast students' confidence in spoken Hindi. In this exercise the phone acts as the decoder and it represents how a native Hindi speaker would decode the learner's speech. The results showed that during the exercise students become more and more conscious of their errors and adjusted their pronunciation. In addition, the voice recognition application helped to determine whether or not the learner's pronunciation was stable. Based on the results of the study, we concluded that it was possible to turn voice recognition application on smart phones into a game that language learners could use to practice their spoken Hindi. This method is cheap and it promotes self-evaluation as well as boosting interest in learning Hindi language.
Keywords: Voice recognition, Hindi as a National language, Pronunciation practice, Confidence, Stability

Introduction

Voice recognition which is also well known as speech recognition or automatic speech recognition is now a common application on modern smart phones and tablets which among other functions can translate human speech into written words. Google's Android and Apple's iOS are among the most popular voice recognition applications. Voice recognition is defined as a process by which human sounds, words or phrases are converted into electrical signals which are then transformed into coding patterns to which meaning has been assigned such that spoken word can be used as an input to a computer program (Rabiner & Juang, 1993). In recent years this computer program has become available on cell phones, thus allowing people to use voice input to send messages on their phones even when they are driving. The primary purpose of voice recognition application on cell phones is for safety when sending messages while driving. However, voicerecognition also makes use of cell phones more entertaining especially when it is used in such games as the TalkingTom application where one speaks to the phone and the rabbit (Mouse) repeats the speakers' words. Voice recognition applications have so many potential functions other than safety and entertainment some of which have not yet been explored. Gales and Young (2007) summarized the possible functions of voice recognition application as follows; commanding and controlling, dictation, transcription of recorded speech, searching audio documents and interactive spoken dialogues. All these functions of voice recognition can be also effectively implemented as teaching aids when teaching languages. Application of speech recognition in language learning is not anything new; Rolandi (2005) once said that Speech recognition can provide the means to interactively evaluate the utterances of a learner on several educational

SOFTWARE DEVELOPMENT FOR AI-POWERED SYSTEMS: AN OVERVIEW

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Abstract
Systems that use artificial intelligence (AI) have at least one AI component to enable certain functionality, such as autonomous driving, speech and image recognition, and image processing. Advances in AI are leading to the widespread adoption of AI-based systems in society. But there isn't much synthesised information available about Software Engineering (SE) techniques for creating, managing, and sustaining AI-based systems. A thorough mapping study was carried out in order to gather and examine the most recent knowledge regarding SE for AI-based systems. Between January 2010 and March 2020, 248 studies were published. In the field of emergent research, more than two thirds of papers on SE for AI-based systems have been published since 2018. Reliability and safety are two of the most researched aspects of AI-based systems. Several SE techniques for AI-based systems were found, and we categorized them using the SWEBOK areas. Research pertaining to Software quality and testing are highly visible, but software maintenance seems to be overlooked. Problems with data are the most frequent difficulties. Researchers can immediately comprehend the state-of-the-art and determine which of our findings are valuable. Subjects in need of additional study; practitioners need educated on the strategies and difficulties that SE presents for AI-based systems and to close the curriculum gap between AI and SE, educators.
Keywords: AI-based systems, systematic mapping study, SE4AI

INTRODUCTION
In the last decade, increased computer processing power, larger datasets, and better algorithms have enabled advances in Artificial Intelligence (AI) [11]. Indeed, AI has evolved towards a new wave, which Deng calls "the rising wave of Deep Learning" (DL) [46] 1 . DL has become feasible, leading to Machine Learning (ML) becoming integral to many widely used software services and applications [46]. For instance, AI has brought a number of important applications, such as image- and speech-recognition and autonomous, vehicle navigation, to near-human levels of performance [11]. The new wave of AI has hit the software industry with the proliferation of AI-based systems integrating AI capabilities based on advances in ML and DL [6, 24]. AI-based systems are software systems which include AI components. These systems learn by analyzing their environment and taking actions, aiming at having an intelligent behaviour. As defined by the expert group on AI of the European Commission, "AI-based systems can be purely software-based, acting in the virtual world (e.g. voice assistants, image analysis software, search engines, speech and face recognition systems) or AI can be embedded in hardware devices (e.g. advanced robots, autonomous cars, drones or Internet of Things applications)"2 . Building, operating, and maintaining AI-based systems is different from developing and maintaining traditional software systems. In AI-based systems, rules and system behaviour are inferred from training data, rather than written down as program code [101]. AI-based systems require interdisciplinary collaborative teams of data scientists and software engineers [6]. The quality attributes for which we need to design and analyze are different [153]. The evolution of AI-based systems requires focusing on large and changing datasets, robust and evolutionary infrastructure, ethics and equity requirements engineering [119]. Without acknowledging these differences, we may end up

RESEARCH ON SOFTWARE ENGINEERING: THE ETHICAL ASPECTS OF CHATGPT

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Abstract:
ChatGPT provides effective, user-friendly information synthesis and analysis through natural language interactions, which can enhance Software Engineering (SE) research techniques. However, ChatGPT may provide ethical issues with regard to data security, privacy, and plagiarism as well as the possibility of producing skewed or potentially harmful data. By focusing on the essential components—motivators, demotivators, and ethical guidelines for utilizing ChatGPT in SE research—this study seeks to close the existing gap in knowledge. In order to accomplish this goal, we reviewed the literature, determined the aforementioned components, and created a taxonomy to show how they relate to one another. Furthermore, a thorough questionnaire-based survey comprising SE scholars was used to experimentally analyze the identified literature-based features (motivators, demotivators, and ethical principles). To develop a cluster-based decision model, we also performed a Cross-Impact Matrix Multiplication Applied to Classification (MICMAC) analysis. By embracing the motivators and addressing the demotivators, these models seek to assist SE researchers in developing ethical strategies for incorporating ChatGPT into their research while adhering to the established standards. With a focus on ethical issues, the study's conclusions will set a standard for using ChatGPT services in SE research.

INTRODUCTION
ChatGPT is a cutting-edge language model created by OpenAI [1], designed to generate human-like responses to various prompts. The model employs deep learning algorithms, utilizing the latest techniques in Natural Language Processing (NLP) to generate relevant and coherent responses. GPT, or "Generative Pre-trained Transformer" refers to the model's architecture based on the transformer architecture and pretrained on a vast corpus of textual data [2]. ChatGPT been fine-tuned on conversational data, allowing it to generate appropriate and engaging responses in a dialogue context [1], [3]. The model's versatility means that it can be applied to numerous applications, including chatbots, virtual assistants, customer service, and automated content creation. The OpenAI team continues to update and improve the model with the latest data and training techniques, ensuring it remains at the forefront of NLP research and development [4]. ChatGPT has significant potential for use in academic research [5], particularly for performing SE activities [6].
Researchers can utilize ChatGPT to generate realistic and high-quality text for various applications, including language generation, language understanding, dialogue systems, and experts' opinion transcripts [7]. ChatGPT can also be fine-tuned for specific domains or tasks, making it a flexible tool for researchers to create customized language models [8]. In addition, ChatGPT can be used to generate synthetic data for training other models, and its performance can be evaluated against human-generated data. Moreover, ChatGPT can be used for research on social and cultural phenomena related to language use. For example, researchers can use ChatGPT to simulate conversations and interactions between people with different cultural backgrounds or to investigate the impact of linguistic factors such as dialect, jargon, or slang on language understanding and generation [9].
ChatGPT significantly impacts research, particularly in qualitative research using NLP tools. Its ability to generate high-quality responses has made it a valuable tool for language generation, understanding,

ROBOTICS AND ARTIFICIAL INTELLIGENCE WORKING TOGETHER: A COMPLETE INTEGRATION

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Abstract
Most software-driven robotic systems, such as mobile robots, unmanned aerial vehicles, and, increasingly, semi-autonomous cars, are associated with the emergence of artificial intelligence. However, given the substantial differences between the computational domain and the physical domain obstructs existing systems' efforts to develop intelligent, user-friendly robots that can interact and interact with our human-centred environment. Developing dependable and embodiment-aware artificial intelligence systems is the goal of the emerging discipline of machine intelligence (MI), which blends robotics and AI. Because these systems are self-conscious and aware of their surroundings, they may adjust to the interacting body in which they are functioning. To achieve fully autonomous intelligent systems in our daily lives, robotics and artificial intelligence (AI) must be integrated into control, perception, and machine-learning systems. An outline of the is given in this review. The historical evolution of artificial intelligence, dating back to the 12th century. The examination of robotics and artificial intelligence (AI) as it is today follows, with a discussion of important systems and current research prospects. In addition, the paper discusses the unmet potential future of human-machine interactions and lists the remaining obstacles in these sectors.

INTRODUCTION

The convergence of robots and artificial intelligence (AI) is rapidly emerging as a catalyst for the development of novel industries, state-ofthe-art technology, and enhanced productivity and efficiency across established sectors [1]. The ongoing development of artificial intelligence (AI) in the field of robotics is leading to a growing recognition of its practical applicability in various real-world contexts [2]. Artificial intelligence (AI) is significantly contributing to the transformation of various industries and enhancing the quality of everyday life. Its applications range from self-driving automobiles, customer service and healthcare to industrial and service robots [3]. Despite apprehensions around the potential displacement of human labour by AI and robotics, the World Economic Forum (WEF) forecasts a net increase of 12 million employment resulting from the use of this technology by the year 2025 [4]. The current expansion offers a favourable circumstance for the retraining and acquisition of new skills among the workforce, as well as the allocation of resources towards knowledge development that is in line with the most recent technological advancements [5].

The integration of artificial intelligence (AI) and robotics holds significant promise for transforming work responsibilities in many sectors. This includes the automation of repetitive operations within manufacturing facilities, as well as the introduction of adaptability and cognitive capabilities into monotonous applications. The potential applications of artificial intelligence (AI) in the realm of robotics are many and diverse, rendering it a captivating area of study and comprehension. Continue reading to get further knowledge about robots and artificial intelligence, as well as discover ways in which you may actively contribute to the future development of this significant sector [6,7].

SOFTWARE ENGINEERING TRAINING IN SEVERAL LANGUAGES

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Abstract
Nowadays, a lot of software engineering activities may be automated with the help of well-trained machine-learning models that use a lot of data from open-source software. This strategy has been used to a number of SE problems, with performance progressively improving over the past few years thanks to improved models and training techniques. Training benefits from an increasing amount of diverse, well-labelled, and clean data; nevertheless, creating high-quality datasets is difficult and time-consuming. Increasing the amount and variety of clean, tagged data can be applied in a broad range of situations. Labelled data may be scarcer for certain languages (like Ruby) and more concentrated in certain application domains (like JavaScript) for other languages.

INTRODUCTION

Researchers in the NLP area have reported that multilingual training is beneficial for low-resource language [16, 23, 57, 63]. Several papers show that multilingual-trained models show better performance [36, 62] and are more practical to deploy [9]. However, this is observed in two situations: 1) for low-resource languages and 2) when the languages are related. We find that programs in different languages solving the same problem use more similar identifiers; furthermore, different languages sometimes have similar keywords and operators. High-capacity deep learning models are capable of learning interlingua: shared semantic representation between languages [34]. Moreover, with tasks like summarization, or method naming, we are dealing with a simplified, many-to-one setting: translating multiple source languages to a single target language), which is believed to be easier than multi-way task [20, 76]. We begin by introducing the code summarization task, which we use to motivate multilingual training.

Developers often rely heavily on comments, to gain a quick (even if approximate) understanding of the specification and design of code they are working on. An actual example of a comment is shown in Figure 1. Such comments help a developer gain a quick mental preview of what the proximate code does, and how it might go about it; this helps the developer know what to look for in the code. Knowing that such comments are useful to others (or even later to oneself) incentivizes developers to create comments that explain the code; however, the resulting redundancy (viz., code that does something, and some nearby English text that describes just what the code does), with the same concept expressed in two languages results in a bit of extra work for the original coder. This extra work, of creating aligned comments explaining the code, can be fruitfully viewed [21] as a task related to natural language translation (NLT) (e.g., translating English to German). The mature & powerful technology of NLT becomes applicable for comment synthesis; ML approaches developed for the former can be used for the latter. An effective comment synthesizer could help developers: by saving them the trouble of writing comments; and perhaps even be used on-demand in the IDE to create descriptions of selected bits of code.

BACKGROUND & MOTIVATION

We now present some motivating evidence suggesting the value of multilingual training data for deep-learning applications to software tasks. We begin the argument focused on code summarization. Deep
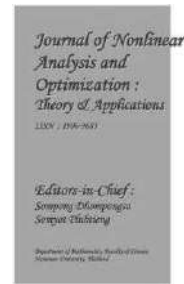
Guidelines for Reporting Secondary Studies in Software Engineering

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Abstract

The reporting of secondary studies on software engineering has drawn criticism from a number of tertiary studies. Our goal is to provide recommendations for the reporting of secondary research related to software engineering (SE) that would address issues that have been noticed in the reporting of SRs, or software engineering systematic reviews. Approach: We examine the objections raised by SE secondary research and determine the principal areas of the issue. Based on its status as the reporting guideline recommended by the Cochrane Collaboration, whose SR guidelines were a major input to the guidelines developed for SE, we evaluate the PRISMA 2020 (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) statement as a potential solution to the need for SR reporting guidelines. In the context of SE secondary studies, we outline its benefits and drawbacks. We also evaluate reporting requirements for qualitative reviews and mapping studies, comparing their content and structure to PRISMA 2020 for comparison. Results: Secondary study reports are of varying quality, as previous tertiary investigations have confirmed. On the other hand, impromptu suggestions that modify reporting requirements might lead to needless text repetition. We affirm that while the PRISMA 2020 declaration primarily focuses on quantitative reviews, mixed-methods reviews, and meta-analyses, it also covers issues related to SE reporting. That being said, we demonstrate how the PRISMA 2020 item definitions can be expanded to include the data required for reporting qualitative reviews and mapping studies.

Keywords Evidence-based software engineering, systematic reviews, quality reviews, mixed methods reviews, PRISMA 2020

INTRODUCTION

THE goal of this article is to introduce and justify the SEGRESS guidelines that we have developed for reporting secondary studies in software engineering (SE). The SEGRESS guidelines are based on the PRISMA 2020 standard, which was developed to support the reporting of medical and healthcare-related systematic reviews. The main reason for developing SEGRESS was to address criticisms of SE systematic review reports raised in recent tertiary studies (see Budgen et al. [1], Zhou et al. [2], Ampatzoglou et al. [3], Yang et al. [4]). Criticisms include problems in finding the information required, such as recommendations [1], lack of standards for assessing the validity of secondary studies ([2] and [3]), and problems with study quality assessment [4]. In Section 2, we summarise the criticisms reported in these studies in more detail.

This both justifies the need for SE reporting guidelines that are suitable for software engineering researchers, and also identifies essential information that such guidelines need to ensure is reported. In Section 3, we introduce the PRISMA 2020 statement, which is the current international standard for

DESIGN OF 4X4 MULTIPLIER USING REVERSIBLE TSG GATE

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Abstract--- Multipliers are very important components of any processor or computing machine. The performance of microcontrollers and Digital signal processors are evaluated based on the number of multiplications performed.. Hence better multiplier architectures are assured to increase the efficiency of the system. The reversible multiplier is one such promising solution. In this paper, a 4x4 reversible unsigned multiplier is being designed. The Fredkin gates (FRG) are used for producing the partial products and Thapliyal Srinivas Gate (TSG) singly can be used as a half adder and as a full adder for the addition of partial products. The design is implemented using Xilinx ISE 14.7 design suite.

Keywords--- Reversible logic gates, reversible logic circuits, reversible multipliers, Delay, Garbage Output, Quantum Cost

I. INTRODUCTION

The most important basic function in arithmetic operations is multiplication. Presently these are used in many Digital Signal Processing(DSP) applications such as Fast Fourier Transform (FFT), convolution, filtering, and microprocessors in its arithmetic and logic unit. There is a need for a high-speed multiplier since multiplication dominates the execution time of most DSP algorithms. The demand for high-speed processing has been increasing, as a result of expanding computer and signal processing applications. One of the key arithmetic operations in such applications is multiplication and the development of fast multiplier circuits has been a subject of interest over decades. Reducing the time delay and power consumption are very important requirements for many applications.

In today's world, designing a Low power circuit is one of the most interesting topics in current researches. However, device scaling is critically limited by power dissipation, demanding better power optimization methods. According to Bennet et al [5], irreversible circuits result in heat dissipation as a result of bit loss. KTln2 Joules of energy is wasted for each bit of information loss [4], where K is the Boltzmann constant and T is the absolute temperature. Hence reversible circuits should be constructed to minimize energy dissipation and data loss. Reversible computation is very important in the field of quantum computing, bioinformatics, nanotechnology, optical computting, information security, digital signal processing, low-power complementary metal-oxide- semiconductor (CMOS) design, quantum-dot cellular automata, etc. [6].

In this paper, an efficient multiplication algorithm has been proposed which explains the multiplication of two 4- bit numbers. The reversible multiplier circuit has been designed using the proposed algorithm. It uses 16 Fredkin gates (FRG) for partial product generation and 13 TSG gates are used as half adder and full adder for the addition of partial products.

The paper is organized as follows: Section II introduces the preliminaries; Section III

DESIGN OF DIGITAL VOTING WITH BLOCKCHAIN TECHNOLOGY AND ARTIFICIAL INTELLIGENCE

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Abstract: Democratic voting is a crucial and serious event in any country. Every country votes is through a paper based system. Digital Voting with usage of Blockchain Technology and Artificial Intelligence aims to outline our proposal to solving the issues of manual voting system . Security of digital voting is always the best concern when considering to implement a digital voting system. Blockchains gives a secure and robust system for digital voting system.

INTRODUCTION
Digital voting is the use of electronic devices, such as voting machines or an internet browser, to cast votes. These are sometimes referred to as e-voting when voting using a machine in a polling station, and I-voting when using a web browser. Blockchain technology originates from the underlying architectural design of the crypto currency bitcoin. It is a form of distributed database where records take the form of transactions, a block is a collection of these transactions
Our idea explains how blockchain technology could be used to implement a secure digital voting system.
PROPOSAL
Our design is to create a system that doesn't entirely replace the current voting but rather integrates within a current system. We decided to do this to allow for as many different ways to vote as possible, this is so voting can be accessed by the majority of the population.

Registration
The first aspect of our design is the registration process. To allow users to register to vote our proposed service utilizes both postal based forms as well as web forms requiring the same information to ensure we cater for those without a direct internet connection. This information includes their national identity number, postal address, optional email address and a password. All this information then forms a transaction for the user agreeing with the government that they are asking to vote; this transaction is then created on the voter blockchain.

Figure – Blockchain in Voting

During this process, a voter blockchain is used to keep a record of both transactions taking place at each stage of this process for each voter:
1.   Firstly, a transaction is created when a user 'registers'.
2.   The next transaction is created when a government miner authorizes that user's right to vote.
After the correspondence is received by the user, they can then await voting to open to use their credentials to vote. It is important to note

DESIGN OF NOVEL MULTIFUNCTION FILTER USING CURRENT FEEDBACK AMPLIFIER

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Abstract--- One configuration for realizing voltage- mode multifunction filters using current feedback amplifiers (CFOA) is presented. The proposed voltage -mode circuit exhibit simultaneously low pass and band pass filters. The proposed circuits offer the following features: No requirements for component matching conditions, low active and passive sensitivities, employing only grounded capacitors and the ability to obtain multifunction filters from the same circuit configuration.

Keywords--- Active Filter, Current Feedback, Operational Amplifier, Voltage-Mode

I.   INTRODUCTION

The current feedback amplifier (CFOA) can provide not only constant bandwidth independent of closed-loop gain but also high slew-rate capability. Thus, it is beneficial to use a current feedback operational amplifier as a basic building block to realize analogue signal processing circuits [1].

In 1992, Fabre proposed a voltage-mode band pass and high pass filters circuit by using two CFOAs, one grounded capacitor, one floating capacitor and three resistors. In 1993, Fabre proposed another voltage-mode or current-mode biquads[2-3]. The voltage-mode biquad exhibits simultaneously band pass and high pass filters by using one CFOA, one grounded capacitor, onefloating capacitor and two resistors. The current-mode biquad exhibits

simultaneously band pass and high pass filters by using one CFOA, two grounded capacitors and two resistors. Several single-CF0A voltage-mode biquads were proposed. However, only one filter function (low pass, band-pass or high pass) can be obtained in each realization, which implies the need to change the circuit topology to obtain other types of filter functions. Moreover, these single-CFOA voltage-mode biquads

simultaneously by using one CFOA, two grounded capacitors and three resistors. One more filtering signal can be obtained with respect to the previous single-CFOA biquads in [3-7] and two-CFOA biquads in [5]. With respect to the voltage-modebiquads in [3], the proposed circuit uses only grounded capacitors. The use of grounded capacitors makes the proposedcircuit attractive for integrated circuit implementation [8]. With respect to the voltage-mode two-CFOA low pass and band pass biquads in [10], the proposed circuit uses one less active components.

One new configuration is proposed to realize current-mode low pass, band pass and high pass filters simultaneously. One more filtering signal can be obtained with respect to the previous current-mode biquad in [5]. Critical component matching conditions are not required in the design of proposed circuit.

II.   VOLTAGE-MODE CIRCUIT

Using standard notation, the port relations of a CFOA can be characterized by vx=vy,v0=vz,iz=ix and iy=0.The proposed

EMPIRICAL RESEARCH ANALYSIS BASED MACHINE LEARNING AND TEXTUAL ANALYSIS

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ABSTRACT:
We are currently in the age where data is readily available, its use for the prediction of future stock prices and movement trends is becoming very popular. Thus we will be reviewing the most appropriate and efficient method to predict the stock movement with higher accuracy The stock market is a complex nonlinear system with low signal-to-noise ratio. Machine learning is used to model fuzzy nonlinear data and has proved to be a powerful tool in many fields. Machine learning has been continuously improved, and the successful application of the algorithms in the fields of computer vision, expert systems, etc. makes it obvious advantages to use machine learning methods to construct quantitative investment strategies. Stock selection is essentially a sorting problem. Investors all want to pick relatively better performing stocks. Therefore, this article discusses how to choose a more appropriate investment strategy in the investment process. This paper analyzes the basic situation of the application of machine learning methods in the field of quantitative investment in conjunction with the relevant technical background, and studies and constructs a rate of return prediction model based on the analysis. As a product of the current fusion research of quantitative investment and machine learning methods, the subject is a research hotspot in the industry and has strong practical guidance and reference value.
Keywords: machine learning, deep learning, quantitative investment, quantitative stock picking

Chapter 1 INTRODUCTION
INFORMATION ON STOCK

We all have heard the word stock one way or the other. Particularly stock is related with the associates and companies which are commercialized and are to settling

in the world of marketization. The other word used for stock is share which is prominently used in day to day life. People even term it as an investment plan and its something people see as a long term investment that secures and provides an abundant funds during the retirement age.

Buying a company stock is purchasing a small share of it. People invest on the same to get a long term benefit which they think is less value for now but has to potential to grow with the time. Its an investment that provides the long time run and deals with long time goals with the fair objectives. The value of share you invest today has to give you an yield of best tomorrow but its not the same.

Market is unpredictable so are the resources and the factors that are taken to drive it off or on the set. Its never been on the same level and the pattern of the same is still unpredictable till the time. Some closeness and prediction method had been derived and approximates values and the rough figures are generated hoping for the best but all of the resource can't be trusted and are still unpredictable innature.

Knowing the market situation and researching on the same is the best way to find the reliability

GRAPHENE-BASED ANTENNA DESIGN FOR WEARABLE ELECTRONICS USING DIFFERENT TYPES OF PATCH ANTENNA ARRAY

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Abstract— Graphene based circular micro strip patch antenna array is presented in this paper. First a single circular patch to resonate at 2.45 GHz is designed in HFSS, then 1 × 2 array and 1 × 4 array are developed in order to improve the gain. The designed patch and arrays are fabricated using copper and graphene and the antenna parameters are measured and compared. This research work mainly focuses on two things; one is to improve the gain by developing array and the other one is to develop graphene antenna array using a simple, low cost printing method. Both are achieved, as the gain is improved by ~ 5 dB for 1 × 4 array when compared to single patch and the graphene antenna is fabricated and tested for its performance and found to be working perfectly as antenna in ISM Band

Keywords - Array, Graphene, Gain enhancement, Circular microstrip, Screen Printing·
Industrial☐· Scientific☐· Medical radio band (ISM)
.

I. INTRODUCTION

An antenna can be defined as a transducer that converts electrical signals into electromagnetic waves, and vice versa. It is a device that is designed to radiate or receive electromagnetic energy, typically in the radio frequency (RF) or microwave frequency range. The antenna is a critical component of any wireless communication system, as it is responsible for transmitting and receiving signals between different devices or systems. Antennas come in a variety of shapes and sizes, each with unique electrical and physical properties that determine their performance characteristics, such as gain, radiation pattern, polarization, and bandwidth. The design and optimization of antennas require a deep understanding of electromagnetic theory, as well as expertise in various simulation and measurement techniques. Our work is to see varieties of antennas' working condition under several cases where used materials are varied and conditions are practically ideal.

II. EXPERIMENTAL SECTION

also a potential point for this research which means it can operate across a wide range of frequencies, from radio waves to terahertz waves. Due to Graphene being a nanomaterial, it was not made possible to implement the design in real term however, a prototype of the design was made possible using copper instead of graphene and the dimensions up-scaled with the same ratio. Although graphene is still relatively expensive to produce, its cost has been steadily decreasing over time as manufacturing methods improve. It can be assumed that, with
greater technological advancements upcoming, fabrication with 2d novel materials will become more common.

The parameters of Graphene:

GRID-INTERACTIVE MULTIFUNCTIONAL SINGLE-PHASE PV-BATTERY SYSTEM UNDER ABNORMAL GRID CONDITIONS

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Abstract:- **Renewableenergy–based distributed generators (DGs) play a dominant role in electricity production, with the increase in global warming. This article deal with the single-phase grid interactive multifunctional solar PV system with continuous power transfer capability. However, preserving uninterrupted power and to enhance power quality is completely challenging owing to the non-linear load. This proposed model consists of two stages; PV-array and boost converter with a battery and a bi-directional converter integrated with DC link and second stage is a VSC which mitigates the harmonics and effective power utilization. In standalone mode, maintaining the magnitude and waveform almost as ideal case. In this proposed system a PI controller is used to furnish the DC-link voltage to a constant value. A feedforward control is proposed in solar PV to improve the dynamic response of the system. A self-adjustable step based control is introduced for the VSC to estimates the real power reflection portion of the load current in order to illustrate the features of the PV-battery system.The MATLAB/SIMULINK simulation results confirm the concept in terms of flexible conversion, high power density, low leakage currents as well as controllable power flow even under abnormal grid condition.**

*Keywords***Voltage source converter, MPPT, Power Quality, Feed forward.**

I. INTRODUCTION

To meet the growing energy demand, reduce carbon dioxide emissions and cope with environmental concerns, renewable energy is expected to play a key role in the future [1-3]. This clean energy can be integrated at transmission level as well as at distribution level. At transmission level, wind energy is the main driver, particularly in Europe. For example in Northern Europe, one can witness many offshore wind farms connected to the main transmission grid via AC or DC links. Due to their intermittent nature and the fact that these wind farms are connected to the grid via power electronics converters, the power grid becomes more vulnerable and subject to instability.

Establishing a multi stage conversion system with separate general DC-DC and DC-AC converters and developing stand alone multi-port configurations[3]-[9] are two methods to perform the interlinking conversion. Compared to the former solution, standalone hybrid topologies bring more benefits (e.g., increased reliability, higher power density and lower system cost due to the reduced number of conversion stages), and they posses more flexibility. For instance, the split-source inverters were introduced in [6],[7] and to enhance the compactness, efficiency, flexible power flow and voltage boosting. This is a troublesome challenge when applied in PV systems. To

ENHANCEMENT IN VOLTAGE STABILITY AND REACTIVE POWER COMPENSATION USING D-STATCOM

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Abstract: This paper deals with performance, analysis and operating principle of a power electronics based device called D-STATCOM, which is used for voltage stability and compensation of reactive power and make the system stable. The DSTATCOM contains an insulated gate bipolar transistor (IGBT) based voltage source converter principle. D-STATCOM is an effective measure to maintain voltage stability and improve power quality of distribution system. The simulation is done in MATLAB for D-STATCOM and voltage source converter (VSC).

Keywords: D-STATCOM, distribution system, line voltage, voltage stability, voltage source converter.

I. INTRODUCTION:

Power quality is set of electrical boundaries that allow the piece of equipment to function in its intended manner without significant loss of performance or life expectancy. The electrical device like electric motor, a transformer, a generator, a computer, a printer, communication equipment, or a house hold appliance. All of these devices and others react adversely to power quality issues, depending on the severity of problems. Reactive power cannot be transmitted across large power angle even with substantial voltage magnitude gradient. Reactive power should be generated close to the point of consumption. We can make several reason to minimize reactive power transfers.

1) It is inefficient during high real power transfer and require substantial voltage magnitude gradient
2) It causes high real and reactive power losses
3) It can lead to damaging temporary overvoltage's following load rejections
4) It requires larger equipment size for transformer and cables

Due to this here a D-STATCOM as shunt FACT devices is used. A distribution static synchronous compensator (D-STATCOM) is a fast response, solid-stat power controller that provides flexible voltage control at the point connection to the utility distribution feeder for power quality (PQ) improvements. It can regulate the bus voltage by absorbing or generating reactive power from system to the converter and converter to the system at the point of common coupling.

II. STATIC OF ART:

The D-STATCOM is three phase shunt connected power electronics based device. It is connected near the load at the distribution system. It is also a one type of the voltage-source converter, which converts a DC input voltage into AC output voltage in order to compensate the active and reactive power needed by the system.

OPTIMAL UTILIZATION OF CUSTOM POWER DEVICES FOR THE MITIGATION OF POWER SYSTEM PROBLEMS AND LOAD REACTIVE POWER COMPENSATION

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Abstract: **The modern power distribution system is highly vulnerable to different power quality problems. At distribution level UPQC is a most attractive solution to compensate these problems. The Unified Power Quality Conditioner (UPQC) is a versatile device which could function as series active filter and shunt active filter. The main concern in this paper is to introduce a new concept for the optimal utilization of UPQC. The series inverter of UPQC is controlled to perform simultaneous voltage sag/swell compensation and load reactive power sharing. The active power control approach is integrated with the theory of Power Angle Control to coordinate the load reactive power between two inverters. The reference voltage signal for controlling the series inverter is generated using the UPQC controller based on PAC approach. Particle Swarm Optimization is used as an optimization technique. The controlling of series inverter of UPQC-S is done using PSO based fuzzy logic controller. Using this the reference voltage signal for series inverter is obtained. Computer simulation by MATLAB/ SIMULINK has been used to support the developed concept.**

Index Terms—power angle control (PAC), power quality, reactive power compensation, Active power filter (APF), unified power quality conditioner (UPQC), voltage sag and swell compensation, PSO(Particle Swarm Optimization), VAloading, Fuzzy Logic Controller.

I. INTRODUCTION

Electric Power quality is a term which has captured increasing attention in power engineering in the recent years. A wide diversity of solutions to power quality problems is available for both the distribution network operator and end user. The power processing at source ,load and for reactive and harmonic compensation by means of power electronic devices is becoming more prevalent due to the vast advantages offered by them. The measure of power quality depends upon the needs of the equipment that is being supplied. Electric power quality means different things for different people. To most of the electric power engineers, the term refers to a sufficiently high grade of electric service but beyond that there is no universal agreement. Usually the term power quality refers to maintaining a sinusoidal waveform of bus voltages at rated voltage and frequency. In industrial, commercial and utility networks quality problems are common.

Natural phenomena, such as lightning are the most frequent cause of power quality problems. This type of switching phenomena results oscillatory transients in the electrical power

COMPARATIVE REVIEW OF REACTIVE POWERCOMPENSATION TECHNOLOGIES

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Abstract — **The quality of electrical power in a network is a major concern which has to be examined with caution in order to achieve a reliable electrical power system network. Reactive power compensation is a means for realising the goal of a qualitative and reliable electrical power system. This paper made a comparative review of reactive power compensation technologies; the devices reviewed include Synchronous Condenser, Static Var Compensator (SVC) and Static Synchronous Compensator (STATCOM). These technologies were defined, critically examined and compared, the most promising technology is recommended for the realisation of an effective, efficient, sustainable, qualitative and reliable electrical power network.**

Keywords—Reactive power compensation; synchronous condenser; static Var compensator; static synchronous compensator; reactive power compensation technology

INTRODUCTION

There is a heightening concern in power efficiency and energy savings among policy makers, economics and academics from the aspect of technology, economic, policy and human behavior point of view. Thus, the needs to further promote and explore energy efficient, reliable and sustainable technology such as synchronous condenser for reactive power compensation in electrical power systems [1].

Reactive power (Q) is an expression used for the unreal power from inductive loads like motor or capacitive loads, which normally is not so much common. It is widely calculated in units of VARs, that is volt-amps reactive. In order to maintain the most advantageous circumstances for a power system from engineering and economical point of view, it is very important to always apply the most advantageous reactive power compensation technology in an electrical power system [2], [3]. Reactive power compensation is defined as the administration of reactive power to ameliorate the production of Alternating Current (AC) in an electrical network. The idea of reactive power compensation encompasses an extensive and divergent field of both system and consumers problems, mostly connected with power quality matters, since most power quality issues can be resolved with appropriate control of reactive power [4].

The basic function of any electric power system is to convey electricity reliably and at a well synchronized frequency and voltage. Reliable and efficient Power Systems

REVIEW ON MULTILEVEL INVERTER BASED DVR FOR POWER QUALITY IMPROVEMENT

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Abstract— **Voltage sags and swells, flickers, interruptions, harmonic distortion and many other distortion are the main problems of the power quality and these power quality problem which are arise due to a fault so to solve this, custom power devices are used . One of the example of these devices is Dynamic Voltage Restorer[1]. Dynamic voltage restorer (DVR) is a power electronic converter-based custom power device used to compensate for voltage variations which is considered to be more efficient device.**

Keywords— ***Dynamic Voltage Restorer, Power Quality, Voltage sag***

I. INTRODUCTION

Electrical energy is the simple and well regulated form of energy, can be easily changed to other forms. Along with its quality and continuity has to maintain for good economy. Power quality has become main concern for today's power productions and users. Due to the increasing demand of electronic equipments, Power quality problems are arised by increasing demand of equipments[2]. Many disturbances related with electrical power are voltage sag, voltage swell, voltage flicker and harmonic contents. This reduces the efficiency and shortens the life time of end consumer equipment. There is also data and memory loss problems of electronic equipment like computer.

The main power quality problems are voltage sags/swells because of the complex structure of power system network which affects end users and industries and result in high losses. Voltage sag is a small period reduction in rms voltage which can be produced by a short circuit , overload and fault in the system and voltage swell, which is a momentary increase in voltage ,happens when a heavy load turns off in a power system[3]. The continuity of power supply can be maintained by clearing the faults at faster rate. To enhance the power quality the power quality problems i.e. voltage sag/swell , voltage harmonics flickering has to be compensated.

Power electronic devices i.e. Distribution Static Compensator (D-STATCOM) and Dynamic Voltage Restorer (DVR) been recently used for voltage sag/swell compensation. In this project DVR is proposed which can protect the end-consumer load from any unbalance of voltage supply. It is a series compensating device, can maintain the load voltage profile even when the source side voltage is distorted. This series conditioner device is capable of generating or absorbing real and reactive power with the help of its essential components, namely power circuit & control circuit. Various control techniques are available to

A REVIEW PAPER ON POWER QUALITY IMPROVEMENT TECHNIQUES IN POWER SYSTEM WITH RENEWABLE DISTRIBUTED GENERATION SOURCE

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***Abstract*:- Power Quality Improvement in Distributed Generation has been fast growing, challenging and interesting area in modern era. A large number of Power Quality Improvement techniques have been developed in last few decades. In this paper an attempt is made to review a wide range of methods used for Power Quality Improvement in Distributed Generation comprehensively. This include use of Active Filters, Dynamic Voltage Restorer, DSTATCOM, Reactive Power Compensation Techniques and Unifified Power Quality Conditioner. This review investigates all these methods with Power Quality parameters like Reverse Power Flow, Voltage Stability and Current Harmonics.**
Keywords: DSTATCOM, DVR, Reverse Power Flow, PV, Distributed Generation

INTRODUCTION:

Power Quality is an important part of proper operation of consumer Loads. In recent era, the environmental constraints and increasing energy requirement are moving power system towards Distributed Generation. It is well known fact that if Distributed Generation Sources are installed than power quality problems like Reverse Power Flow, Voltage instability and voltage or current harmonics are inevitable. To improve voltage quality Dynamic Voltage Restorer has been adopted as an effective equipment to protect voltage-sensitive loads from voltage instability. DVR inserts three single phase voltages of suitable magnitude and phase in series with the supply voltage through booster transformer to achieve power quality. PV systems are gaining more and more popularity. In [2] an inverter is used to provide active power to the grid along with PV interfacting. Fuzzy Logic Controller is used to control the Maximum Power Point Tracking. The shunt active power filter uses a control technique to eliminate the harmonics in grid current and increase the power factor. The PV power generation depends to a greater extenton weather conditions and represents intermittence which influences the grid and cannot be ignored. STATCOM [3] is a static compensator is a new device which brings about reactive power compensation closer to the load. By adjusting the amplitude and phase of injected current/voltage at the PCC the reactive power compensation can be achieved thereby achieving voltage stability. In [4] the performance of solar PV has been examined depending on variation in irradiance produced and the operation of PV based inverters. In this paper the author has tried to mitigate the effect of Solar output power on the Low Voltage network through the VARcontrol strategy of the inverter. Many people have come up with different ideas to relieve the power quality problems in association with Distributed Generation. None of the previous papers in connection with Distributed Generation have discussed the problem of Reverse Power flow in LV Feeder Network. The author of this paper has proposed a Novel Technique to come up with the solution to the problem of reverse power flow in the LV feeder network with the use of Custom Power Device DSTATCOM.

CONTROL TECHNIQUES FOR SHUNT ACTIVE POWER FILTERS

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Abstract— **Reliability and quality are two most important facets of power delivery system. Wide use of nonlinear and electronically switched devices in distribution systems hinders the quality of supply. The problems of power quality include voltage fluctuations, flicker, harmonics, and asymmetries of voltages. Specific analysis of power quality issues and their solutions have generated tremendous amount of interest amongst power system engineers. Some of the tuned passive filters were developed to bypass specific harmonic frequencies. Since the passive filters were found to operate only over a fixed range, the attention is to be given towards compensating devices like active filtering that can effectively eliminate the harmonic currents.**

In this paper, the instantaneous p-q technique, synchronous reference frame theory and the hysteresis current control of shunt active filters is studied.

Keywords: p-q technique, Synchronous Reference Frame (SRF) theory, Hysteresis current control (HCC), Shunt Active Power Filters (SAPF)

I. INTRODUCTION

In last few decades due to developments in power conversion technologies the application of non-linear loads has significantly increased in the power system. Switched mode power supplies (SMPS), variable frequency drives, Rectifiers, Converters, Arc Furnaces are some of the non-linear loads found in Industries. Also advances in the technology for development of Renewable energy sources has led to application of various power electronic converters used for increasing its efficiency. Excessive use of these power electronic devices has resulted in distorting the voltage and current waveforms and responsible for reactive power disturbances in the power system such as low power factor, low efficiency, voltage fluctuations and communication interference [2,3,4,6 10,9]. Distorted or non-sinusoidal currents contain other than the desired fundamental frequency component many undesired frequency components which are multiples of the fundamental component.[6]. These frequencies commonly known as harmonics. These harmonics cause distortions in the supply currents and voltages. This causes poor power factor, lower efficiency and interference with communication lines. So it is necessary that these harmonics are reduced. The minimization of harmonics can be done through a combination of active and passive filters [7]. Harmonics is known to be a major issue out of all power quality problems. The increased use of power electronics equipment has resulted in rise of harmonics in the power system. Nonlinear loads connected with the distribution system result in harmonic currents. These current harmonics will be responsible for power factor reduction,

power system voltage fluctuations, decrease in efficiency and interference during communications[8]. When the main objective is to eliminate harmonic currents, the shunt active power filter SAPF has been

COMPARATIVE ANALYSIS OF DC-DC CONVERTERTOPOLOGIES FOR FUEL CELL BASED APPLICATION

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Abstract—**Power electronic converters play an important role in integrating renewable energy sources in to the electrical grid. A power conditioning unit (PCU) which comprises of different power electronic converters is essential to process the power of renewable energy sources and make it useable for stand-alone or grid-tied application. DC-DC converters are used in the primary stage of PCU to step up the voltage of renewable energy source to a desired level and also to improve the conversion efficiency. In this paper, a comprehensive analysis is carried out to provide details about different non-isolated, isolated and soft switched converters used in PCU. The performance of these converters are analyzed according to their conversion efficiency and number of components.**

Keywords: DC-DC converter, topology, classification

Design of PCU is critical as it requires proper selection of power converter topology and adequate control strategy. To make the distributed generation scheme sustainable and economical, the PCU should be of lower cost, higher efficiency and reliable. A comprehensive review of different converter and inverter topologies used in the PCU of fuel cell based distributed generation system is reported in [1]–[5]. A review of different non-isolated DC-

INTRODUCTION

Fuel cell which converts chemical energy to electrical energy is one of the renewable energy sources which is being widely used in modern times in variety of fields. The schematic diagram of fuel cell based system is shown in Fig. 1. The electric power delivered by the fuel cell has to be regulated and inverted to make it useful for stand-alone or grid-tied application. The said operation is carried out with the help of a power conditioning unit (PCU).

A REVIEW PAPER ON SOLAR ENERGY FROM SOLAR PANELS TO SOLAR SKINS

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ABSTRACT

Sun energy is the most abundant energy available on earth. Over the years with advances in technology solar energy has emerged as most useful renewable sources of energy. Solar energy has evolved from ground mounted solar panels to wearable solar panels and solar tracking mounts. But there are now several exciting new solar panel technologies either in the pipeline or already on the market. These promising technologies will revolutionize the way we think about not just solar, but energy production in general. Solar no longer requires large parcels of land or roof space, nor does it need to look boring. Silicon panels are becoming cheaper and more efficient day-by-day. According to experts, if photovoltaic panels are placed on reservoirs and other water bodies, they offer even greater efficiency as well as a plethora of other benefits. Innovation in solar technology continues to improve efficiency, size and cost, making it more pervasive throughout society. The trend is leaning toward incorporating solar into more buildings beyond panels placed upon the roof. Cool applications include: solar shingles, solar film, solar roadways, and solar windows. Other innovations being explored are: the solar orb, solar cars (commercially available), solar balloons, nanowires, and working with the infrared spectrum. As the manager of the Green Mountain Energy Sun Club, I'm excited about these advances in solar technology and the growing part this pollution-free resource will provide in our lives. A solar future is closer than you may think. Technology for producing electricity from the sun using solar cells, typically encased in panels.

Keyword : - *solar panels, photovoltaic, solar cells.*

1. INTRODUCTION

Sun has massive energy and is being used to produce electricity over the years. Solar energy has become the major source of renewable power generation as well as source of employment. Solar processes use photovoltaic effect to convert sunlight to electricity. Photovoltaic effect was discovered by French scientist Edmond Becquerel in 1839. On April 25, 1954, Bell scientists presented a solar panel of cells that relied exclusively on light power and used to run a 21 inch Ferris wheel as a proof. During the 1960's and 1970's, solar panel technology was often too expensive for mainstream consumer distribution. Dr. Elliot Berman is credited for contributing to affordability of solar panels in mainstream market. As the space age developed, solar panels were used to power various parts of spacecraft throughout the late 1950s and 1960s. The first was the Vanguard I satellite in 1958, followed by

DEVELOPMENTS OF POWER SYSTEM PROTECTIONAND CONTROL

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Abstract

Synchronized wide area communication has become a mature technology, which makes the real-time interaction between the substations and the wide area protection and control system possible. However, the present protection and control system to handle this real-time data has been recognized to be deficient. This paper beginsby reviewing the development history of power system protection, with special attention paid to the recent development in the field of wide-area and integrated protections, in order to look into the future development ofprotection and control systems. Then the concept of integrated wide area protection and control is introduced, where it can be shown that a hierarchical protection and control system provides the protection and control for wide area or regional power substations/plants and their associated power networks. The system is mainly dividedinto three levels: the local, the substation/plant, and the wide area/regional. The integrated functions at each level are described in details with an aim to develop an optimal coordination mechanism between each level. The key element in the proposed system is the wide area real-time protection and control information platform, which notonly enables the merger of three lines of defence for power system protection and control, but also provides a perfect tool for the application of cloud computing in substations and power networks.

Keywords: Power system protection, Wide area protection, Integrated protection and control, Information platform

Introduction

Power system protection emerged at the beginning of the last century, with the application of the first electro-mechanical overcurrent relay. The majority of the protection principles currently employed in protec-tion relays were developed within the first three decades of the last century, such as overcurrent, direc- tional, distance and differential protection, as shown in Fig. 1. The development of modern science and tech-nology, especially electronic and computer technology, promoted the development of relay technology, such as materials, components and the manufacturing process of the hardware structure of relay protection device. Atthe same time, great theoretical progress had beenmade in the relay protection software, algorithms, etc.As shown in Fig. 1, the progress in modern technology stimulates the development in power system protection. In the last century from the emergence of protection tothe end of the 1990s, the relay protection had gone through a number of development stages, migrating from electro-mechanical to semiconductor, and subse- quently to integrated circuit and microprocessor tech- nologies. Today, microprocessor-based digital and

ANALYSIS OF MULTILEVEL INVERTER WITH DIFFERENT TOPOLOGIES

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Abstract — In this paper H-bridge topologies of a higher output voltage level in multilevel inverters with reduce number of switches is proposed. These topologies maintain the performance of a 15 level output from multilevel inverter and reduction in switching losses, installation area, converter cost and size. The converter has a simple strategy switching control. One topology consists of 16 switches and the other topology has 10 switches and 6 diodes. An output waveform is analyzed and the Total Harmonics Distortion (THD) results are compared to conventional method. The validity of the analysis has been proved by simulation.

Main objective of multilevel inverter is to reduce the THD in the operating system. Normally it is achieved by increasing the number of the DC source and the switch. However, this method will increase the power losses. That is why the new topology will try to reduce the component without reducing the quality output of converter. Due to the stepped output waveform characteristic of a multilevel inverter, the Total Harmonic Distortion (THD) content is low compared to the conventional two-level inverters.

Index Terms— Multilevel inverter, Cascaded multilevel inverter, Sub-multilevel inverter, Full-bridge, H-bridge

I. INTRODUCTION

The converters have to be designed to obtain a quality output voltage or a current waveform with a minimum amount of ripple content. In high power and high voltage applications the conventional two level inverters, however, have some limitations in operating at high frequency mainly due to switching losses and constraints of the power device ratings. Series and parallel combination of power switches in order to achieve the power handling voltages and currents. The conventional two level inverters produce THD levels around sixty percent even under normal operating conditions which are undesirable and cause more losses and other power quality problems too on the AC drives and utilities.

For high voltage applications, two or more power switches can be connected in series in order to provide the desired voltage rating. However, the characteristics of devices of the same type are not identical. For the same OFF state current, their OFF state voltages differ. Even during the turn OFF of

the switches the variations in stored charges cause difference in the reverse voltage sharing. The switch with the least recovered charge faces the highest transient voltage. For higher current handling, the switches are connected in parallel, however because of uneven switch characteristics the load current is not shared equally. If a power switch carries more current than that of the others, then the power dissipation in it increases, thereby increasing the junction temperature and decreasing the internal resistance. This in turn increases its current sharing and may damage the devices permanently which is undesirable for critical applications.

In the conventional two level inverters the input DC is converted into the AC supply of desired frequency and voltage with the aid of semiconductor power switches. Depending on the configuration, four or six switches are used.

RESEARCH ON THE APPLICATION OF AUTOMATIC CONTROL SYSTEM IN MECHANICAL ENGINEERING

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Abstract: With the continuous innovation and development of science and technology in our country, the automation control system has gradually infiltrated into various industries in the society. The automation control system plays a very important role in the modern mechanical engineering. In this paper, the mechanical engineering automatic control system in the use of the issue of analysis and research, mainly for the development of both to be an introduction, and analysis of Chinese current state of the art of automatic control systems and application analysis.
Keywords: Mechanical Engineering; Automatic Control Systems; Sensors

1. Introduction

As society continues to develop and its economy continues to grow, the daily work of human beings has gradually become more and more advanced. As an important support for the development of the productive forces, laborers have done a great deal of work instead of laboring. This shows that in the fields of human production, the status of labor appliances in life is very important. And with the gradual development of wood machinery to the late metal structure, the production process of labor appliances has also achieved a qualitative change, which is the basis for the development of modern mechanical engineering. However, with the rapid development of automation technology and computer technology, mechanical engineering has made further development and gradually realized the automatic control. We must be proficient in using automated control systems to continually adapt to increasingly complex production processes while increasing productivity.

2. The Important Role of Mechanical Engineering in Reality

In the process of human production and living are inseparable from the use of labor appliances, first of all human beings in order to transform the natural transformation of life is to use the manual to complete the work, but after all, manpower is limited and can not face all the work. With the increasing demand, people rely more and more on their manual work more and more restrictions, based on this mechanical apparatus came into being, human beings constantly improve it, many times the machinery can be completed with the hands of people can not match the work, but also to ensure the quality and efficiency. With the continuous innovation and development of technology, people have accumulated a great deal of valuable experience in using machinery, and the research on machinery has been further deepened. In today's society, mechanical engineering has gradually entered the high-tech, both in terms of quality, precision and other contemporary mechanical engineering have achieved great results. For example, in agriculture, construction, military, medical, exploration and many other fields, are inseparable from the use of mechanical engineering.

3. The Development Status Quo of Chinese Automation and Control System

Modern mechanical engineering has a unique automatic control system, through this system for automatic control of the entire mechanical engineering. The automatic control system is the use of a variety of high-tech, unmanned operation to allow mechanical engineering to automatically work to

AN OVERVIEW OF FACTS DEVICES USED FOR REACTIVE POWER COMPENSATION TECHNIQUES

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Abstract— **In the last two decades demand of power is increasing rapidly but we have limited resources of power generation resulting transmission line getting heavily loaded and facing stability, voltage sag, reactive power issues. It is necessary to implement the FACTS devices which are better solution for power transmission problem. This paper describes about the study of various reactive power compensation techniques needed for any power system using FACTS devices such as SSSC, TCR, TCSC, STATCOM and UPFC. A classification of FACTS controller is also mentioned here. At the end comparison of various FACTS devices are done.**

Keywords— reactive power compensation, STATCOM, SVC, fact controllers

I. INTRODUCTION

Today the power system is very complex and interconnected; we need to improve power utilization to maintain security and reliability. Some transmission line are overloaded and some are loaded below the limit by which voltage profile deteriorate and system stability decreases so we need to control the power flow in the transmission line for power transfer. The development of power electronic technology has introduced Flexible AC transmission system (FACTS) devices. [12] The fact devices can overcome limitation of mechanically controlled transmission system [1].power flow equation for lossless transmission line is given by

$$= \quad \sin \qquad (1)$$

and Denotes the " and ^{hI} bus voltage magnitudes, is bus voltage angle and Denotes line reactance. From equation (1) we can say that power is a function of sending and receiving end voltage, transmission line impedance and phase angle between voltages. By controlling one of them we can control active as well as reactive power. FACTS devices, such as Static Synchronous Series Compensator (SSSC), Static Var Compensator (SVC), Unified Power Flow Controller (UPFC) and Static Synchronous Compensator (STATCOM) can regulate bus voltages, phase angles and line impedances of power transmission lines. These FACTS controllers are voltage source converters use for controlling power flow, enhancing the power transfer capability, reduce

REVIEW ON VOLTAGE STABILITY IMPROVEMENT WITH RENEWABLE ENERGY SOURCE USING UPFC

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Abstract- **This paper's purpose is to review the improvement of the voltage stability in renewable energy sources using UPFC (Unified Power Flow Controller) at the faulty side using Computer Simulation Software. If there is no UPFC installed at the faulty side then the voltage stability can't be obtained. The UPFC (Unified Power Flow Controller) is a type of FACTS (Flexible AC Transmission Systems) device that is developed to a high degree of complexity and complex power electronic equipment and has developed for the control and optimization of power flow (10) and also to regulate the voltage in High voltage electrical power transmission system. We are using a 5-Bus system for this stabilization of voltage. Computer Simulation is carried out by MATLAB Simulink to know and check the performance of UPFC.**

Keywords- Voltage Stability, FACTS, Renewable Energy, UPFC (Unified Power Flow Controller).

I. INTRODUCTION

The paper's aim is to design a FACTS device named as UPFC. Its special features(aspects) are to control active and reactive power in a transmission line and to adjust the voltage at the buses. This FACTS device gives great quality power flow (9) on power system stability, these features even more considerable and perceptive that the unified power flow controller can be apply to the transmission line with in their limits and enhancing the power to flow through the preferred path. This device gives unique control on the power flow and voltage stability. In this paper the working of UPFC is in the field of control flow of power in transmission-line. The research regarding the 5-bus power system to control the voltage in the transmission line by keeping the controller at the faulty side. By making the power system simulation model, we are getting result without and with using UPFC and after that these results are compared in form of real and reactive power in the transmission line. On the basis of simulation results and to analyse the performance of UPFC, we can conclude that UPFC is ideal controller for performing such parameters. A power grid system is a combination of electrical constraints utilized to offer, transfer and utilization of electrical power.

We can categorize this in three sections of power system, i.e. generation, transmission & distribution system. All these subsystems are under control of one body in that particular geographical area which supplying power at regulated rates. For economic purpose we deregulate power grid (5) system in which generation, transmission and distribution occur separately. The electrical power demand is growing rapidly and due to economic and environmental facts building of new generating unit and transmission circuit is much complicated. The power utilities are pressured to rely on utilization of

existing generating unit. The performance of the network is analysed with and without FACTS devices. Results show that UPFC is the most efficient FACTS device in case where increase in network load-ability and reduction of network losses are required. For the economic use we will deregulate the power grid in which the generation, transmission and distribution

POWER DISTORTION IMPROVEMENT USING DSTATCOM

Bijaya Kumar Mohapatra[1]*, M. Rameswar Patra[2], Rajib Kumar Nishanka[3], Rasmita Majhi[4] Assistant Professor[1,2], Student[3,4] Department of Electrical Engineering Einstein Academy of Technology and Management Bhubaneswar-752060, Odisha, India

Abstract— **In this paper we have basically dealt [2] with the problems faced in Transmission line like Voltage sags harmonics distortions and low power factors which in long run leads to Power Quality problems We have analyzed some problem and thus with the help of DSTATCOM in the system were able to upgrade the quality health of the overall system DSTATCOM is known for its mitigation property it's efficient of engrossing and producing reactive power which improves voltage flickering and peculiarity of power delivered The analyzation was conducted by the usage of MATLAB SIMULATION variant R2007b**

[2]
Catchword: D-STATCOM, VSC, Voltage Sags, LCL Passive Filters, Total Harmonics Distortion (THD), Controllers, Feeder.

I. INTRODUCTION

Nowadays power users are getting really solicitous regarding the standard of the power, that shall be delivered to it. Quick optimizations in modern era is enhancing the facility quality concerns. As we know that with time not only the demand of quantity of power has increased but also the quality of the power is concerned by consumers and the utilities, and the reason being the rising requirement of the reliable electrically power, high peculiarity and also the growing quantity of distortion load. Malfunctions and switch working in the system, mostly results in the disruption of voltage, commotion in transient & networks which will again lead to flickering i.e. rapid voltage alterations, harmonics and phase instability, and all of these overall deteriorates the power quality of the system. Majority popular PQ issues at present time are voltage sags, harmonic deformation and less PF. Voltage fall is a short time event within whereat reduction in the r.m.s magnitude occurs, it's an occurrence which last less then 1-6 of a second (1-cycle) which can be the reason of loss of really huge amount of dollars process which'll cause economical loss for the single industry client.

Developing of power electronics equipment's like Flexible AC Transmission System (FACTS) and more customed power tools has presented all of us to a rising branch of tech. which deals with the enhancement and growth of the power system with adaptable and flexible new regulate proficiencies. Out of the several methods of improving power quality troubles in transmissions and distributions system.

DSTATCOM's also sustainable device which can sustain at reactive current in low voltages and can also act as capacitor using energy storage in battery devices.

II. DISTRIBUTION STATIC COMPENSATOR (D-STATCOM)

Distribution static compensator, device which as we mentioned earlier is responsible for insertion & absorption of reactive power which is required by system. D-STATCOM is power electronic founded reactive power compensation equipment which is generally parallelly-connected with specific bus in distribution system. DSTATCOM primarily offers a continuous variable level of parallel compensation (by injecting current into the distribution system) that differs linearly over the distribution voltages. Its known for its feature that provides twain capacitive and inductive
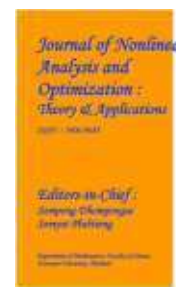
WORKPLACE BULLYING AND EMPLOYEE PERFORMANCE: AN ANALYSIS

Satyaprakash Naik[1] Assistant Professor, Einstein Academy of Technology and Management[1]
Durga Prasad Mishra[2] Assistant Professor, Einstein Academy of Technology and Management[2]

Abstract
This study aims to explore the relationship between bullying at work and employee work performance. To achieve the study's objectives, data was obtained from 215 representatives employed by several IT associations in Lucknow, Uttar Pradesh, India. The dependability test for work execution and workplace torture was observed overall. The SPSS 22.0 data analysis revealed a strong positive correlation between representational work performance and workplace harassment. The t-test for autonomous instances revealed significant differences between harassing behaviour at work and job performance between representatives who were local and those who weren't. The distinct relapse showed that there was dedication to the seven elements of workplace harassment related to task completion. The investigation found that the harassment suffered at work was expected to be one of the areas where representational work execution would be strong. Several relapse investigations were examined to create an indication model. Many recommendations were offered to managers, leaders, and organisations to establish a high-quality working environment that motivates workers to perform effectively at work.

Key Words: Bullying at work, performance at work, employee satisfaction, performance at work, and harassment at work.

Introduction
Working environment tormenting can be characterized as the rehashed less ideal treatment of an individual by one more or others in the working environment, which might be viewed as irrational and improper working environment practice. Behavior that intimidates, offends, degrades, or humiliates a worker, whether in front of coworkers, customers, or clients, is included in this category. All over the world, bullying has been linked to mental health issues, stress, and suicide. Principally viewed as a youth issue, harassing has been upsetting grown-ups too. Work environment harassing alludes to rehashed activities pointed towards representatives intended to
affront them. Activities like this represent a gamble to workers' wellbeing and security [1]. There is a distinction among harassing and hostility. Hostility as a rule includes a solitary demonstration. Interestingly, tormenting conduct includes rehashed activities against an objective. It is an ongoing example of conduct [2].
Tormenting at work includes a maltreatment of force. Scary, embarrassing, and corrupting a representative are ways of behaving of tormenting. It makes a sensation of weakness in the tormenting objective. A work environment menace has self-centered intentions and a total absence of regard for other people. He could do without others, never thinks of them as equivalent, and uses all means important to force his methodologies. It's possible that some bosses have high standards for their employees' performance. Such supervisors may not really be menaces. Representatives for the most part menace to their friends. Menaces show normal conduct qualities like indignation and nervousness [3]. They are more likely to have had previous experiences with bullying. Additionally, bullies are more likely to have been through traumatic experiences in their lives. They are shaky about family

BEHAVIOURAL FINANCE'S IMPACT ON INVESTMENT DECISIONS

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Abstract:
Decision-making in investment is a complex process influenced by various factors, including cognitive psychology and environmental dynamics. Traditional financial models often overlook these complexities, resulting in suboptimal outcomes. Behavioral finance has emerged as a crucial paradigm shift, recognizing the significant impact of human psychology on investment decisions. This abstract explores the foundational principles of behavioral finance and its implications for investors.

The emergence of behavioral finance stems from the recognition of inherent flaws in traditional decision-making processes. Seminal studies by researchers such as Paul Slovic, Amos Tversky, and Daniel Kahneman have highlighted cognitive biases that challenge conventional economic assumptions. Behavioral finance principles elucidate two main categories of cognitive illusions: heuristic decision processes and prospect theory.

Heuristic decision processes involve the use of mental shortcuts, leading to biases such as representativeness, overconfidence, anchoring, gambler's fallacy, and availability bias. On the other hand, prospect theory addresses concepts like loss aversion, regret aversion, mental accounting, and self-control, shedding light on psychological factors shaping investment decisions.

While not all investors succumb to the same cognitive illusions, behavioral finance underscores the importance of recognizing and mitigating biases in decision-making. Experience and other variables influence susceptibility to specific biases. To enhance investment outcomes, investors must adopt strategies to minimize or avoid these illusions. Understanding behavioral finance principles equips investors with the tools to navigate decision-making complexities effectively, thereby improving investment performance and fostering financial success.

Introduction

Decision-making is a complex activity. Decisions can never be made in a vacuum by relying on the personal resources and complex models, which do not take into consideration the situation. Analysis of the variables of the problem in which it occurs is mediated by the cognitive psychology of the manager. A situation based on decision- making activity encompasses not only the specific problem faced by the individual but also extends to the environment. Decision-making can be defined as the process of choosing a particular alternative from a number of alternatives. It is an activity that follows after proper evaluation of all the alternatives[1]. They need to update themselves in multidimensional fields so that they can accomplish the desired results/ goals in the competitive business environment.

This needs better insight, and understanding of human nature in the existing global perspective,
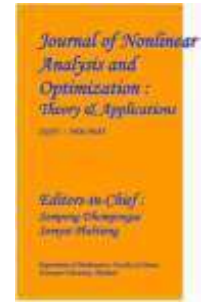
TRADITIONAL AND BEHAVIORAL FINANCE & ITS EFFECTS ON THE PROCESS OF MAKING FINANCIAL DECISIONS

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Nagen Kumar Sahu, Einstein Academy of Technology & Management, Khordha.

Abstract
The present study investigates the investment preferences of individuals and deliberates on the various aspects of behavioral finance that bear on the impact of investments in developing nations such as Pakistan. The introduction only discusses the distinctions between traditional and behavioral finance, with the literature focusing on various aspects of both. The impact of traditional and behavioral finance on investments is covered in the third section. A comparison of various research findings is covered in the fourth section, and the conclusion is covered in the final section

Keywords: Behavioral Finance, Traditional Money raising, Investment ways. Efficient Market Hypothesis.

Introduction:
Decision making is very important activity for the process of choosing an alternative option from a situation that show good results to individual or investors. Investment purpose is to generate money for investors. Market individual and information structure influence the decision of investment. So that investment sometimes show negative results to investors for that purpose they invested or they not get satisfied results from their investment due behavior of investors about investment. Buchan, (2001) stated that "Money is desire Embodied". Kahneman and Tversky, (1979) and Statman, (1999) stated that people feelings of pain when they find out that the other choice have good results. So Behavioral finance is the study that gives description to investors who are interested about finding how individual emotions or behavior are related to drive share prices.

Behavioral finance explains about how and why emotions and cognitive biases create anomalies about stock market for investors. But in modern finance we take the concept of rationality and logical theory based decision like Capital Asset Pricing Model, efficient market theory that considered people are rational and work for their wealth maximization but the fact is that people behave irrationally that are not predictable in real life that irrationality is linked from behavioral finance. Behavioral finance explains our action and behavior but modern finance is related to explanation of actions of an economic man. Traditional finance is related to decisions in which full information's are available for making investment decision.

Becker (1962); Thaler (1990) stated in role of Behavioral Economics and Behavioral Decision making in Americans Retirement savings decisions that Individuals keep the full information according to the Traditional theory; they can also share the information and rational decision makers. Proprieties of these people remained constant overtime and well-defined. Phung, (2010) explained that Behavioral finance is comparatively a new field that develop the combination of psychological theory, cognitive and behavioral with finance and conventional economic that provide the conclusion about the irrational decision making of the people. Behavioral finance theory was firstly developed in 1980 among small group of academics of different fields.
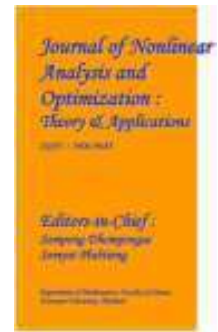
CREATING A SUCCESSFUL PARADIGM FOR FINANCIAL INCLUSION IN THE INDIAN SETTING

Sanat Rout, Einstein Academy of Technology & Management, Khordha.

Samir kumar Palai , Einstein Academy of Technology & Management, khordha.

Abstract

Providing financial services to previously unbanked populations at a reasonable cost, particularly the impoverished and low-income, is known as financial inclusion. To extend banking services, the Indian government and Reserve Bank of India have taken steps like increasing the number of rural bank branches, approving the banking correspondent model, and implementing CBS technology. Financial inclusion is a significant social and commercial potential in addition to being a formidable task given its scale and scope. This research aims to examine the many financial inclusion methods that are utilized in India, along with their associated issues and potential solutions.

Keywords: Financial Services; Banking, CBS technology, merchant banking.

Introduction

Inclusion is the process of bringing in a loop the left outs and when it goes to Financial Inclusion 'It is the process of ensuring access to financial services and timely and adequate credit where needed by vulnerable groups such as weaker sections and low-income groups at an affordable cost. It is important to understand that a person with a reasonable access to all essential financial services is considered 'financially included' and merely one off access to some financial services for the sake of fulfilling the mandate of financial inclusion does not construe inclusion in the true sense. The problem of exclusion is not singularly faced by India but the whole world. Statistics show that 70% of the adult population of the emerging markets is excluded from the benefits of Banking, and when it comes to India the things are not too different. India has made enormous strides towards greater financial inclusion. At this stage, India has been adopting best practices from around the world that are relevant and is leveraging the nation's inherent strengths to accelerate the ongoing efforts towards greater financial inclusion—a critical social and economic imperative of the country.
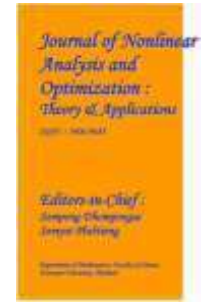
Literature review

Financial inclusion has been a burning issue since last decade. A lot has been already discussed on it by the government officials, Reserve Bank of India and it has been a research point for the researchers all over the world. An exclusive committee was formed

THE INVESTIGATION OF DIGITALIZATION'S IMPACT AND EFFECT ON HRM PRACTICES IN INDIA

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Raghunath Sahoo , Einstein academy of Technology & Management, Khordha

Abstract:-
Utilizing digital platforms for a range of services utilized in the organization is known as digitalization. current digital technology is influencing every element of human life, and it is causing a shift in business from old to current digital models.

Human resource management (HRM) operations, like other business functions, make good use of digitalization through the usage of various employee-related software within the company. Various Android applications, social media networks, and ITES are managing their human resource operations. My primary goal in writing this paper is to analyze how technology and innovative practices play a part in the digital world. These practices are constantly evolving and innovating human resource practices such as training and development, performance management systems, compensation, and recruitment.

Keywords:- Human Resource Management, HRM Practices, Technology, Digitalization. , e-HRM,

INTRODUCTION:

The Use of the internet/ digitalization is the main change in the organization. The new way to exchange information more prominently and to reach out the maximum population at any time in recent memory. HR professionals have to respond to increased competition for globally digitalized transformation and highly advanced HR technology. To deal with the new technology adopted by the organization or business, new kinds of technical knowledge, Skills, and abilities would be required for HR Practices in the future. This process can start with strategic efforts of the managementso that it facilitates organization by planning, recruiting, Selecting, Training and developing the employee to achieve the common objectives of the organization and individual to fill the gap between old to new generation. HRM programme by finding difficulties in adapting new technologies. This gap can be filled through the e-learning system is a missing key link to join the generations and lead the industry in a competitive world.

Today, digitalization is considered as the latest tool in HRM practices. It is a real revolution spreading over the world of job hunting and hiring, using social networking websites for the HRM practices is more cost-effective as compared to traditional ways of practices. With the help of digitalization, many companies use social media platforms like Facebook, LinkedIn, Glassdoor, and Skype (VideoConferencing), and due to the COVID-19 pandemic lockdown many companies have started interviews through Google Meet, Zoom Platform, Microsoft Team is the modern and latest tool for the HRM practices like GD and PI is part of the recruitment process so it is possible through the aboveplatforms.

Digital technology helps the association to increase its profitability by augmenting its most
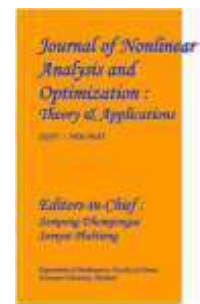
A COMPREHENSIVE REVIEW OF NANO-FLUID HEAT TRANSFER MECHANISM

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ABSTRACT

In this paper, a comprehensive review of nano-fluid heat transfer mechanism and its thermo-physical properties are done. Different nano-fluid preparation techniques, heat transfer mechanism and their thermo-physical properties are discussed in detail. As we know, heat transfer in nano-fluid depends on parameters such as Brownian motion of particle, molecular layering of the liquid-particles interface and nano particle clustering. Also, the effect of metal oxides nano particles in heat transfer enhancement of the nano-fluid is enormous. It is also known that, the coolants have high thermal conductivities at low volume concentration of nano-fluid. The thermal conductivity and viscosity of nano-fluids mostly depend on their size, volume concentration, shape and material. The increase or decrease of nano-fluid viscosity depends upon the material of nano particle. It is also observed that the viscosity of nano-fluid increases with increase in volume of nano particle.

 Keywords: Nano particles, Nano- fluid, Thermal Conductivity, Viscosity, Volume Concentration, Heat Transfer.

INTRODUCTION

The resources in nature are limited, with these fast depleting resources, maximizing efficiency is very important. Most of the Industries face the severe problem of heat transfer enhancement of thermal systems on account of limited resources, confined space etc. In electronic industries the electronic devices are manufactured into smaller volumes and major problem arises due to this is how to dissipate the heat generated from these devices. Therefore there is an increased emphasis on maximizing heat transfer rate. The minimization of energy waste by increasing the effectiveness of heat transfer is a trending area of research. The conventional fluids used for heat transfer purpose have low thermal conductivity. The increase of heat transfer through extended surfaces has already reached its limit. Therefore, we need to look for alternatives to achieve our objective. Nano fluid is looks to fill this gap and have been the recent advancement to increase heat transfer. Fluids with nano particles (diameter less than 100 nm) suspended inconventional fluids are called Nano fluids. Proper dispersion of nano particles into base fluid forms stable Nano fluids this exhibits several beneficiary features. The introduction of few nano particles in the base fluid increases thermal conductivity of the base fluid significantly. Their enhanced thermal conductivity in-turn can improve the heat transfer rate and energy efficiency in various fields like defence, transportation, space, power generation etc.

NANO FLUID PREPARATION

The preparation of Nano fluid is the first step for experimental studies. Nano fluid consists of metals, carbides, oxides and carbon nano tubes well dispersed in conventional fluids. Researchers are studied and used a two-step process to produce nano-tubes via inert gas condensation process [1-2]. This process involves the vaporization of a source material under vacuum conditions. An advantage of this technique is that nano particle agglomeration is minimized. The disadvantage is that only low vapour pressure fluids are compatible with the process [3] and the pure metallic nano particles cannot be produced. The formation of such a problem can be reduced by using a direct evaporation condensation

CONCEPTUAL TESTING OF PILOT ASSISTING MODULE SIMULATORS OF LIGHT AIRCRAFT

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Abstract

This paper presents the results of Pilot Assisting Module research performed on two light aircraft flight simulators. The first simulator was designed as an open platform for the verification and validation of the advanced pilot/aircraft interface systems and inherited its appearance from the cockpit section. The second flight simulator has been built around the cockpit of a unique agriculture jet. It introduced a system architecture that supports scientific simulations of various aircraft types and configurations, making it suitable for conceptual testing of Pilot Assisting Module. It was initially designed to support research on advanced flight control systems, but due to its continuing modernization it evolved into hardware-in-the- loop test-bed for electromechanical actuators and autopilot CAN based controller blocks. Pilot-in-the-loop experiments of proposed Pilot Assisting Module revealed favorable operational scenarios, under which the proposed system reduces the cockpit workload during single pilot operations.

Key words: aircraft, simulator, flight control, flight displays, hardware- in-the-loop, electromechanical actuators

Introduction
Concept of advanced small aircraft

In recent years, the general aviation piston aircraft became increasingly popular as personal transportation aids. The impact of technology driven success in light and ultra-light aviation led to a significant reduction of their ownership and operating cost. Flying thus became accessible not only to a privileged group of people, but through a well-developed network of local airports it offered an alternative to railway or even car travel. Unfortunately for the industry, the general public didn't stop questioning the level of com- fort and safety of light aircraft when compared to sophisticated airliners or business jets. It is the authors' belief that the main safety concern remains attributed to the single pilot operations of mostly amateur crews surrendering to the hazards of bad weather or in-flight failures and emergencies.

Fig. 1. Evektor Sport Star light aircraft
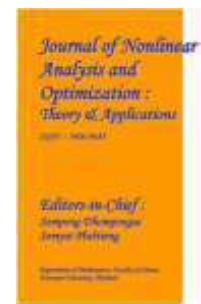
90CrSi STEEL CUTTING SURFACE ROUGHNESS PERFORMANCE IN DRY HARD TURNING

Biswajit Nayak[1], Tusharkanti Panda[2]
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Abstract:
In order to meet the increasing requirements for quality and productivity, hard machining is applied widely in industrial production. This article presents an experimental study on the performance on surface roughness values R_a in hard turning of 90CrSi steel (60-62HRC). Factorial experimental design 2^{k-p} with the support of Minitab 19 software was applied to investigate the influence of cutting speed, feed rate, and depth of cut on R_a. The obtained results show that the feed rate has the greatest influence on surface roughness. As the cutting speed increases, reducing the feed rate and depth of cut will contribute to decrease in roughness value R_a. Furthermore, reasonable sets of technological parameters on cutting modes are proposed.

Keywords: turning, machining, surface roughness, cutting, 90CrSi steel.

Introduction
Hard turning has received a lot of attention and is becoming a support/alternative solution for grinding process due to its high productivity, suitable for complex profiles, reduced use of cutting oil and good surface quality [1]. However, the conditions in cutting zone are very severe because the friction, cutting forces and temperature are very large, so there are strict requirements on the selection of cutting parameters and cutting tool material [2-6]. The dry hard turning technology developed and first applied in industrial production has shown many advantages such as improving productivity and ensuring quality in terms of dimensions and surface quality. Besides, the selection of cutting tool materials such as CBN, ceramic, carbide, etc. and the appropriate cutting parameters is very important factors for successful hard turning. Machining in the dry condition also contributes to environmental protection by eliminating the coolant [7,8]. This is a new hard machining technology and increasingly widely applied in production practice. Besides, the quality of the machined surface is a very important parameter because it affects the mechanical properties and working performance of the parts. The most important factors to evaluate the quality of the hard machined surface are surface roughness, topography, micro-hardness, white layer thickness, chemical composition of the surface material [7]. Among them, the surface roughness has a great influence on the fatigue strength and surface characteristics of the product, and this is also the most common parameter to evaluate whether the machined products are satisfactory or not. Therefore, it is necessary to study the effect of the cutting condition on surface roughness of the machined surface. 90CrSi steel is a tool steel widely used in the mechanical engineering industry because of its high hardness and strength, and this steel type is often used to make shafts, dies, cutting tools, etc. Studies on the effect of cutting parameters on surface roughness in hard turning of 90CrSi steel are still limited. Therefore, the authors are motivated to make a study on the effect of cutting condition on surface roughness in hard turning of 90CrSi steel (60 ÷ 62 HRC).
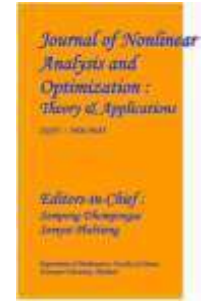
CEILING BOARD BASED ON AGRO-WASTE AND ITS FILLER MATERIAL - A STUDY ON THERMAL BEHAVIOUR

C Vasanth Kumar[1], Arupananda Moahanty[2] [1]Professor, [2]Asst. Professor Department of Mechanical Engineering Einstein Academy of Technology and Management Bhubaneswar, Khurdha Odisha, India

Abstract

In this paper a study has been conducted for the thermal behavior of a ceiling board made with breadfruit seed coat as the filler material, and recycled Low Density Polyethylene, as the binder. The ceiling material was produced with 19.722% filer-binder ratio, and pressed for 10 minutes, at temperature and pressure of 197.31 °C and 9.042 MPa respectively. Lee- Charton's apparatus was used to determine the thermal conductivity of the produced material, which gave a value of 0.362 $Wm^{-1}K^{-1}$ and the corresponding thermal diffusivity and resistivity of 5.24 x 10^{-7} m^2/s, and 2.76 $Wm^{-1}K^{-1}$, respectively.

Keywords: *Agro-waste, Breadfruit seed, conductivity, diffusivity, Resistivity, gravimetric analysis, Calorimetry*

Introduction

In tropical countries, the major source of heat within a building occurs through the roof of the building. This is because of the use of zinc and aluminum-made roofs in most countries such as Nigeria (Ettah et al, 2016). These roof materials are exposed to the sun, and because of its high thermal conductivity, allows the transfer of intense heat to the internal environment of the building, which causes thermal discomfort to the inhabitants (Onyeaju et al, 2012). Hence the need for thermal insulation of roof section using ceiling board to reduce or eliminate the thermal discomfort from the roof section.

Ceiling board materials are used for ceiling padding in building construction, for insulation and aesthetic purposes. It covers the upper internal section of the building, thereby concealing the details of the roof trusses (aesthetics) (Oladele, et al, 2014), and preventing thermal radiation from the roof section due to the roofing materials which are mostly zinc, and its long exposure to the sun (Gesa et al, 2014). These desires for aesthetic and thermal comfort in building determines the choice of ceiling materials and influences technological advancement in ceiling board production (Oyekunle et al, 2018). These ceiling materials ranges from plant-originated materials, such as thatches, plywood and cardboard, to synthetic and composite ceiling materials, such as asbestos, plaster of Parish (POP) and the more recently PVC (George et al, 2010).

In the past, asbestos which are natural fibers in rocks, were commonly used to produce ceiling boards, due to its high tensile strength, low thermal conductivity and high fire resistance. However, asbestos causes asbestosis, which leads to cancer (Amenaghawon et al., 2016). The carcinogenic nature of asbestos necessitated the research for alternative materials for ceiling board production. These alternatives include shredded wood, cellulose fibre, agricultural waste, industrial and man-made
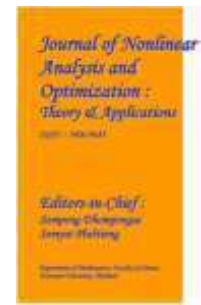
EFFECT OF HONEYCOMB STRUCTURE WITH BLENDED WING AIRCRAFT DESIGN IN AN X-48B SUPERSONIC AIRCRAFT

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Abstract:
The structure of an aircraft must withstand all anticipated mission loads. It is designed to have optimal structural weight with the required safety margins. The structural stress, deflection, strain, and margins of safety distributions are visualized and the design is improved. The elasticity, stiffness, strength and stress distribution is found to be more in the nodes of the structure. The present application focus on the blended-wing-body vehicle structure and advanced composite material are also considered. A sandwich construction consisting of two thin facing layers separated by a thick core, offers advantages for design of weight critical structure. Depending on the specific requirements of the structures, aluminum alloys, high tensile steels, titanium or composites are used as the material of facings skins. Several core shapes and material may be used in the construction of sandwich among them. It is also observed that aluminum honeycomb core has excellent properties with respect to weight savings and fabrication costs. The blended wing aircraft NASA X-48B is implemented by honeycomb structure to achieve the highly specified properties of an advanced aircraft.

Key words: Honeycomb structure, Morphed, Fabric Wing, Optimization, Loads, Stress, Lift Force.

I. INTRODUCTION

In this project we are going to do the static structural analysis of the blended wing aircraft wing without any spar and ribs by using of the honeycomb structure. The structure used reduce the weight and increase the strength. The wing of x-48 B NASA aircraft has modified as sandwich wing with core of hexagonal honeycomb structure the honeycomb structure used for load carrying purpose, and reduction of material used for the wing construction. By using the sandwich construction the stress will be reduced, because if will spread over the nodes and the stress will reduced. The blended wing body have less connection so that, the implementation honeycomb structure is easy in the wing construction. The blended wing shear leads and, air load, are less because of the design of the BWB Aircraft the honeycomb structure which is made for the stress with stand capacity. The structure had honeycomb structure, over the wing and it has less weight to increase the efficiency. So the passenger load and efficiency may be increased. Economically it is useful for the subsonic passenger aircraft. The boeing 797 is one of the BWB passenger, aircraft, the weight will reduced about 25% because of the reduce of material usage.

A. Blended wing body (BWB or Hybrid Wing Body, HWB) craft have no clear dividing line between the wings and the main body of the craft. The body form is composed of distinct and separate wing structures, though the wings are smoothly blended into the body, unlike a flying wing which has no distinct fuselage. Many BWB craft have a flattened and airfoil shaped body, which produces most of the lift, the wings contributing the balance.

The purported advantages of the BWB approach are efficient high-lift wings and a wide airfoil-shaped body. This enables the entire craft to contribute to lift generation with
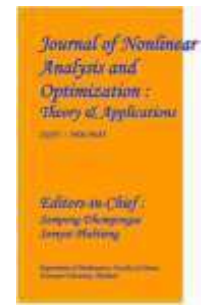
PERFORMANCE ANALYSIS OF THREE DISSIMILAR TUBE BUNDLES OF HEAT EXCHANGER

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Abstract:- In this paper, performance analysis of three different tube bundles for particular heat exchanger and their comparison analysis is proposed. These three types are known as smooth, micro finned and corrugated tubes. Heat exchanger is designed with smooth tube bundle and then simulation is done. Micro Fin and corrugation over tube is used separately for same heat exchanger in feasible size and simulated for its performance. Also, performance analysis is done by comparing the heat transfer rate with pressure drop.

Keywords: Micro-Fin, Tube bundles, HX, tube, CFD, fin, corrugation.

I. INTRODUCTION

Heat exchangers are used in so many applications such as evaporator, radiator, condenser, cooler etc. These are all forms of heat exchanger. Most of industries are using heat exchangers. They are classified into many kinds but their purpose is to transfer heat between two mediums (fluids). Phase change also happens in heat exchanging process like evaporator and condenser. Performance of heat exchanger is based on many parmeters. It is required to optimize parameters for enhancing heat transfer rate. In literatures, research over optimized parameters to particular heat exchanger design has been explored. It isn't saturated till now.

In present work, comparison of three different tube bundles for particular heat exchanger is proposed. Three types are smooth, micro finned and corrugated tubes. Heat exchanger will be designed with smooth tube bundle and

simulated. Micro fin and corrugation over tube is applied separately for same heat exchanger in feasible size and simulated for performance. Besides, comparison is done with heat transfer rate and pressure drop.

2. LITERATURE REVIEW

Bhuiyan A.A. et al present numerical study of 3d thermal and hydraulic characteristics of wavy fin and tube heat exchanger. Numerical visualisations are used to study the thermal and hydraulic performance of four row wavy staggered fin and tube heat exchanger. In this paper, the effects of tube arrangements, different geometrical parameters and inlet flow angles are investigated in terms of heat transfer and pressure drop and efficiency for the wavy fin-and-tube heat exchanger for turbulent flow regime using k-ω turbulence model with 5% turbulence intensity. The tube arrangement and the geometrical parameters such as pitch, wavy angle and inlet flow angle have strongly affected the flow structure. Comparatively higher heat transfer and pressure drop is found in staggered arrangement than in lined for both laminar and turbulent case. By increasing Ll and Lt, f and j both decreases as the flow becomes free and less compact. But efficiency goes high. The fin spacing very strongly influences the heat transfer and pressure drop. If it is too small, the effects are less; if it is too large, the effect is comparatively higher [1].

Digvijay S. et. al presents heat transfer analysis of a cone shaped helical coil heat exchanger. In this work, the experimental evaluation of cone shaped helical coil heat exchanger is carried out. The overall conclusions related to the comparative analysis between the cones shaped

A STUDY OF INFLUENCE ON VIBRATION DUE TO ULTRASONIC-ASSISTED INCREMENTAL SHEET FORMING

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Abstract:
This paper investigates the effect of ultrasonic vibration on the axial force in the sheet forming process of Fz Al5052 aluminum alloy by progressive plate forming (Ultrasonic sheet Forming-UISF). The results show that as the formation angle increases, the axial force component Fz is larger. During forming, when ultrasonic vibration is turned on, the axial force component Fz is significantly reduced (about 20%) compared to the absence of ultrasonic vibration. When the forming depth reaches approximately 20 mm, the forming force component Fz hardly increases, it tends to be constant, i.e. regardless of the forming depth. In addition, the test results also show that the increased wall angle reduces the possibility of plastic deformation, i.e. the flat blank will tear when it reaches a very small forming depth. And the transition zone between the flange part and the mold part is bent, which causes the shape to be distorted; the size of this area depends on the mold profile and the thickness of the product.
Keywords: Ultrasonic, incremental sheet forming, axial force, deformation

Introduction

Currently, plastic deformation processing to form shell-shaped products using incremental sheet forming (ISF) processes has attracted many scientists around the world [1],[2],[3]. This processes promise many potential applications to replace deep drawing technology, such as applications in the field of manufacturing plates and shells for the automotive and aircraft industries [4],[5],[6]; or rapid prototyping applications in biomedical technology or other fields [7],[8],[9].
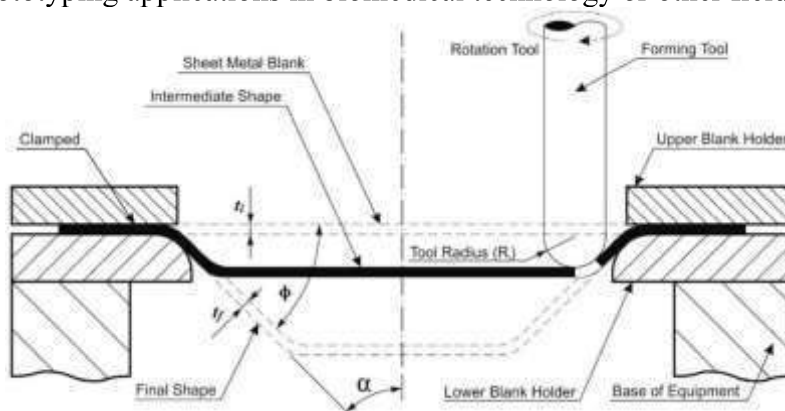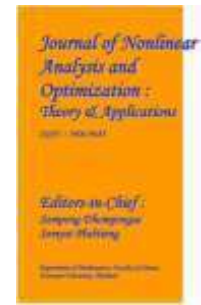

Figure 1. Schematic representation of a cross-sectional view of the rotationally symmetric ISF process [3]

According to Yanle Li et al [1], there are four configurations of ISF processes, including:

ANALYSIS OF THE HARD MILLING PROCESS FOR NEGLIGIBLE LUBRICATION WITH NANO-CUTTING FLUID

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Abstract

Applying the technology of minimum quantity lubrication (MQL) conditions with nano-cutting oil is a new research direction to improve the lubrication and cooling capacity of the cutting area, which improves the efficiency of the machining process. Especially for hard milling, due to the intermittent cutting process and high cutting temperature, the use of MQL with nano-cutting oil is such a possible technological solution. The content of the work is an experimental study with a Box-Behnken design on the effect of cutting speed, feed speed and nanoparticle concentration on surface roughness in hard milling. The obtained results show that using MQL with nano cutting fluid improves the cutting performance compared to MQL using pure cutting fluid. Among the investigated parameters, the feed rate has the greatest effect on Ra, followed by the concentration of nano particles. The interaction of these two parameters also significantly affects the objective function. Some solid engineering guidelines are recommended for applying the Nano fluid Minimum Quantity Lubrication (NFMQL) technique to hard milling.

Keywords: Hard milling, nano cutting fluid, surface roughness, lubrication.

Introduction

In recent years, there are more and more high requirements for productivity as well as quality in the field of metal cutting. Thanks to the rapid development of materials technology and CNC machine tools, machining processes are now performed with increasing productivity and quality [1]. At the same time, hard machining technology is researched and developed to meet this trend [2]. Previously, the traditional technological solution for finishing steels after heat treatment was the grinding process. The advantage of this process is its very high dimensional accuracy and surface quality [3]. However, low productivity and environmental pollution from the use of coolant in grinding are inherent disadvantages [4]. To support/replace grinding in finishing processes, hard machining technology has shown the productivity advantages while ensuring accuracy and machined surface quality [5]. In the mold manufacturing industry, hard milling has attracted great interest not only by manufacturers but also by researchers around the world. The use of geometric-defined cutting tools for directly cutting heat-treated steels has brought new technological solutions in machining [6]. Discontinuous cutting and very high cutting temperature are the major challenges that need to be addressed. The use of flood coolant is difficult due to the low ability to bring the cutting fluid deeply into the cutting zone and the thermal shock that easily occurs when using this technology. Therefore, hard milling in dry condition is the first solution to be considered. However, rapid tool wear seriously affects product quality and increases machining costs [5]. There have been a number of studies applying MQL technology to hard milling and showing initial effects in improving lubricity [7,8]. However, the low cooling capacity of MQL makes this technology not yet effective as expected. The introduction of nano cutting oil as the base cutting oil for MQL is the solution to overcome this
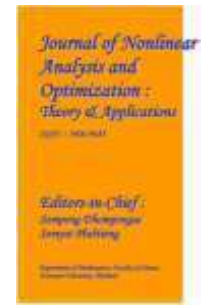
A STUDY ON STEELWELD THERMO-MECHANICAL PROPERTIES AND ITS MICROSTRUCTURE

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Abstract
The research focused on the thermo-mechanical properties of steel welds. Four pairs of rectangular plates, each measuring 200 mm x 100 mm x 6 mm, were fabricated from mild steel mass selected from SAE10XX grade. The samples were subjected to mechanical testing after the welding process, and the microstructure of all welded samples was analyzed with a scanning electron microscope. The results suggest that a good combination of operating variables ensures a stable welding operation, which in turn helps to get high quality weld joint. In addition, it is suggested that maintaining a low but sufficiently high welding power will help minimize excessive temperature rise of the base metal and improve stress distribution along the weld line, which in turn will reduce the deterioration of mechanical properties. The result also shows that a coarse structure is formed in the melting region and a fine structure is formed under the influence of heat.

Keywords: Weld joint, Heat transfer, Welding parameters, Thermal analysis, Temperature

Introduction

In metal joining, welding creates a permanent joint between two or more base metals. American Welding Society (AWS), defined the phenomenon as the coalescence of metals or nonmetallic produced by heating the materials to a specific temperature without applying pressure, or by applying pressure alone, with or without using filler metal. Thermally, the base metals and the filler material are melted while in contact with one another, then cooled and bonded together. Research in welding processes is primarily driven by the need to overcome defects in welds as well as other limitations associated with welding as an important metal joining process. In many cases, welding conditions and subsequent cooling of metals cause the material to degrade mechanical properties at the weld region because of residual stresses and other factors associated with material microstructure changes (Holovento et al. 2013; Hu et al. 2013).Weld induced residual stresses can greatly affect the mechanical behavior and response of structures, for instance they may enhance occurrence of brittle fracture, fatigue, structural buckling and stress corrosion cracking (Azimi et al. 2018; Dias & Chuvas, 2016; Grajcar et al.2014). The problem of material micro structural change is inevitable in welding since the process necessarily involves heating the weld materials beyond equilibrium melting temperature. For instance, in the arc welding process, the energy required for metal fusion is produced by the Joule effect which produces the energy requiredto melt the base and filler metals, forming what is known as the liquid pool whose temperature varies from 1700K to 2500 K, depending on the material. In the liquid pool, convective effects take place that improve the heat transport. When the heat sources are removed, the metal solidifies on cooling (Khan et al. 2008; Bringes, 2012). During the cooling process, temperature changes in the alloy produce solid state transformations. These micro structural transformations cause changes in the material properties during the evolution of the process. The thermal strains that occur in the vicinity of the welding zone are elasto-plastic and the resulting stresses

GOLDEN RATIO-BASED ROUGH SET MODEL RESEARCH

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Abstract
The problem's context affects how decisions with pre-determined preference-ordered criteria should be made. Preference analysis can use the dominance rough set model,and probabilistic rough sets introduce probabilistic methods for rough sets. This research presents new dominance rough set models that incorporate the golden ratio. We also provide a decision-making process employing fresh rough set model for supremacy.

1.Introduction

Making decision involves selecting a course of action from numerous initiatives in order to accomplish certain goals.Ranking options based on the set of criteria using pre-definded preference-ordered choice classes is a prevalent problem in decision-making. Examples include loan approval [1], stock risk estimation [2], mobile phone alternative estimation [3], etc.For extracting and aggregating preference relation based on different criteria,model and algorithms were presented. Understanding the decision-making process, creating decision models, and learning decision-making rules from data are the overarching goals. Three separate versions of the decision-making problem are offered, each based on a different set of decision criteria: high risk, usual risk, and low risk.Between now and then, five different models of decision criteria have been developed: the minimum-riskoption criterion, the compromise-decision criterion, the evenness criterion, the optimistic criterion, the pessimistic criterion, and the decision criterion.

The idea of equivalence classes served as the basic tenet of Pawlak's[4,5] rough set, This is an analytical mathematical process. Equivalence classes are a concept that Rough set Theory uses to divide the training examples into categories. In the mining process,two types of partitions are created: lower approximation and upper approximation, from which specific and conceivable rules can be simply deduced. It is entirely data-driven, operating simply on the data and required no other input. Incorporating data mining, artificial intelligence, knowledge acquisition, machine learning, pattern recognition, and other approaches, the notation of rough has been successfully implemented in a number of fields [6,7]. Based on equivalence relations, the Pawlak rough set model is built.Many people consider these relationships to be one of the model's primary drawbacks when applying it to difficult decision-making task. In situation requiring multiple criterion decision -making , preference structures exist between condition and decision. Many individuals believe that when using the model to tackle challenging decision-making problems, these interactions are one of the main weaknesses of the approach. When making decisions based on several criteria, preference structures exist between the conditions and the decisions. A dominating rough set model appropriate for preference analysis was presented by Greco et al. [8].Numerous criteria and characteristics were used to investigate the decision -making problem, and from those criteria dominance relations were retrieved. Additionally, they developed equivalence relations from nominal features and similarity connections from numerical

USING FUZZY LOGIC IN DECISION-MAKING FOR THE SELECTION OF TRANSPORT REQUESTS

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Abstract

In the competitive transport industry, carriers strive to deliver quality service while meeting the diverse needs of their customers and their own unique characteristics. Few rail freight operators use the tools available to help them make the right decisions about what is profitable and what is not. Evaluating individual transport requests and making the right choices can lead to better service and improved profitability. To efficiently evaluate individual transport requests and make informed decisions, this paper proposes the use of fuzzy logic can be used. The paper considers 6 real transport requests and evaluates them using fuzzy logic.

Introduction

Rail freight operators strive to provide efficient and high-quality services to their customers. Carriers receive a range of transport requests, many of which are unfavorable or difficult to meet. On this basis, carriers select the shipments they are able to meet. Efficient and correct decisions by carriers can have a significant impact on their economic efficiency and increase their competitiveness in the market (Dedík, et al. 2018; Bulková et al. 2023). Various mathematical models and other tools can be used to select the right transport from the carrier's point of view (Čamaj et al. 2020). Fuzzy logic is used to facilitate the decision and selection of the right transport based on the expectations and characteristics of the carriers.

Literature review

The use of fuzzy logic in conjunction with do-right is the subject of a number of academic papers. Sahin et al. (2020) proposed a model to be used in the purchase decision of dry bulk carriers. Within their model, the authors identified the criteria that influence the choice and used fuzzy logic as a decision-making tool. Pukaj (2009) proposed a model for evaluating the customers of a selected company using fuzzy logic. The author, together with the selected company, selected the criteria that are important in evaluating the customer and by subsequent application of fuzzy logic, the customers were sorted into 4 groups that determine whether the customer is beneficial to the company or not. Kazan et al. (2015) used fuzzy logic to focus on the optimal mode of transport for the selected company. In their paper, they compared sea, rail, road, air and pipeline based on selected criteria such as speed, capacity, suitability, cost and reliability. Ćalić et al. (2019) in their paper used fuzzy logic for the prediction of the annual energy consumption of freight trains in Serbia (from 2018 to 2022). The authors also used the Wang-Mendel method in their article, which helped them to determine the criteria for the application of fuzzy logic.

Al Ghamdi et al (2010) in their paper proposed the application of fuzzy logic to the control of vehicles in traffic. They applied fuzzy logic to the sensors in order to improve the overall traffic flow

LISTENING SKILLS AND PERSPECTIVE FOR FRESHER'S

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Abstract

Good ability in listening means having competence to comprehend information during listening activities. However, listening skill is still considered as one of the most difficult skills for English language learners although they have been learning English for few years. Hence, this study was designed to gather information about the students' challenges in listening activities, their perspectives on listening subject, and positive factors on the students' success in listening. Then, a set of listening test and questionnaire were distributed. Both quantitative and qualitative data were studied to identify the underlying matters in students' listening skills, addressing challenges, main listening hindrance factors and learning experiences. The findings of this study revealed that the students faced problems in listening because they still could not complete the basic listening skills in the test. Furthermore, most of them considered that the listening classes are challenging for them due to some problems and difficulties during the teaching and learning activities. Besides that, there were 5 factors influenced the students' listening skill; lack of practice, limited vocabulary mastery, native speakers' accent, pronunciation, and uninteresting learning materials. Moreover, their knowledge about English structure and good facilities in listening classes supported them to be able to figure out some challenges in listening activities. In addition, the students realized the important of the listening activities, but assistances from the teachers and some other students were still needed during the teaching and learning activities. In conclusion, having good listening skill still appeared as a challenge for the first-year students at English Department of Academic Year 2015/2016.
Keywords: Listening Skill and Perspectives

INTRODUCTION

Good ability in listening means having competence to comprehend information during listening activities or transfer the information in written or oral communication. It relates to the ability of understanding, communicating, and responding what is listened. Nation and Jonathan (2009:38) state that listening is a bridge to learn a language. Having good ability in listening is one of the main skills that has to be mastered by language learners because it tightly relates to the communication process. Harmer(2007:133) also states that listening can be helpful for students in running successful communication. The students' communicative competence successfully runs together with good listening skill of students. Bulley-Allen (1995) in Flowedew (2010:159) state that Listening is dominant activity in daily communication (40%), 35 % for speaking, 16 % for reading, and 9 % on writing. In other words, communication will not run well if it is not supported by good ability in listening.

To have good listening skill in English needs listeners to enrich themselves with basic language knowledge, such as vocabulary, grammar, pronunciation, and other language components. Buck (2001: 1) states that there are two kinds of knowledge used in listening; linguistics and non-linguistics knowledge. Linguistics knowledge in listening comprehension relates to students' abilities in understanding phonology, syntax, lexis, semantics, and discourse structure. Then, the non-linguistics knowledge is knowledge about topic, context, and general knowledge. Both of them are

LITERATURE REVIEW ON SOFT SKILLS

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Abstract
Every organization requires leadership skills to effectively interact with other employees in the organization and perform work effectively. To achieve organizational goals and objectives, every organization must consider the human element as the most prominent element in the organization so that human qualities such as presentation skills, relationship management skills, teamwork and team management, decision making, work and personal life management, problem solving skills and communication skills will become an important factor for the development of workers and organizations (Rangneka, 2014)1. In this paper, the researcher reviewed the various aspects of soft and hard skills. This research paper focuses on the literature review on soft skills requirements in an organization.

INTRODUCTION OF SOFT SKILLS

Soft skills can be referred as a combination of self-management skills, communication skills, leadership skills and Interpersonal skills. Interpersonal skills are the set of skills required to communicate and understand others and influence them. Self-management skills can be defined as the abilities regarding one's own thoughts, attitude, perception, and emotions which play a significant role at work place. Some of the other skills closely related to explain the concepts of soft skills include "Employability skills", "life skills", "social skills", "Personal skills", interpersonal skills", and "Transferable skills" (Parakandi, 2010)[2].

Organisations, all over world, try to find out the people who have good skills for managing themselves at work and also capable of handlinAZg critical things in different environmental situations. Various skills such as communication skills, time management, leadership skills, optimism, discipline, self-awareness, mentoring and inter-personal skills are some of the essential competencies in employees of a progressive organisation must to possess. What clients and customers need is care and service, provided by individuals: Every employee is a representative and ambassador of the company that's why organisations always welcome those employees who possess soft skills and employability skills (Agarwal, A. (2014)[3]. Soft skills and employability skills are those essential skills which must be acquired by people so that they can perform best at their work place and can enhance their career development opportunity. Soft skills are very essential and important requirement for any individual, along with technical skills to work efficiently and effectively, perform and grow on the activities andjob.

RESARCH STUDIES RELATED TO SOFT SKILLS

1. A Mardatillah, et.al. (2018)[4] the research was done for the multilevel marketing strategies in marketing industry of Indonesia. Indonesian society has become satured because of lack of soft skill of sales person i.e., communication skills as customers does not only buy a product but also judge the behaviour of a sales person. Sales person does not sell only product but also helps in

A CASE STUDY ON TRANSLUCENT CONCRETE AS A CARBON-NEUTRAL MATERIAL

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ABSTRACT - This experimental study aims to investigate the potential of translucent concrete as a sustainable and carbon-neutral building material. The study entails performing tests to examine the physical, mechanical, and optical features of light-transmitting concrete and analyzing its environmental effect.

This work focuses on the use of alternate cement-based substances, such as fly ash and slag, in the manufacturing of transparent concrete to minimize the carbon footprint of construction industry. Additionally, the study studies the energy efficiency advantages of translucent concrete in lowering the demand for artificial lighting throughout the day by assessing its effects on the environment, conducting tests to ascertain its compressive strength, light transmission, and flexural strength, and examining the material's effects on the practical and aesthetic aspects of buildings.

The experimental study seeks to give findings and perspectives on the performance of transparent concrete easacarbon- neutral material that may guide the evolution of environmentally conscious construction techniques and contribute to minimizing the environmental effect of the construction.

KEYWORDS
Translucent concrete, Plastic optical fibers, Carbon-neutral material, Light transmitting-concrete

I. INTRODUCTION

Translucent concrete, often known as light-transmitting concrete, is an emerging construction material that enables light to be transmitted through it. It was initially created in 2001 by Hungarian architect Aron Losonczi, who designated his innovation"LitraCon."The primary premise of translucent concrete is to insert optical fibers in conventional concrete, enabling light to penetrate through the substance. The fibers are commonly composed of glass or plastic and are organized in a manner to maximize the quantity of light that can travel through the concrete. The result is a material that seems solid when seen from the outside, but which can transmit light from the inside. Translucent concrete presents a multitude of potential applications in design and construction. For example, it may be used to create facades that enable natural light to penetrate deeper into buildings, decreasing the need for artificial lighting. It may also be utilized in interior walls and barriers to provide a sensation of transparency and openness while yet offering seclusion.

Translucent concrete has garnered considerable attention from architects and designers and is being utilized in several prominent projects throughout the globe. For example, it has been utilized to construct the facade of a mall in Beirut, Lebanon, and for the construction of a bridge in Valencia, Spain.

While the material is still relatively new and expensive compared to traditional concrete, it has the potential to revolutionize the way buildings are designed and constructed. Translucent concrete may offer a sustainable alternative to electric illumination since it can eliminate the demand for artificial lighting and reduce energy use.

II. LITERATUREREVIEW

Poornima D et al. (2019) The compressive strength of LITRACON improved by 17.13% and 22.76%, respectively, when10%and15%of the cement was replaced with silica fume and there was a rise in split tensile strength of 13.61% and 8.26%, respectively, when compared with the conventional concrete. It

A HAZARDOUS WASTE MANAGEMENT OF INDUSTRIALWASTE FOR GREEN BRICK DECEIT

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Abstract: **The emancipation of industrial waste affects the marine environment by physical smothering and intoxication. Waste water hold organic solvents, heavy metals and massive pollutants compel through improper design, operation or treatment system, crafts foremost environmental issues when discharged. A giant amount of sludge is generated during treatment process caused a major trouble to industry. In this perspective, the present research work aims to widen an effective and advanced technique in solidification and stabilization of sludge for brick development. Dried sludge were utilize as additive with fly ash, stone dust, ordinary port land cement and water in various compositions for fabrication process. Compression, water absorption, efflorescence, soundness, XRF and TCLP tests were conduct to determine brick parameters.**

Keywords: Sludge, Brick, Pollutant

1. INTRODUCTION

The hazardous waste ejection from industries such as pharmaceutical industry is of prime concern in the recent decade, due to its toxic nature. Pharmaceutical industry often produced high-strength wastewater as well as sludge with unreliable quality and quantity limits depending upon their raw materials and manufacturing processes [1]. Perpetual storage of hazardous wastes required to be converted into non-hazardous forms by suitable pre- treatments [2]. Land filling, incineration, solidification/stabilization (S/S) and co-processing for cement industry are the disposal methods in practice. S/S method is the most preferable technique for managing the pharmaceutical sludge in a sustainable manner due to its stability.

Stabilization/Solidification (S/S) is a method where the different types of industrial wastes can be managed andparticularly suited to those of heavy metal-containing wastes[3]. Stabilization refers to techniques that chemically reduce the hazard potential of a waste by converting the contaminants into less soluble, mobile or toxic forms, while solidification refers to techniques that encapsulate the waste, forming a solid material, and does not necessarily involve a chemical interaction between the contaminants and the solidifying additives [4].

AN ALTERNATE SOLUTION IN BRICK MAKING USING MINERAL ADMIXTURES

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Abstract: The present work deals with the addition of silica fume to the fly ash bricks. Fly ash has many has many advantages, its low hydration at early stage causes the strength to be low. In this study, the experimental investigation was carried out to find the compressive strength & water absorption of fly ash brick. However the brick specimen of size 290 mm x 120 mm x 130 mm were cast for different mix percentages of Fly ash (20%), Gypsum (5%), Lime (0 to 15%). The results show the variation of compressive strength for different mix proportion of materials mentioned at 7, 14, 21, 28 days. Here for proper grinding of raw materials pan mixer and hydraulic press machine (moulds are inserted into the machine) is used. Gypsum and lime plays a key role to achieve more compressive strength results of have declared that use of silica fume has significantly increases the compressive strength of bricks and water absorption of bricks also decreases.

Key words: Fly ash, Gypsum, Stone dust, Silica fume, Lime, Hydraulic Bricks machine (Press Machine), Pan mixer, Compressive strength and water absorption.

1. INTRODUCTION

Since Ancient Days from Stone Age to modern age man needs Food, Cloth and Shelter out of three needs of Man Shelter that means house building is placed a prominent need. To build a house building man choose many types of materials for the construction but during the time course since olden days according to the house building after developed some civilization man built a dams canals along with house buildings.

All these built to modern construction main item and materials is the brick in time to time making of brick man developed some Sophisticated Technologies. Basically in making of brick clay and soil is the main material and ever standard materials but in modern days we making cement brick by using and mixing some chemical admixtures and formulas, and in recent age we are using light weight cement bricks for the structures of the building. These light brick are most used for the building of Multi storied building.

An effort for an alternative investigation the manufacturing of the brick was accomplished. By using industrial byproducts like Fly-ash, Silica fume, lime, gypsum, Stone dust as key ingredients. In India thermal power plants are generating Fly-Ash in large quantities. Industrial waste are Hazardous in Nature, Their disposal is of Major concern. Recycling such a waste by utilizing them in to building materials is a modern solution for the pollution issues. Much of an emphasis is laid on energy

saving and economy. Industrial waste like Fly-Ash which is creating environmental problems is mainly used as building material due to its low cost and easy availability. But the main disadvantage of these bricks is its low strength of these produce Fly-Ash composite bricks which will have higher compressive strength.

2. EXPERIMENTAL PROGRAM

Materials Used:

In this research work various materials are used like Fly ash, Silica fume, Lime, Gypsum, Stone dust, Water, Silica fume is used.

Fly ash:

AN EXPERIMENTAL INVESTIGATION ON BRICK BY PARTIAL REPLACEMENT OF CLAY WITH COPPER SLAG AND SCULPTURE WASTE

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Abstract - In this experimental investigation is about the partial replacement of clay in brick with copper slag and sculpture waste. The Partial replacement of copper slag and sculpture waste in different percentage such as 0 to 5%.When copper slag is introduced as a replacement material, it reduces the environmental pollution. The Plaster of paris is a hard white substance made by the addition of water to powdered and partly dehydrated gypsum. Since it reduces the production of waste . The experiments are conducted for variation in properties i.e, compressive strength, water absorption, hardness and soundness. The effects of those wastes (copper slag and plaster of paris) on the bricks properties as physical, mechanical properties will be reviewed. This reviewed approach on bricks making from waste is useful to provide potential and sustainable solution.

1. INTRODUCTION

Now a days, most of the developed countries face the problems of storage and disposal of waste products. For this reason, recycling and reuse of these waste products prevents environmental pollution.

Copper slag is a by -product obtained during the melting and refining of copper .In current situation 24.6 million tonnes of copper slag is generated around the world.

Gypsum is heated at 128°c, resulting in powdery substance commonly known as plaster of paris. Over the years, million tonnes of waste plaster of paris were generated and disposed in land fill was dumped directly into the environment without any disposal.

Out of the total construction cost, the cost of building materials is about 70% in developing countries like India. Therefore, the utilization of industrial waste helps in reducing the waste generated as a result of rapid industrialization and also helps in reducing the construction cost.

OBJECTIVE OF THE PROJECT

This study involves the addition of copper slag and sculpture waste with clay bricks.

- To investigate the compressive strength of bricks.
- To investigate the physical properties of bricks.
- Comparison of result with conventional bricks based on their performance.

NEED FOR THE STUDY

More land is being used for getting clay for making brick. When copper slag and plaster of paris is used as a partial replacement, the use of clay is reduced. A new combination of brick manufacturing is obtained. When plaster of paris and copper slag are gives a very fine finishing and good appearance for the brick. High strength can be obtained, so it can be used for main elements of a structure. No dumping of waste and it is used as replacement in clay bricks, concrete.

SCOPE OF THE PROJECT

- The use of combination of clay with copper slag and sculpture waste in bricks would be more efficient as well as environment friendly.
- To minimize the water pollution.

AN EXPERIMENTAL STUDY ON PAPERCRETE BRICKS MANUFACTURED USING PAPER PULP, LIME AND FLYASH

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Abstract—**Concrete is one of the most widely used construction material in the world and it must keep evolving to satisfy the increasing demands of all its users. The emission of CO2 from cement production is a major issue for all the countries. Also the majority of abandoned paper waste accumulating from all over the world causes certain serious environmental problems. The present study focuses on utilizing the materials like fly ash and lime in papercrete bricks, thereby reducing the amount of cement in the bricks and also to reuse the waste papers without causing any environmental issues. Experimental investigation was carried out to evaluate the compressive strength, water absorption and dry weight of flyash - lime based papercrete bricks. The maximum compressive strength is obtained for 20% replacement of cement with fly ash and lime respectively. The test results shows that, further replacement of cement with fly ash and lime decreases the compressive strength &increases the water absorption of papercrete bricks. Papercrete bricks are light weight and relatively more economic and they can be used for partition walls& non load bearing walls.**

Keywords—Papercrete, Fly Ash, Lime, Compressive Strength, Water Absorption

INTRODUCTION

The environment impact of paper is significant, which has led to changes in industry. With the use of modern technology, harvesting of wood, disposable paper has become a cheap commodity which has led to a high level of consumption and waste. The production and use of paper has a number of adverse effects on the environment which are known as paper pollution. Discarded paper is a major component of it. Taking this issue into account, construction material known as papercrete is invented. Papercrete is an innovative composite material developed to build an environmental friendly house made up of paper, cement and water. It has been reported to be a cheap alternatively building construction material, to have a good absorption and thermal insulation, to be a light weight and fire-resistant material. The paper used in making are those that need to be recycled. It is perceived as an environmental friendly material due to the vital recycled content. It is made by mixing the dry ingredients with water to form slurry and cast the slurry into blocks and let it dry. It holds its shape even when it is wet and is

DEVELOPMENT OF CONCRETE BRICK USING RECYCLED PLASTIC AND GLASS WASTE

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Abstract—**The management of garbage is a critical issuein the modern world, particularly with regard to plastic and glass waste. Thousands of tonnes of plastic and glass are thrown in the trash every day, yet there aren't enough treatment and recycling options. Every day, a significant amount of plastic is thrown away or burned, contaminating the ecosystem and the atmosphere. Plastic trash buildup in the environment poses a threat to both plant and animal life. Recycling plastic and glass garbage after their useful lives are through while generating economic value and causing the least amount of environmental harm is the secret to their sustainable management in a circular economy. Bricks are a common building material used to make masonry structures like walls and pavement. Numerous research has been conducted on concrete that has been saturated with waste plastic and glass fiber, with positive outcomes and many benefits. Numerous testing have been carried out to manufacture eco bricks, including compression tests and water absorption tests.**

the development of numerous products that are advantageous to society in terms of economic activity, employment, and level of living. Utilizing these waste materials is one way to address ecological and environmental problems. A such substance is glass, which is produced from raw materials like sand. Despitethe fact that most glass debris is recycled in order to manufacture new glass products. Non- biodegradable and useful resource glass takes up valuable landfillspace.Inordertolessentheamountofglasswaste

Keywords—*bricks*; *compression testing; water absorption testing*

INTRODUCTION

One of the oldest and most common building materials is brick. Depending on their size, color, texture, origin, materials utilized, and forming process, the many varieties of bricks available on the market are employed. Bricks are an important component of industrial production processes in addition to being utilized in the construction of buildings. Plastic is a versatile, sturdy, and fairly priced material. These characteristics have led to

EFFECT OF HIGH SILICA POWDER AND PAPER MILL WASTE IN BRICKS

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Abstract—**In Civil engineering field it is a great challenge that replacing the industrial waste material as the construction materials. Paper industry is one of the oldest and largest sectors in India, it has several environmental impacts causing land pollution with toxicity. Waste management becomes a big problem nowadays. In the present study, an attempt has been made to utilize the paper waste with high silicate powder in making of fired clay bricks. Paper mill waste was incorporated in clay bricks manufacturing of size 230×100×70mm, and it was observed that with increase in paper content, there is a decrease in compressive strength and weight of bricks. The purpose of this study was to determine the compressive strength and water absorption test. It was observed that 6% of paper waste and 30% of high silicate powder in normal clay bricks gives the higher compressive strength of 6 N/mm² and 8.7 N/mm² respectively and also the water absorption result is better in 30% usage of high silicate powder and 6% of paper mill waste.**

INTRODUCTION

Burnt clay bricks are most utilizing bricks in construction world. Since the large demand has been placed building materials industry especially in the decade owing to increasing the population which cause a chronic shortage of building material. But the unlimited use of clay is harmful to society as all the brick kilns in India, depend on good quality clay available from agricultural field and weight of 3 kg per brick. So the last 40% per weight. Brick use of industrial waste products such as paper waste and high silicate powder for making fired clay bricks is ecologically and economically. In our project , we are going to use high silicate powder and paper mill waste in clay brick. Due to its silica content, amorphous glassy structure and availability, silicate powder is determined to be a feasible option for addition. The specimen with glass additions exhibited an increase in compressive and flexural strength, a decrease in the initial rate of absorption and an increase in firing shrinkage.

MATERIALS
Clay
Clay is a hydrous aluminium silicate. Minor impurities present in clay are potassium, sodium, calcium, Magnesium (or) iron oxide. The chemical formula of clay is $Al_2 O_3 2Sio_2 2H_2o$.

EFFECT OF STEEL FIBERS AND GFRP SHEET ON THEBEHAVIOR OF LIGHTWEIGHT CONCRETE SPECIMENSUSING WASTE LIGHTWEIGHT SAND BRICKS

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Abstract—**High performance traditional and optimizedlightweight fibrous concrete was investigated by using steel fibers and glass fiber reinforced polymer (GFRP) sheet, double action of Fibers. Basically, fibers could controlled the cracking of concrete, crack propagation and crack width. However, using fibers capable of enhancing failure mode of concrete to semi- ductile or ductile mode. Experimental work was consist of two phases, the first phase was focused on cast traditional fibrous concrete specimens in addition to control specimens to compare obtained results. These specimens were cubes, cylinders and prisms, which were tested after seven, fourteen and twenty eight days. Three percentages of round crimped (corrugated) steel fibers (0.5%, 1% and 1.5%) were used to get the optimum percentage. The second phase was concerned with cast lightweight concrete specimens by using the obtained optimum percentage of steel fibers. Specimens were cast by using waste lightweight sand bricks as an coarse aggregate (replacement percentage 50% of actual weight). The effect of strengthening with external GFRP sheet was studied for traditional and lightweight concrete specimens. The results confirmed that, steel fibers and GFRP sheet (external strengthening) increased the studied mechanical properties with competitive values in comparison to traditional concrete.**

Keywords— Green Concrete, Lightweight Concrete, Fibrous Concrete, Recycling, External Strengthening, GFRP.

INTRODUCTION

Fiber reinforced concrete (FRC) may be defined as a composite materials producing by using Portland Cement, aggregate (coarse and fine), and incorporating with fibers. Recently, adding fiber could enhance the brittle behavior of concrete material. Basically, the role of randomly distribute of fibers is to overcome the crack propagation to enhance some post-cracking (ductility) and optimizing low tensile strength and strain capacity. Mechanical properties of traditional and lightweight fibrous concrete were investigated, in addition to comparing results with strengthened (GFRP) sheet, traditional and lightweight concrete specimens. Fibrous specimens which were strengthened called double action of fibers concrete. Waste lightweight broken sand bricks were used as a coarse aggregate with 50% replacement of total weight of aggregate toproducing lightweight concrete specimens. Hassan et.al, (2012)[1] studied the influence of using fiberson the properties of different types of lightweight aggregate concrete (LWAC). These properties included the fresh and hardened properties. Basically, the inclusion of fibers in LWAC (single or hybrid) improved the mechanical properties,

EXPERIMENTAL STUDY ON CONCRETE WITH PARTIAL REPLACEMENT OF FINE AGGREGATE BY CRUSHED FOURTH CLASS BRICKS WITH ADDITION OF GLASS FIBRE

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Abstract: **World is growing day by day and so the construction industry is going very fast. The difficulty to get building materials in market is increasing day by day, especially the concrete ingredients. We thought to replace one of ingredient with readily available source and cheap in cost. Hence we thought to use the waste crushed fourth class bricks to replace sand in concrete partially. The strength and durability of sand mixed concrete depends on multiple factors where as we tried to use waste crushed fourth class bricks to increase the durability and strength of concrete. We thought to analyze deeply to demonstrate the usage of waste crushed fourth class bricks in this project. We would like to demonstrate the strength and durability of mixed concrete which can be made with low cost waste crushed fourth class bricks as sand and glass fibre.**

Keywords: Crushed fourth class brick, Glass fibre, Split Tensile Strength, Flexural Strength.

I. INTRODUCTION

Concrete is widely used in domestic, commercial, recreational, rural and educational construction. Communities around the world rely on concrete as a safe, strong and simple building material. It is used in all types of construction; from domestic work to multi-storey office blocks and shopping complexes. Despite the common usage of concrete, few people are aware of the considerations involved in designing strong, durable, high quality concrete. Concrete Basics aims to provide a clear, concise explanation of all aspects of making quality concrete; from the Materials and Properties involved through Planning, Preparation, Finishing and Curing. Concrete Basics addresses the needs of unskilled and semi- skilled persons undertaking general concreting projects including home and handyman projects.

Since the natural resources are vanishing due to extensive use of them day by day, It is necessary to find alternative for the natural resources used in concrete. Fine Aggregate is becoming scarce and hence it's cost is increasing day by day. There is need of finding an alternative for fine aggregate used in concrete and crushed fourth class brick is one such alternative which can take the place of Fine Aggregate in Concrete. Concrete is weak in tension and flexure, most commonly it is reinforced using

FABRICATION OF AL7075 METAL MATRIX COMPOSITETHROUGH STIR CASTING METHOD - A REVIEW

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Abstract:- **Aluminium alloys are widely used in aerospace and automobile industries due to their low density and good mechanical properties, better corrosion resistance and wear, low thermal coefficient of expansion as compared to conventional metals and alloys. The excellent mechanical properties of these materials and relatively low production cost make them a very attractive candidate for a variety of applications both from scientific and technological viewpoints. The aim involved in designing metal composite materials is to combine the desirable attributes of metals and ceramics. Present work is focused on the study of behavior of Aluminium alloy (Al 7075) with SiC and TiB2 composite produced by the stir casting technique. Al7075 alloy is taken as base material and then it is reinforced with silicon carbide(SiC) and titanium di- boride (TiB2). Different weight % of TiB2 reinforcement is used by keeping standard weight % of SiC. After preparation of suitable samples, tensile test and hardness test were performed and results were analyzed. At last, a comparison is made between the mechanical properties of base aluminium alloy and the prepared aluminium metal matrix composites.**

INTRODUCTION

OVERVIEW OF COMPOSITES:
People have been making composites for many thousands of years. One early example is mud bricks. Mud can be dried out into a brick shape to give a building material. It is strong if you try to squash it (it has good compressive strength) but it breaks quite easily if you try to bend it (it has poor tensile strength). Straw seems very strong if you try to stretch it, but you can crumple it up easily. By mixing mud and straw together it is possible to make bricks that are resistant to both squeezing and tearing and make excellent building blocks. Another ancient composite is concrete. Concrete is a mix of aggregate (small stones or gravel), cement and sand. It has good compressive strength (it resists squashing). In more recent times it has been found that adding metal rods or wires to the concrete can increase its tensile (bending) strength. Concrete containing such rods or wires is called reinforced concrete.

Industrial technology is growing at very rapid rate and there is increasing need of materials. Conventional monolithic materials have limitations in achieving good combination of strength, stiffness, toughness and density. To overcome these shortcomings and to meet the always increasing demand of modern day technology, composites are most promising materials. Composite materials are those formed by combining two or more materials on a macroscopic scale to form useful third material that results in better properties than those of the individual

GREEN BUILDINGS AND SUSTAINABLE CONSTRUCTION

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Abstract - The issues of sustainable construction practices have been an emerging phenomenon in India. The increasing concern of harmful effects of construction related activities and need to address the same have regularly appeared in newspaper headlines. In light of the same government of India has already taken proactive measures to promote the concept of green building for better environmental and social protection. Rising concern of deterioration to the environment, developers should also rework on their existing construction practices and should adopt sustainable construction practices in their future projects. However, the speed with which all the associated developers and builders accept this aspect of construction depends upon the level of awareness, knowledge as well an understanding of the consequences of the individual action. Aligned with this objective, survey has been organized in the current study to assess the difference in level of knowledge, awareness and implementation of sustainable practices based on the perceptions of the project developers in India. To improve the acceptance and momentum of sustainable practice in the industry, appropriate actions are recommended towards improving this knowledge at all levels of developers.

INTRODUCTION

Construction industry in any part of the world has significant positive and negative environmental, economic and social impacts on the society. Besides providing the required number of buildings and facilities to human beings, activities within construction industry provides employment opportunities to large number of people. The negative influences of construction activities include; noise, traffic congestion, dust, fumes, water pollution and waste disposal. With emerging technologies and rising population a need for significant increase in infrastructure was felt. Rising number of buildings are required to accommodate the expanding population – this calls for a need to identify optimal solutions for minimizing the environmental impacts (Conte and Yepes, 2012). According to estimates buildings consume more than 30% of energy utilizing 40% of resources while simultaneously generating 40% of wastes and 35% of harmful green-house gases. Indian Real Estate sectorisflourishingatanirresistiblespeedof112.2%

Compound Annual Growth Rate (CAGR)leading to growing demand for natural and other depleting resources. By theendoffiscalyear2030 ,India is expected to have a GDP of
4 trillion and population of 1.5 billion (Tathagat&Dod, 2015). Energy and peak shortage of 9.8% and 16.6% respectively makes it imperative for developers in India to indulge into activities concerning sustainability.

The movement of Green building in India began in the year 2001, with the establishment of IGBC by Confederation of Indian Industries (CII) in cooperation with USGBC and Green building council of the world. It was a symbolic movement for the country when the first green building; Sohrabji Godrej Green Business Centre was inaugurated. Indian Green building market is anticipated to be 40 billion USD which is likely to grow further. According to estimates out of the total number of registered projects across the world 37% are registered in India under LEED NC-USA (USGBC, 2007). India with a coverage area of 3.59 billion sq holds a second position in the global green market space. The market size of green buildings in India is anticipated to be 10 billion sq. ft. in 2022. The increasing prominence of the concept in the country is a result of the policies initiated by the government to

BIG DATA: AN OVERVIEW WITH LEGAL CONSIDERATIONS AND UPCOMING OPPORTUNITIES

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Abstract: The advent of big data has revolutionized the way organizations process, analyze, and extract insights from vast volumes of data. This research paper provides a comprehensive overview of big data, including its applications, challenges, and the tools and techniques employed to tackle its complexities. The paper explores the diverse domains where big data plays a critical role, ranging from business and healthcare to government and academia. Furthermore, it examines the challenges associated with big data, such as data storage, scalability, privacy and security. To address these challenges, various tools and techniques are employed, including data mining, machine learning, and cloud computing. The paper delves into these technologies and discusses their applications in managing and extracting value from big data. By understanding the breadth and depth of big data, its challenges, and the tools available, organizations can harness its potential to make informed decisions and gain a competitive advantage in today's data-driven world with the consideration of legal issues.

Keywords - Big Data, Applications, Challenges, Tools and techniques, Case study, Legal Issue.

1. INTRODUCTION

The rapid expansion of digital technology and the internet has resulted in an unprecedented surge in the volume, velocity, and variety of data being generated worldwide. This abundance of data, often referred to as big data, presents both immense opportunities and significant challenges for organizations across various industries. Big data (BD) encompasses large and complex datasets that cannot be efficiently processed and analyzed using traditional data processing methods.

1.1 Background

The exponential growth of digital data has given rise to the concept of big data. The term "big data" refers to datasets that are too large and complex to be effectively managed, processed, and analyzed using traditional data processing techniques. This proliferation of data is primarily driven by advancements in technology, the widespread use of the Internet, social media platforms, mobile devices, and the Internet of Things (IoT). The data generated from these sources include structured, semi-structured, and unstructured data, creating a massive volume and variety of information.

The potential value and insights hidden within big data have attracted significant attention from various industries and sectors. Organizations recognize that effective analysis of big data can provide valuable insights, facilitate evidence-based decision-making, enhance operational efficiency, and unlock new opportunities for innovation and growth. As a result, the field of big data has gained immense importance in recent years [1].

1.2 Objective

The objective of this research paper is to provide an overview of big data, focusing on its applications, challenges, and the tools and techniques employed to tackle its complexities. By understanding the applications of big data in diverse domains, organizations can gain insights into how it can be effectively utilized to derive value. Additionally, exploring the challenges associated with big data will help identify potential obstacles and develop strategies to overcome them. Furthermore, understanding the tools and techniques available for managing and analyzing big data will enable organizations to

A TAXONOMY SCHEMA DESIGNED FOR MOBILE AND WEB 2.0 APPS

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Abstract: The Web 2.0 phenomena and associated concepts like social computing, social media, and user generated media have received a lot of attention lately. But whenever Web 2.0 is brought up, definitions and concepts are typically evasive and unclear, involving a convoluted blend of business and technical elements. In order to provide some clarity in this murky environment, this paper suggests a taxonomy schema for Web 2.0 applications. The primary criteria for classification are the kinds and attributes of interaction that the applications allow or facilitate. After that, the suggested taxonomy schema is expanded to the context of Mobile 2.0 by going over the potential consequences of mobility applications.
Keywords: Web 2.0, Mobile 2.0, application taxonomy schema

1.   INTRODUCTION

In recent times, a number of trends in information and communications technology led to the emergence of a phenomenon commonly referred to as Web 2.0. A consensus on how to precisely name and define the phenomenon is still far away – and given the numerous aspects it encompasses, maybe it will never be achieved. Even so, these terms are commonly employed as catch-all expressions for a myriad of interactive applications that support and facilitate collaboration, community formation, content production and sharing by users, and social interaction. Examples include blogs, forums, content aggregators, social networks, and content communities (Constantinides & Fountain, 2008). In addition to the lack of consensus on definition, there is also much confusion about the underlying characteristics of the Web 2.0 phenomenon and how to categorize its applications. Indeed, much of the published research on the topic has to do with specific and single practical applications, without a great concern for the larger picture or for how applications relate to each other. In light of these considerations, the objective of this paper is to propose a taxonomy schema for Web and Mobile Social Computing applications that uses as main categorizing construct the type of interaction permitted of facilitated by the applications

2   WEB 2.0

Recent years witnessed an undoubted paradigmatic shift in the Web: from a linear structure of one-to-many content production, distribution and consumption to a participatory structure based on open, inclusive, collaborative and customizable applications that allow users to collectively create, share, evaluate and use digital content. This change was enabled by the wide availability of broadband Internet connectivity, including continuous connectivity through wireless channels, and the increase on processing power and memory capacity in personal computing devices, including mobile handsets (Parameswaran & Whinstone, 2006).The result of this paradigmatic shift is a complex and multi-faceted phenomenon, frequently called Web 2.0 (O'Reilly, 2005; Oberhelman, 2007; Levy, 2009), but also known as social computing (Parameswaran & Whinstone, 2006), Social Media (Constantinides & Fountain, 2008) or even User- Generated Media (Shao, 2009)

2.1   Technological Approach

A frequent common ground in attempts to understand Web 2.0 and its impacts is O'Reilly's (2005) set

A WEB API FRAMEWORK FOR DEVELOPING GRID PORTALS

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Abstract

We provide a grid problem solving environment we created for financial applications in this research. Its development was founded on a specially created portlet framework and a collection of Web APIs that contained all calculation and grid control functionality. Despite the fact that grid gateways now days are distinguished by numerous and distinct features and are implemented in very disparate technologies and programming languages, we reasoned that they share a large number of structural elements. We made the decision to create and deploy a set of Web APIs that are unique to the Grid and dubbed GRB WAPI as a result. A portal developer can handle a high level design and avoid dealing with grid technical specifics thanks to them. The developer of a portal will have more time to focus on other presentation-related factors, like the usability and functioning of the portal. The notion of creating a conventional library to release portal developers from a specific implementation technology was abandoned. This option allows the portal presentation mechanism to be implemented on a different server and in any web technology.

Keywords

Grid Problem Solving Environment, Web API, REST, Grid Portals, Portlet

Introduction

A Grid portal is a Web-based gateway that provides seamless access to a variety of backend resources. In general, a Grid portal provides end users with a customized view of software and hardware resources specific to their particular problem domain. It also provides a single point of access to Grid-based resources that they are authorized to use. This allows scientists or engineers to focus on their problem area by making the Grid a transparent extension of their desktop computing environment. Web services can be considered as a major technology for developing automated interactions between distributed and heterogeneous applications. Various standards, such as WSDL (Web Services Description Language), UDDI and SOAP, support the definition of Web services and their advertisement to the potential user community. on a set of portlets that communicate with Web APIs that encapsulate all grid control and computation logic; we called GRB WAPI these Grid specific Web APIs. By Using them a portal developer has not to deal with grid technical details concentrating on some other aspects concerning presentation, such as portal usability and functionality. We discarded the idea to develop a traditional library in order to free portal developers from a particular implementation technology. Thanks to this choice the portal presentation logic can be implemented in any web technology and can be on a different server.

State of the art

Grid portal development can be broadly classified into two generations. First generation Grid portals are tightly coupled with Grid middleware such as Globus. These portals generally provide grid services such as authentication, job management, data transfer and information services. Some first generation representative Grid portal toolkits are GRB[1][2][3][4], Grid Port 2.0[6], the Ninf Portal[7] and Grid Speed[8]. A major limitation of the first generation portals is the lack of customization because the

A BIG DATA PERSPECTIVE ON DATA ANALYTICS FOR AGRICULTURAL MANAGEMENT

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Abstract

Every sector of the global economy is greatly impacted by the most recent developments in information and communication technologies. The rise of digital devices and the developments in data science and artificial intelligence led to the emergence of digital agriculture. With consideration for the environment, digital agriculture has produced innovative methods for increasing farming's output and efficiency. Agronomists, farmers, and other professionals can now better comprehend farming chores and make better judgments because to the availability of large datasets that have been collected and analysed thanks to data science and modern, sophisticated digital technologies. The application of data mining techniques to digital agriculture is reviewed systematically in this work. We restrict this study to agricultural yield and monitoring, however we do introduce the crop yield management method and its elements. After identifying the main categories of data mining techniques for crop yield monitoring, we discuss a panoply of existing works on the use of data analytics. This is followed by a general analysis and discussion on the impact of big data on agriculture.

Keywords: Big data, data mining, machine learning, digital agriculture, data analytics, and crop management.

Introduction

DA, (also called digital farming or smart farming)[1] [78, 105, 130], is a modern approach that uses digital and smart devices [sensors, cameras, satellite, drones, the Global Positoning System (GPS)] in conjunction with Data Mining (or data analytics) to improve productivity and to optimize the use of resources. Digital Agriculture (DA) comes as a response to the increasing demand for improving productivity while reducing farming operational costs. Moreover, the improvement of productivity should not be done at any cost, e.g., overuse of natural resources and chemical products. DA can, for example, manage crop growth by finding appropriate fertilization program for each farming field and can help farmers to reduce their operational costs and respect the environment by refining their farming operations based on the needs of each part of the farming field.

AN EXTENSIVE REVIEW OF SENTIMENT ANALYSIS: METHODS, OBSTACLES, AND DEVELOPMENTS

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ABSTRACT:
Extracting and evaluating people's thoughts, feelings, attitudes, views, and so on about various topics, goods, and services is known as sentiment analysis (SA), often known as opinion mining (OM). A vast number of thoughts and reviews about goods, services, and daily activities are produced by individuals as a result of the quick development of Internet-based applications such as blogs, social networks, and websites. For governments, corporations, and academics, sentiment analysis offers a potent tool for obtaining and evaluating public opinion and mood in order to make better decisions and obtain business intelligence. With the goal of providing scholars with a comprehensive overview of sentiment analysis and associated topics, this paper offers a thorough examination of sentiment analysis methodologies, obstacles, and developments.
Keywords: Opinion mining, Machine learning, Sentiment classification, Deep learning

Introduction

Sentiment Analysis is a task of Natural Language Processing (NLP) that aims to extract sentiments and opinions from texts [1,2]. Besides, new sentiment analysis techniques start to incorporate the information from text and other modalities such as visual data [3,4]. This research topic is conjoined under the field of Affective Computing research alongside emotion recognition [3]. According to [5], affective computing and sentiment analysis are the keys to the development of Artificial Intelligence (AI). Moreover, they have a great potential when applied to various domains or systems. The task of sentiment analysis can be considered as a text classification problem [6–8] because the process includes several operations that end up with classifying whether a given text expresses a positive or negative sentiment. However, sentiment analysis may seem an easy process, but in fact, it requires taking into consideration many NLP subtasks like sarcasm and subjectivity detection [9,10]. Moreover, the text is not always organized as in the books or newspapers [11,12] and can contain many orthographic mistakes, idiomatic expressions, or abbreviations.

Nowadays, sentiment analysis has become well acknowledged, not only among researchers, but also companies, governments, and organizations [4,8,13]. The growing use of the Internet have made the web become the universal and the most important source of information. Millions of people express their opinions, and sentiments in forums, blogs, wikis, social networks, and other web resources [14–16]. Those opinions and sentiments are very relevant to our daily lives, and hence there is a need to analysed this user-generated data in order to automatically monitor the public opinion and assist decision-making [6,14]. For example, Twitter posts have been used to predict election results [17].

For this reason, the field of sentiment analysis gained more interest within the last one and a half decades among research communities. Since 2004, sentiment analysis has become the fastest growing and the most active research area, as there has been a massive increase in the number of papers focusing on sentiment analysis and opinion mining recently [18]. Fig. 1 shows the rising popularity of sentiment analysis according to Google Trends.

Numerous surveys and review articles on sentiment analysis have been presented. Liu and Zhang [19] presented earlier in 2012 a survey of opinion mining and sentiment analysis. In this survey, the authors defined the problem of opinion mining and discussed the issues that should be addressed in the future. Furthermore, they analysed the problem of detecting opinion spam and fake reviews. The authors

AN APPROACH TO IMPROVE CELLULAR NETWORK CONNECTIVITY QUALITY USING BIG DATA APPLICATIONS

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Abstract

Academics and industry alike now favor and support software-defined networking and big data. Traditionally, wireless cellular networks have tackled these two significant domains separately. Analysing wireless cellular technologies with the contrast of effective and improved spectral densities at a lower cost was the discussion that this study examined. Which method has been the main focus of this study in order to achieve its objective. This study has shown that spectral densities can be improved at lower costs by using power spectral estimating methods, which have been supported by prior research and traditional methodologies. Power spectrum estimate results are obtained using the Welch method. The Welch approach is effective at mitigating the impact of noise.

Keywords: Spectral density, Software-defined networks, Big Data, Quality of service, and Wireless Cellular Networks

Introduction

Big data enjoys a wide range of acclimation in both industry and academia. Its data sets are so complex and massive that conventional data processing methods and management tools are inappropriate to deal with it [1]. Big data is popularly denoted by "5Vs": variety, velocity, volume, integrity, and value. In today's world, the data is being generated exponentially, mainly from social networking websites, scientific research, and the internet of things (IoT) [2]. According to the recent report of an international data corporation (IDC), the global volume of data will increase from 33 zeta-bytes to 175 zeta- bytes by 2025 [3].

Big data applications would not be possible regardless of the underlying networking support because of their extreme complexity and large volume, specifically for near- real-time or real-time applications [4]. Recently, software defined networking (SDN)has drawn much attention from researchers as a new paradigm in networking [5]. Thecore processes of SDN are to detach the control plane from the forwarding plane, instill the competence to program the network, and break vertical integration [6]. Logical centralization of feedback control is allowed by SDN, and decisions are made by the net- work brain operating with a global network viewpoint that eases optimization of net- work [7].

In SDN, data plane aspects become programmable packet and highly efficient forwarding devices, while the control plane features are reflected by a single entity: the controller [8]. It is much easier to develop and apply applications in SDN as compared to conventional networks. Additionally, it is feasible to enforce consistent network policies with the global exploration of

VIRTUAL ONLINE LABORATORY IMPLEMENTED BY CLOUD COMPUTING SOFTWARE

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Abstract
The article provides a survey on cloud platforms suitable for a virtual online laboratory, which contains Linux online environments and is intended to support the Operating Systems. The study justifies the choice of utilizing private cloud as a deployment model and IaaS as a service model and substantiates the decision to create specially tailored cloud environments adapted for educational needs in contrast to applying ready-made IaaS (Infrastructure as a Service) cloud services given by providers.

Keywords
Linux, operating systems, virtual online laboratory, private cloud, IaaS

1. Introduction

Most of the Operating Systems (OS) courses include practical assignments on real OSs. In many cases, these assignments require giving students administrative access to their isolated instance of the OS. Also, OS courses usually consider Linux OS, although the majority of computers in University labs, as well as students' laptops more often come with Windows installation. For this reason, different virtualization technologies may be used. The purpose of the article is to make a survey on cloud platforms applicable for a virtual online laboratory containing Linux online environments in the Operating Systems course, to compare these platforms and to select the most suitable platforms.

2. Related work

The available works on cloud platforms for teaching operating systems describe the experience of using a wide range of tools, including cloud services given by provider and specially tailored cloud environments adapted for educational needs. Rajaei and Aldakheel [2] are convinced that the Operating Systems course is among the courses that benefit from using cloud-based environments the most. The authors suggest applying Amazon AWS instances to give students the ability to learn how different scheduling algorithms behave, how virtual memory is managed etc. Gaffar and Hajjdiab [3] describe the experience of working with processes, threads, pipes and sockets using cloud-based laboratories(Ubuntu Linux instances on Amazon AWS). Bhatia et al. [4] focuses on the design of cloud for higher education institution, its proof-of-concept implementation methodology (private cloud, based on OpenStack platform). The authors also formulate the resource requirement model, which estimates the amount of resources needed for a specific number of virtual machines (VMs). Malan [5] describes the experience of moving Harvard College's introductory computer science course (CS50) into Amazon Elastic Compute

A REVIEW OF APPLICATIONS IN NATURAL LANGUAGE PROCESSING AND UNDERSTANDING USING BERT METHOD

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Abstract: Here, we describe the application of one of the most popular deep learning-based language models - BERT. This describes the mechanism of operation of this model, the main areas of its application to the tasks of text analytics, comparisons with similar models in each task, as well as a description of some proprietary models. In preparing this review, the data of several dozen original scientific articles were published over the past few years, which attracted the most attention in the scientific community, were systematized. This survey will be useful to all students and researchers who want to get acquainted with the latest advances in the field of natural language text analysis.
Keywords: BERT, Deep Learning, Transfer Learning

Introduction

The search for a universal representation of text is at the heart of the automated processing of natural languages. The big breakthrough in this area has been with the development of pretrained text attachments such as word2vec or GloVe . Over the past years, supervised models have shown consistently better results than unsupervised models [49]. However, in recent years, models based on learning without a teacher have become much more widespread since they do not require the preparation of a specially labeled dataset, but can use already existing or automatically generated huge corpora of texts and, as a result, learn on much a larger sample, thus taking full advantage of deep learning.

The centerpiece of 2019 in the field of natural language processing was the introduction of a new pretrained BERT text attachment model, which enables unprecedented precision results in many automated word processing tasks. This model is likely to replace the widely known word2vec model in prevalence, becoming, in fact, the industry standard. Throughout 2019, almost all scientific articles devoted to the problem of word processing in natural languages, in one way or another, were a reaction to the release of this new model, the authors of which have become one of the most cited researchers in the field of machine learning.

Natural language processing tasks include a wide range of applications from conversational bots and machine translation to voice assistants and online speech translation. Over the past few years, this industry has experienced rapid growth, both quantitatively, in the volume of market applications and products, and qualitatively, in the effectiveness of the latest models and the proximity to the human level of language understanding.

One of the central themes in natural language processing is the task of text representation. Text representation is a kind of rule for converting natural language input information into machine-readable data. A representation can also be considered simply a computer encoding of text, but in the context of applied machine learning problems, such representations that reflect the internal content and conceptual structure of the text are more useful.

The simplest textual representations are categorical encoding when each word is represented as a vector filled with zeros everywhere, except for one position corresponding to the number of this word in the dictionary. This concept was used in the early stages of the industry. It is quite simple, does not

KNOWLEDGE REQUIREMENTS FOR MINING COVID-19 IN CHINESE ONLINE HEALTH COMMUNITIES

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A B s t r A C t

This study investigates the information needs of Chinese online health communities (OHCs) on the new coronavirus pneumonia (COVID-19). Topic mining and data analysis were done using information from the COVID-19 question and response sheets in six Chinese OHCs. Based on the co-occurrence analysis of lexical meaning and the LDA topic model, we suggest a CL-LDA topic model (Latent Dirichlet Allocation Model with co-occurrence of verbal meaning). This study identifies four primary information requirement issues and their corresponding proportions: symptom (45.50%), preventive (36.11%), inspection (10.97%), and therapy (7.42%). We also find that women are more concerned with prevention information than they are with symptoms; young users have the majority of information needs and are more concerned with prevention information. The findings of the experiments demonstrate that the CL-LDA model is capable of adapting well to the topic mining information support.

Keywords: OHCs, Covid-19 questions, CL-LDA.

1. Introduction

The outbreak of novel coronavirus pneumonia (COVID-19) has seriously affected people's health and normal life [1]. On Jan- uary 30, 2020, the outbreak was recognized as a public health emergency of international concern (PHEIC) by the World Health Organization (WHO). In the process of prevention and control of the epidemic, the Chinese online health communities (OHCs) have played the unique advantages of online and remote consultation, reduced the risk of patients' infection, alleviated the situation of medical resources shortage in some areas, solved the plight of patients without medical treatment caused by the closure of none-emergency outpatient clinics in some hospitals. Compared with the same period, the number of the diagnosis and consultation volume of some third-party Internet medical service platforms increased more than 20 times, and the prescriptions increased nearly ten times [2]. However, the information provided by OHCs is mixed, and it isn't easy to obtain the required high-quality health information quickly and accurately. Therefore, it is very important to determine the health information needs of OHCs users and pro- mote OHCs to provide more high-quality services.

In this study, topic mining and data analysis are conducted to discover the information needs of COVID-19 in Chinese OHCs. The main contributions of this paper are summarized as follows.

• To deal with the short, poorly prescriptive and domain-specific question and answer (Q&A) data from OHCs, a novel CL-LDA topic model is proposed. The CL-LDA model takes full account of the influence of synonyms on topic generation in the cor- pus, merging synonyms into one lexical meaning element, and replaces the original document word matrix of LDA with the co-occurrence matrix as the feature vector of the corpus. This model can be applied to other topic extraction tasks based on short texts from Internet.

THE ADVANTAGES AND BENEFITS OF CLOUD COMPUTING

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Abstract
The purpose of this paper is to provide a better knowledge of the cloud computing as well as to suggest relevant research ways in this growing field. Also, we will go through the future benefits of cloud computing and the upcoming possible challenges we will have. Intext Cloud, performance, cloud computing, architecture, scale-up, and big data are all terms used in this context. Cloud computing offers a wide range of architectural configurations, including the number of processors, memory, and nodes. Cloud computing has already changed the way we store, process, and access data, and it is expected to continue to have a significant impact on the future of information   technology. Cloud computing enables organizations to scale their IT resources up or down quickly and easily, without the need for costly hardware upgrades. This can   help organizations to respond more quickly to changing business needs and market conditions. By moving IT resources to the cloud, organizations can reduce their IT infrastructure costs and improve the efficiency. Cloud computing also allows organizations to pay only for the resources. Cloud providers invest heavily in security and compliance measures, which can help to protect organizations from cyber threats and ensure regulatory compliance. Cloud computing provides a scalable platform for AI and machine learning applications, enabling organizations to build and deploy these technologies more easily and cost-effectively. A task, an application, and its input can take up to 20 times longer or cost 10 times more than optimal. Cloud products' ready adaptability has resulted in a paradigm change. Previously, an application was optimized for a specific cluster; however, in the cloud, the architectural configuration is tuned for the workload. The evolution of cloud computing from the era of mainframes and dumb terminals has been   significant, but there are still many advancements to come. As we look towards the future, IT leaders and the companies they serve will face increasingly complex challenges in order to stay competitive in a constantly evolving cloud computing landscape. Additionally, it will be crucial to remain compliant with existing regulations as well as new regulations that may emerge in the future. It is safe to say that the next decade of cloud computing will be just as dramatic as the last where many internet services are becoming cloud based, and huge enterprises will struggle to fund physical infrastructure. The service enables users to access files and applications stored in the cloud from anywhere. Cloud computing makes the connection available from anywhere because they are kept on a network of hosted computers that carry data over the internet. Cloud computing has shown to be advantageous to both consumers and corporations. The cloud has altered our way of life. Overall, cloud computing is likely to continue to play a significant role in the future of IT, enabling organizations to become more agile, efficient, and innovative in the face of rapid technological change.

Keywords: Cloud Computing, Computing Service, Private Clouds, Public Clouds, Hybrid Clouds,

Introduction

MODELS, METHODS, AND RESOURCES FOR AN INTRODUCTION TO DEEP LEARNING IN NATURAL LANGUAGE PROCESSING

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ABSTRACT
The field of artificial intelligence known as "natural language processing," or NLP, focuses on creating and implementing algorithms and systems that can communicate with one another using natural language. Recent developments in deep learning have resulted in an unparalleled performance improvement for NLP applications. We survey the use of deep learning approaches in natural language processing (NLP) in this work, emphasizing the different tasks where deep learning is showing greater influence. We also examine, characterize, and update the primary resources used in NLP research, such as popular corpora, hardware, and software. Lastly, we highlight the primary boundaries of deep learning in NLP as well as future research avenues.

KEYWORDS
Deep Learning, Natural Language Processing, Transformer Language

INTRODUCTION

Natural Language Processing (NLP) is a branch of artificial intelligence brimful of intricate, sophisticated, and challenging tasks related to the language, such as machine translation, question answering, summarization, and so on. NLP involves the design and implementation of models, systems, and algorithms to solve practical problems in understanding human languages.

We may split NLP into two main sub-branches, which are fundamental (or basic) and applicative research. Belonging to the first category, we find general problems representing the *bricks* to build complex systems based on human language. Some of these tasks are language modeling, morphological analysis, syntactic processing, or parsing, and semantic analysis. Additionally, NLP deals with applicative topics such as automatic extraction of relevant information (e.g., named entities and relations between them) from texts, translation of text between languages, summarization of documents, automatic answering of questions, classification and clustering of documents.

Thanks to the recent advances of deep learning, NLP applications have received an unprecedented boost in performance, generating growing interest from the Machine Learning community. For instance, in Machine Translation, the phrase-based statistical approaches that were at the state of the art have been gradually substituted with neural machine translation, consisting of huge deep neural networks that obtained better performance [1]. Similarly, early approaches for named entity recognition based on dictionaries, ontologies, and syntactic grammar rules have been replaced by recurrent architectures [2] and deep learning models. In both cases, large neural networks have demonstrated to be superior to traditional ML algorithms, such as SVM, for multiple reasons. Firstly, these models can often be trained with a single end-to-end architecture and they do not require traditional task-

IPROX IN 2021: BRIDGING BIG DATA AND PROTEOMICS DATA SHARING

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ABSTRACT

A vast amount of experimental data has been produced by the proteomics research' quick development. Handling these massive amounts of data is made possible by the rise of big data platforms. With the implementation of an updated big data platform in 2021, the 2017-launched integrated proteome resource, iProX (https://www.iprox.cn), has undergone significant enhancements. The primary iProX advancements since its initial release in Nucleic Acids Research in 2019 are outlined here. A hyper converged architecture with high scalability first supports the submission procedure. A distributed Elastic Search engine in the style of Restful can query millions of records in less than a second, and a Hadoop cluster is capable of storing massive proteome datasets. Additionally, there are a few additional features, such as the suggested Universal Spectrum Identifier (USI) method With the advance of high-throughput technologies, large- scale biological data has accumulated at an unprecedented rate. First, methods were established for the genome and transcriptome, followed by the proteome and metabolite, which may be collectively designated 'multi-omics' (1,2). Today, nearly all fields in life sciences can be connected by big data. As in other areas of big data science, the major challenges in the proteomics field include data storage, management, analyses, and open sharing.

Keywords: Hadoop, iProX, Mass Spectrometry, Web Service API.

INTRODUCTION

The ProteomeXchange (PX, http://www. proteomexchange.org/) consortium (3,4) coordinates a stable, distributed infrastructure for effective proteomics data sharing through interaction with PX members, including PRIDE (http://www.ebi.ac.uk/pride/archive/, EMBL-EBI, Cambridge, UK) (5), PeptideAtlas with the PASSEL resource (http://www.peptideatlas.org/passel/, ISB, Seat- tle, WA, USA) (6), MassIVE (https://massive.ucsd.edu/, UCSD, San Diego, CA, USA), jPOST (https://jpostdb.org/, various institutions, Japan) (7), iProX (National Center for Protein Sciences, Beijing, China) (8), and Panorama Public (https://panoramaweb.org/, University of Washington, Seattle, WA, USA) (9). Driven by improvements in speed and resolution of mass spectrometry (MS), the scale and complexity of proteomics datasets are expanding, which has resulted in a rapid accumulation of data in almost all PX repositories. To move forward with sharing large proteomics datasets, both hardware and software must continue to improve; therefore, incorporating big data technology, framework and scalable cloud-based solutions will help to manage huge proteomics datasets.

iProX was launched in April 2017 and joined the PX con- sortium in November 2017. As a full member of the con- sortium, iProX (https://www.iprox.cn/) has been updated significantly by implementing an up-to-date big data plat- form in 2021. It can support storage and rapid access to large amounts of proteomic data. Here, we describe the main developments in iProX since its first publication in Nucleic Acids Research in 2019. First, we summarize the over- all data submission and data statistics to demonstrate the wide adoption of iProX. Then, we highlight the big data architecture and infrastructure of iProX, which can sup- port PB-level data storage, hundreds of billions of spectra records, and second-level latency service capabilities to meet the requirements of rapidly accumulating proteomics

MIND AND THE INTERNET

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Introduction

In the few decades since its invention, the World Wide Web has exerted a profound influence on practically every sphere of human activity. Online stores have transformed the way we purchase goods, social networking sites have transformed the way we stay in touch with friends, and real-time news feeds have transformed the way we stay abreast of current affairs. For better or worse, it seems, the Web is poised to have a significant influence on the way we live our lives, and perhaps ultimately it will come to influence the social, political and economic forces that determine the way our lives are lived.The rapid growth and penetration of the Web raises important questions about its effects, not just on our social activities, but also on the nature of our cognitive and epistemic profiles. The Web is a transformative technology, but its transformative influence does not necessarily stop at the social processes that govern our everyday interactions with one another. Many technologies that have transformed society (for example, the clock, the map and systems of writing), have also exerted subtle (and sometimes not so subtle) effects on our cognitive and intellectual capabilities. The invention of the mechanical clock, for example, contributed not only to widespread social and economic change (see Landes, 2000); it also contributed to a profound shift in the way we saw ourselves and the nature of our cognitive abilities. Prior to the invention of reliable and widely accessible time-keeping devices, the nature of our daily activity was structured according to the chronology of the natural world. The sun signal led the start of the working day, while the onset of night signal led a time to sleep. The invention of portable time-keeping devices changed all that. Suddenly, it was possible to organize and synchronize activities in a way that had never been possible before, and on the back of this new capability there emerged a new social and economic era. The influence of the clock, however, was not just limited to the nature of our social interactions and engagements; it also effected a profound shift in our cognitive power and potential. As Clark (2003) argues:

"The presence of easily accessible, fairly accurate, and consistently available time- telling resources enabled the individual to factor time constantly and accurately into the very heart of her endeavors and aspirations. This made possible ways of thought, and cultural practices and institutions, which were otherwise precluded by our basic biological nature." (pg. 40)

As with the invention of clocks, the emergence of the Web is, I think, a highly significant event in our social, economic and cultural history. Like the invention of the clock, the Web is supporting the emergence of new forms of social interaction and engagement, and ultimately these may manifest themselves in more profound forms of social and economic change. The Web also has the potential to change the nature of our cognitive and epistemic profiles. The Web provides new opportunities for interaction and engagement with a global space of information, and, in some cases, such interactive opportunities may contribute to fundamental shifts in the way we see ourselves and the nature of our cognitive capabilities. The idea that a technology as pervasive and as popular as the Web may be changing our cognitive profile is something that is bound to raise both interest and alarm. Over the past couple of years, considerable attention has been devoted to the issue of whether the Web is affecting our social, emotional and cognitive abilities. For the most part, much of the rhetoric in this debate has been negative. The Web has been seen as exerting a largely pernicious influence on our ability to think, read and remember, apparently undermining our ability to engage in 'linear thought', and encouraging us to adopt highly superficial forms of information processing (Carr, 2008, 2010). But what is the real cognitive impact of the Web, and should we be alarmed if it stands to fundamentally alter the nature

AN OBJECT RECOGNITION MODEL USING DEEP LEARNING APPROACH

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Abstract:
. The ability to recognise specific instances of certain items in photos, movies, or video recordings is known as object detection. It creates an intelligent and effective understanding of photos that closely resembles how human vision functions by identifying the various features of Images rather than using object detection algorithms. Beginning with a brief overview of deep learning and well-known object detection systems as CNN (Convolutional Neural Network), R-CNN, RNN (Recurrent Brain Network), Faster RNN, and YOLO (You Only Look Once), this paper will then discuss the application of deep learning to image recognition. Then, along with certain improvements and tweaks, we focus on the architecture of our suggested object identification model. The traditional model can identify a little object in images. Our suggested model accurately predicts the desired result.

INTRODUCTION
Robots with computer vision capabilities are occasionally and inexplicably too sluggish and inaccurate, despite the fact that the human eye can instantly and accurately recognise a given visual, including its content, location, and neighbouring images by interacting with it. Any advancements made in this area will boost performance and efficiency, maybe paving the path for more intelligent systems that behave like people. As a result, technologies like modern technology, which enable people to carry out tasks with little to no conscious effort, will undoubtedly make life much simpler for us.

Driving a car with computer vision-enabled assistive technology, for instance, could predict and alert a driving crash before it occurs, even if the driver is unaware of their behaviours. Real-time object recognition has consequently emerged as a crucial element in the ongoing automation of or replacement of human processes. In the future, it is anticipated that computer vision and object identification, two vital and highly significant areas of machine learning, will assist to unlock the potential of general-purpose robotic systems.

Making information accessible and transparent to all parties involved has become a straightforward task thanks to the continuing innovation in current technology. The widespread use of cell phones and ordinary PCs (laptops) has made the world substantially more open. Along with the globalisation of the internet, the amount of information, data, and images available on the web and in the cloud has grown to the point that millions of people use them every day. People struggle to complete the same iterative assignments or activities, making the usage of electronic devices to utilise this data and create significant acknowledgments and cycles necessary. Perceiving a specific item or area on a picture may be the underlying advance of most such cycles. The acknowledgment interaction is incomprehensibly difficult to conduct through a typical modified PC computation because of the unconventionality of the accessibility, area, size, or state of a thing in each image. For ML, deep learning is necessary. For object detection, far too many methods have been suggested. Deep learning encompasses object detection methods and techniques. A crucial area of machine learning is object detection, which is widely used in computer vision. Around 2006, deep learning started to gain popularity. Over time, numerous techniques have been put forth to address the problem of object identification. These methods are centred on providing solutions at various phases. These central steps specifically include

ANALYSIS OF 5G NETWORKS

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Abstract: The world of 5G is still growing, with many countries rolling out networks. Despite the buzz, folks are unsure how 5G can handle critical tasks securely. It gives a brief look at 5G's fresh elements, like its Service Based Architecture (SBA) and key Network Functions (NFs). It also covers the new safety measures in User Equipment (UE) and Radio Access Network (RAN), the trust model, and security tools (like the 5G AKA protocol). Plus, it introduces the common API framework (CAPIF). The paper also notes possible security worries and refers to relevant studies. Lastly, it hints at new research paths.

I.   INTRODUCTION

The rollout of the fifth generation (5G) cellular network is underway in several countries, predominantly in what is known as Non- Standalone (NSA) mode. This mode facilitates the gradual integration of 5G capabilities into pre-existing 4G networks, allowing for a smoother transition and optimal utilization of existing infrastructure. The advent of 5G signifies a significant leap in technological potential, promising a multitude of applications across various sectors. Its capabilities, such as Enhanced Mobile Broadband (eMBB), Ultra Reliable Low Latency Communications (URLLC), and Massive Machine Type Communications (mMTC), open up unprecedented possibilities for diverse industries. These encompass improved connectivity for mobile devices, highly reliable and low-latency communications, and efficient communication with a massive number of devices. While 5G doesn't represent a complete overhaul of the network architecture, it introduces remarkable enhancements compared to previous generations. In particular, the core network of 5G embraces a service-based architecture (SBA).

This architectural approach offers considerable flexibility and scalability, catering to the evolving landscape of emerging functionalities and services. Notably, this design allows for the seamless integration of additional functions into the network without necessitating a complete reconfiguration of the existing architecture. Notably, the 5G core network embraces a service-based architecture (SBA), delivering substantial flexibility and virtually limitless scalability. This design allows seamless integration of additional functions to adapt to emerging functionalities and services without necessitating alterations to the existing network architecture. While 5G does not constitute a complete overhaul of the existing network architecture, it introduces substantial improvements over its predecessors. Particularly, the core network of 5G adopts a service-based architecture (SBA). This architectural approach grants remarkable flexibility and scalability, aligning with the evolving landscape of emerging functionalities and services. This design facilitates the seamless integration of additional functions into the network without necessitating a comprehensive overhaul of the existing architecture. The modular nature of the 5G core network, facilitated by the service-based architecture, permits the integration of corresponding functions without disrupting the established network framework. This adaptability ensures that the network can swiftly accommodate emerging functionalities and services as needed, ultimately providing a more efficient and versatile platform for the ever-evolving requirements of modern communication.

I.   LITERATURE SURVEY

-       5G networks are capable of delivering gigabit speeds and sub-millisecond latency; This will

DATA COMPRESSION MODEL FOR WIRELESS SENSOR NETWORKS USING DEEP LEARNING TECHNIQUE

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Abstract :   . The WSN sensor nodes have a finite amount of battery life. The life expectancy of the detector nodes is increased by making efficient use of battery capacity. The majority of the energy has been used in the transmission of a substantial volume of data that the sensor nodes have gleaned. One efficient way to decrease communication energy consumption in WSNs is data compression. Compaction Model using Denoising Autoencoder (CM-DAE), an innovative model to compress data and lower communication energy consumption, has been proposed in this work using cluster-based WSN. In the proposed work, data pruning is done by cluster member nodes using a deep-learning approach. For the purpose of transmitting sensed information to the base station, the cluster head nodes compress the data using neural networks. Using data from real sensors, the proposed model is examined and analyzed with the frameworks. The experimental results demonstrate that the suggested model outperforms other existing schemes in terms of energy savings, lifetime of the network, and ratio of delivered packets.

I. INTRODUCTION

Wireless sensor networks (WSNs) are composed of a large number of small, inexpensive sensors to perform a distributed task. The deducting, processing, and information transfer are all parts of how sensor nodes in WSNs operate. The sink can carry out more complicated operations than the regular nodes and is typically connected to a power source. Wireless sensor networks face difficulties with coverage, scalability, low latency, data collection, and other aspects. The tiny batteries that typically power the sensor nodes cannot be changed or recharged.

In a wireless sensor network, many sensors are useful for collecting and communicating information on their own. The network experiences uneven energy consumption as a result of data switch from the origin sensor to the base station. Because neighboring sensors at the drain are most frequently used for data transfer to the sink, they quickly run out of supplies, which leads to the sink getting out of control. The life expectancy of the network is shortened as a result.

Numerous WSN issues consideration must be given in order to produce a highly energy-efficient WSN. Data transmission and collection are one such issue. Sensor nodes only use the majority of their energy during the gathering and transmission of data. The data collection method describes how sensor nodes function to collect information and send it to the drain.

In a cluster-based WSN, all the sensor nodes are grouped into clusters. A distinct node acts as the cluster head in each cluster and the other nodes serve as members of the cluster. Through the group head, the member nodes' sensed data are transmitted to the base station. Various data compression techniques are used in WSN to lower communication energy consumption. Additionally, current neural network-based compression techniques enhance compression while ignoring the network's computation time and WSN application potential. It's possible that the sensor nodes' data collection is redundant and sparse. A decrease in transmission energy is required to lengthen the lifespan of the sensor nodes.

ENERGY-EFFICIENT NONVOLATILE 7T2M SRAM CELL WITH IMPROVEDNOISE MARGIN FOR COMPUTATIONS

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Abstract— The current computing systems are facing von Neumann bottleneck (VNB) in modern times due to the high prominence on big-data applications such as artificial intelligence and neuromorphic computing. In-memory computation is one of the emerging computing paradigms to mitigate this VNB. In this paper, a memristor-based robust 7T2M Nonvolatile-SRAM (NvSRAM) is proposed for energy-efficient In-memory computation. The 7T2M NvSRAM is designed using CMOS and memristor with a higher resistance ratio, which improved the write margin by 74.44% and the energy consumption for read and write operation by 5.10% and 9.66% over conventional 6T SRAM at the cost of increment in write delay. The read decoupled path with the VGND line enhances the read margin and read path Ion/Ioff ratio of 7T2M NvSRAM cell by 2.69× and 102.42%, respectively over conventional 6T SRAM. The proposed cell uses a stacking transistor to reduce the leakage power in standby mode by 64.20% over conventional 6T SRAM. In addition to the normal SRAM function, the proposed 7T2M NvSRAM performs In-Memory Boolean Computation (IMBC) operations such as NAND, AND, NOR, OR, and XOR in a single cycle without compute-disturb (stored data flips during IMC). It achieves 4.29-fJ/bit average energy consumption at 1.8 V for IMBC operations.

INTRODUCTION

He state-of-the-art computing system based on Von Neumann architecture [1] suffers from Von Neumann Bottleneck (VNB) which hinders the further development of high performance and energy-efficient computing system. The conventional Von Neumann architecture has a separate unit for storage and computation, as shown in Figure 1(a). This physically separated memory and computation unit result in large energy consumption for data transfer between these two units. There have been many attempt for evaluation in a computing paradigm to overcome this van-Neumann bottleneck and energy inefficiency. To suppress the Von-Neumann bottleneck and to minimizing the energy consumption, In-Memory computations has been recently used in a computing system where data processing inside memory. In-memory computing system [2] has integrated computation unit (ALU) and memory unit as shown in Figure 1(b), which eliminate the energy consumption due to frequent data transfer operation between memory unit and ALU. In-memory computations has a huge impact on a computing system for a futuristic application like artificial intelligence, neuromorphic computing machine learning [3] - [4].

WIRELESS SENSOR NETWORK-BASED CAPACITIVE SOIL MOISTURE SENSOR MONITORING SYSTEM

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Abstract—. The humidity of the soil is known to change slowly. However, due to the nature of the capacitive sensor, which is sensitive to environmental disturbance, the received humidity reading taken by the sensor could change drastically which is not reflecting the actual soil humidity conditions. In reducing the variations, data averaging could be incorporated. It is known that the longer the averaging points the lesser data fluctuation will be. However, in wireless sensor applications where energy usage should be as minimum as possible, the faster the sampling period gives more energy penalty. In this paper, an empirical experiment to determine how fast the data sampling and the number of averaging points result in the best soil humidity data taken by a capacitive sensor is presented. With the criteria of least data variance with the smallest sampling period result in 200 ms data sampling with a 1000-point average gives the best data quality.

INTRODUCTION

Since time immemorial, agriculture has been one of the main occupations in many countries. Despite this, the industry still needs a lot of growth. Precipitation and how it infiltrates have a large impact on yield. However, many farmers are concerned about reduced rainfall. Irrigation systems were developed in response to this problem to manage water effectively. Drip inundation is today's most effective way to ensure water reaches the roots of plants. We also need to make sure that our industries are using water efficiently. Soil moisture can be used to determine if a plant needs water at a particular time. Utilizing a dielectric moisture sensor is another method. Since the dielectric constant (the ratio of a material's permittivity to that of air) changes as moisture acts (as the permittivity changes), the capacitance of the sensor will also vary. These sensors are essentially capacitors, with the soil serving as the dielectric part [1]-[2].

Background

Capacitive Soil Moisture Sensors: An electronic component that, when energized, stores electrical energy in an electric field is known as a capacitor. It is made up of two metallic surfaces that are separated by an environment or dielectric material. Capacitance, which is the term used to describe the amount of energy that can be stored in a capacitor, is defined by Eq. 1 [3].

distance between them.

Because the material or environment surrounding or between the plates has a different capacitance [3], any change in the amount of water in the soil around the capacitor plate will change both the capacitance and the sensor oscillator step, which will change the output voltage. We are able to establish a connection between the measured sensor value and the water content [4]. Photovoltaic cells or the feed channel of a microcontroller can be used to power capacitive soil moisture sensors [5]. Given the dependability of their responses, researchers readily accept capacitive soil moisture sensors despite their relevant temperature sensitivity and limited detection range [6].

$$C = \epsilon k \, A$$
$$d \quad (1)$$

CONTROL OF MICROGRID: LITERATURE REVIEW

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Abstract – Microgrid (MG) is a one of the novel concept in power generation. The Microgrid concept assumes a cluster of loads and micro-sources operating as a single controllable system that provides both power and heat to its local area. Not much is known about Microgrid behavior as a whole system. Some models exist which describe the components of a Microgrid. This paper aims to emphasis some research works in Microgrids. It is intended that the works appraised in this paper will supportive for further developments in microgrid. The long term objective is to provide a highly sophisticated works done on Microgrid, so as to allow fully understand how microgrids behave.

Keywords – Microgrid (MG), Proportional-Integral (PI) controller, Fuzzy Logic Controller (FLC), Model Predictive Controller (MPC), Wind Turbine (WT), Inverter, PV array.

I. INTRODUCTION

Microgrids are becoming feasible alternatives to centralized generation and bulk transmission of power by offering a localized power generation, regulation, and consumption. There are a various set of benefits stemmed from microgrids, including but not limited to, enriched reliability by enabling self-healing, enhanced resiliency by responding to extreme events and utility grid supply interruptions, increased efficiency by reducing losses, deferred transmission and distribution upgrades by providing a local supply of loads, and enhanced integration of approachable and adjustable loads. Enhancing a swift integration of renewable energy resources, however, cannot be considered as one of the benefits of microgrids.

Energy is the considered to be the pivotal input for development. At present owing to the depletion of available conventional resources and concern regarding environmental degradation, the renewable sources are being utilized to meet the ever increasing energy demand [1]. Due to a relatively low cost of electricity production [2] wind energy is considered to be one of the potential sources of clean energy for the future [3].

With this renewed interest in wind technology for standalone applications, a great deal of research is being carried out for choosing a suitable generator for stand-alone wind energy control system (WECS). A detailed comparison between asynchronous and synchronous generators for wind farm application is made in [4]. The major advantage of asynchronous machine is that the variable speed operation allows extracting maximum power from WECS and reducing the torque fluctuations [5]. Induction generator with a lower unit cost, inherent robustness, and operational simplicity is considered as the most viable option as wind turbine generator (WTG) for off grid applications [6]. However, the induction generator requires capacitor banks for excitation at isolated locations.

The excitation phenomenon of self-excited induction generator (SEIG) is explained in [7]–[9]. The power output of the SEIG depends on the wind flow which by nature is erratic. Both amplitude and frequency of the SEIG voltage vary with wind speed. Such arbitrarily varying voltage when interfaced directly with the load can give rise to flicker and instability at the load end. So, the WECS are integrated with the load by power electronic converters in order to ensure a regulated load voltage [10]. Again due to the intermittent characteristics of the wind power, a WECS needs to have energy storage system [11]. An analysis of the available storage technologies for wind power

A REVIEW ON OPTIMAL GENERATION TECHNIQUES USED IN MICROGRIDS

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Abstract— **Results of a literature survey done on optimization of generation thought that there is plenty of research study. With the depletion of conventional energy sources and increasing of load demand, there is a need of alternative energy sources, therefore non-conventional energy sources and distribution generation technologies continue to gain popularity. As non-conventional energy sources are intermittent, complete dependence on these sources also makes us to face difficulties such as availability of the electricity generated, weather conditions, cost of the equipment, reliability, power quality, voltage profile etc MG, which is a cluster of distributed generation sources, storages and loads that cooperate together in order to improve the power supply reliability, power quality and overall power system stability. It also integrates the advantages of power generation from alternative energy and non-conventional energy power generation systems connected to the grid. This paper presents different optimization techniques developed in recent days for minimization of cost, over emissions and curtailment of loads.**

Keywords— *Conventional Energy, Non-Conventional Energy, Distribution Generation, Power Quality, Voltage Profile, Reliability, Optimization techniques, Curtailment of loads, over Emissions, Literature Survey.*

Nomenclature

MG : MicroGrid

DG: Distributed Generation

DER : Distributed Energy Resource DSM : Demand Side Management PCC : Point of Common Coupling

PV   : Photovoltaic

WT : Wind Turbine

PQ   : Power Quality

MILP : Mixed Integer Linear Programming PSO : Particle Swarm Optimization MOGA : Multi-objective Genetic Algorithm

I. INTRODUCTION

These years because of the industrial development and increase in population, there have been a tremendous raise in global energy demand. The government provides subsidies on the Electricity supply, theft of electricity, mounting transmission losses, overwhelming power dues, lack of maintenance of the units, administrative incompetence enormous gap between supply and demand have resulted in the

worst ever faced power crisis. Energy deficit in many states have not only adversely impacting the agriculture sector but also the industrial production is being decreased. The cause behind the severe power deficient situation is lack of new investments and also modernization attached with the large transmission losses.

Environmental issues associated with the centralized electric power generation, technological advancements in small-scale power generators, lack of adequate transmission capacities, and volatility of fossil fuels prices have introduced the concept of MG. MGs are subsystems and are defined as a cluster of distribution generation capacities, storage devices and controllable loads. They all cooperate together to improve power supply reliability and overall power system stability. It can

A CRITICAL REVIEW ON IMPLEMENTATION OF FLISR TECHNOLOGY IN DISTRIBUTION MANAGEMENT SYSTEM(DMS) USING COMPUTATIONAL INTELLIGENCE TECHNIQUE

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Abstract— **There is continuous research in various disciplines to address the issues posed by changes in distribution networks, such as islanding detection and microgrid development. Power converters, defect detection, enhancing power system quality, decreasing system inertia, and network reconfiguration are all examples of active energy markets. This critical study is made for the Fault Location, Isolation, and Service Restoration in distribution management systems using various computational intelligence techniques, and conclusions are drawn based on the published research works.**

    Keywords—FLISR, DMS, Computational Intelligence Techniques. Smart Grids.

I. INTRODUCTION

The advance technology using computers are playing vital roles in this era, especially the computational techniques like Artificial intelligence, Data Mining, Robot automated technologies are becoming part of every new research of every disciplines. With the rise of Internet of Things (IoT) technologies and Artificial Intelligence, the energy business has shifted from a hardware to a software-oriented focus in recent years. This has resulted in a vast body of research aimed at increasing grid resiliency, accommodating the integration of renewable energy resources (RES), and utilizing data gathered from the electrical network to give Analysis approaches that can detect system issues and aid in restoring power in a way that affects fewer users [1]. The conventional electric power distribution network has been in service for decades, unable to meet consumer energy demand, particularly when electric power demand is ever-increasing with limited supply [2]. The basic goal of the electrical distribution network is to consistently supply the required electrical energy to the end user, which is dependent on the electrical distribution network quality and efficacy. Because of the rapid increase in power demand, power generation capacity must be increased to avoid blackouts, which cause serious financial problems in developing countries [3]. There is ongoing research in various domains to address challenges introduced by distribution system changes, such as islanding detection, microgrid formation, transactive energy markets, power converters, fault detection, improving power system quality, decreasing system inertia, and network reconfiguration [4,5].Analysis approaches that can detect system issues and aid in restoring power in a way that affects fewer user Resilience is a critical requirement for a grid modernization technology module such as the fault location, isolation, and service restoration (FLISR) scheme to ensure reliable operation in the face of natural disasters or cyberattacks. FLISR has been shown to reduce the number of customers affected by system outages by up to 45% while also lowering consumer outages. Time can be cut by up to 51% [6] However, such advancements necessitate a more robust communication infrastructure for remote grid systems, as well as the ability to operate successfully when the distribution network fails. A centralized distribution management system (DMS) that functions in a hub-and-spoke logical framework is frequently used in modern distribution systems [7] A software architecture that manages sensor and network data is at the heart of smart grid operation.

When the distribution system is built and operated to minimize the effects of any failure, the highest levels of service dependability are obtained. that may happen. In this regard, the Fault Location Isolation

OPTIMAL PLACEMENT OF PMUS IN A MICROGRID

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Abstract—**Improvements in power system control and protection is achieved by utilizing real time synchronized phasor measurements. The trend in recent years is the steady increase of Phasor Measurement Unit (PMU) installations worldwide for various applications those targeted for State Estimation enhancement. In this paper, Power System Analysis Toolbox (PSAT) is used for power system analysis and control. PSAT is used to solve the PMU placement problem using different methods for a 2MW Microgrid formed with the help of IEEE 14 bus system.**

Keywords—Synchrophasors, Phasor Measurement Unit, Microgrid, OPP

I. INTRODUCTION

Electric power system is network of electrical devices, transmission and distribution and also component of electric system for use of good quality of power at the load end. Electric power system is network of electrical component that supply a region, homes and industries with power. Power system is a grid Electricity is associated with the presence of flow of electric charge. Electric power is product of two different quantities that is electric current and electric voltage. These both quantities varies with time and also kept at constant values in DC. Because most of our daily appliances use A.C. and some other like computer and digital equipment use D.C. power. A.C. power is a practical choice because it is easy to transform and generate. But D.C. remains practical choice for DC systems and it is more economical for transmit over high voltage. Electricity can be generated in different ways in different power plant like, solar energy system, hydroelectric energy plant, thermal power generation plant, wind power system, nuclear energy power plant etc.

In hydro power plant we use water for the production of electricity by making dams. In this kinetic energy is used to convert to electric energy. In solar power plant we use solar energy to produce electric energy. In solar power generation we use solar cell to convert solar energy into electric energy. Solar cells are act as transducers. Which convert one form of energy into other? Solar cell produces DC output voltage at the end. In wind power plants we convert wind energy into electric energy. For that we use wind turbines and then mechanical power generators for production of electricity. But there are some limitations with it that they are used at places where high speed of wind is present.

Thermal power plants are used to convert coal energy in electric energy. In this we burn the coal and generate steam from that and then that steam is used to rotate the turbine and that energy is converted into electric energy.

In nuclear power plant is we convert nuclear energy into electric energy. In these plants we generate heat to produce steam and then that steam is used to rotate the turbine system and then mechanical energy of turbine is converted into electric energy using generator.

In today's world most of the countries in the world have been affected by number of power failure, blackouts and faults. These are caused by lack of investment in protection equipment and controlling system infrastructure, improper maintenance and continuously increase in demand of electric power that overset the power transmission and distribution system limits. And due to these companies who invest in power system are suffering from losses of billions of dollars. To achieve batter reliability and for continuous operation of power system new technologies are used to prevent the blackouts. Today we are implementing state of then art

POWER QUALITY IMPROMENT IN MICROGRID

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Abstract: **This paper discuses on the power quality issues which occurs in the power system and there solutions based on power electronic components various types of power filters are used the increased problem in power network regards to power quality this has taken awareness by power engineers to build a solution to this problem the component design to overcome the power quality problem are filters and are also called as power line conditions are able to satisfy current and voltage harmonic, voltage harmonic, relative power regulated terminal voltage, suppers flicker and to improve voltage balance in 3 phase system they can satisfy several harmonic orders and not be affected by major difference in network characterises and removing the risk of resonance between filters and network impedances the major discussion is on series shunt and hybrid.**

Key words:- Power quality improvement, shunt power filter, series power filter, hybrid power filter etc, microgrid etc.

I. INTRODUCTION

Power: power is the combination of current and voltage. Power is one of the major dependences in the world, increasing in world population the generation & distribution side the consumption varies so the quality of the power gets affected. some of the conditions or reason where the power quality is been affected due to lightning, over load, short circuit, and some abnormal conditions, they are some major problems occurs during transmission of power supply these problems leads to power losses in large amount due to this there is a slight downfall in economy and there is an add in burden to the generation stations so to avoid the burden we use renewable energy like solar, wind, hydro. It produces small amount of electricity to contribute to the generating system. As far as the recent UN submits the contribution of fossil fuels (nonrenewable resources) should be used less and the usage of renewable energy sources should be high in terms of power generation. To this all the world nations have come up in contribution in world power with the use of renewable sources and reduce in the pollution and they are trying to pollution free earth. The main goal of the distribution's centres is to supply uninterrupted power supply to make this possible we see the various problems like voltage sag, voltage spike, harmonic distortion, voltage unbalance etc.

THE STUDY OF SMART MICROGRID STABILITY USING DIESEL ENGINE GOVERNOR AND EXCITATION SYSTEM CONTROLLERS

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Abstract— In recent years, the demand on renewables has been continuously increasing which is motivated by environmental policies to push for the retirement of fossil fuel power generations and to move toward zero carbon emissions. The driver of enhancing the power system reliability makes it feasible to interconnect conventional grid with renewables. The concept of smart grid has enabled the monitor, control and automatic dispatch of power flow in today power network. This paper will review the impact of renewables penetration on conventional grid stability, and also it will introduce some approaches to improve the power system stability. In the last sections of this report, the modelling of diesel engine with governor and excitation system controllers will be described and simulated in smart microgrid case study to evaluate the transient and small-signal stabilities.
Keywords— Smart Microgrid, Conventional grid, Governor, Excitation, Stability

I. INTRODUCTION

Electrical power generations are strategically located closer to power resources or nearby water sources for the purpose of logistics and cooling respectively. As some of power grids are separated in remote locations, the economic advantage of integrating local grids with national grid could be not a cost-effective solution. However, as the power demand increases and the redundancy of the power supply to the customers is a reliability concern, interconnecting local grids can contribute sustainability to overall power generations and consumptions. In conventional grids, spare generators are hold on standby mode to overcome stability issues during peak times and prevent poor power quality and blackouts. In addition, at low power demand during the day, some turbine generators are required to be turned off. One solution to effectively utilize turbine generation is to motivate the change of power consumption behaviour by introducing dual tariff with low-rate charges, especially when power demand is low at night. There are other approaches that are not affecting the customer behaviour such as introducing power storage systems and renewables. Although the penetration of renewables can supply high clean energy, but there are some engineering designs concerns (such as power electronics harmonics and trading flexibility) of interconnecting renewables with national grid. As the technology advancing, it is possible exchange power information between power generators, storage systems, and customers through IT solutions. Furthermore, the implementation of remote power switching and isolations became smarter and safer at different power network levels in the generations, transmissions and distributions.

In this paper, the second section will review the impact of renewables penetration on conventional grid. The third section will introduce some approaches to improve the stability in smart microgrid. The fourth section will focus on the modelling of diesel generator governor and excitation system controllers to maintain frequency and voltage at the nominal values. The last section will illustrate a case study where smart microgrid will be simulated in Simulink to evaluate the performance of diesel engine governor and excitation system controllers during transient and small-signal stabilities.

REVIEW RENEWABLES PENETRATION ON CONVENTIONAL POWER GRID

In Conventional power grid, the power network is design in hieratical structure where high voltage power generations transferred through transmission lines into medium or low voltage distribution networks, feeding industrial, commercial and domestic loads. However, the integration of distributed renewables into main grid requires new formation of power grid topology. The distributed generation

PV SYSTEM BASED CASCADED MULTILEVEL INVERTER: A CRITICAL REVIEW

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Abstract— **This paper presents a single-stage circuit topology consisting of the association of a full-bridge isolated dc–dc converter and two input inductors and two input diodes connected to the mains network, in order to obtain an isolated ac/dc switch mode power supply, with sinusoidal input current. The topology does not use an input bridge rectifier, common in similar applications. The current in the two input inductors can therefore, flow in both directions. Consequently, the different topology equally distributes the current by the four-bridge transistors that provide four input parallel boost power factor correctors (PFCs). The use of the four bridges permitting the accurate simultaneous regulation of output voltage and input current is hereby described.**

Keywords— *Full-bridge converters, Input current shaping, low-distortion input current, single-stage power factor correctors (PFCs)*

I. INTRODUCTION

In modern technology, power electronics and processor plays a vital role in the field of motor control, light control, heat control, power supplies, vehicle system, HVDC, FACTS and renewable applications. The philosophy focuses on preserving the energy and meeting the power demand accurately and the power modulator pertaining to inverter / converter technology fulfills the requirements and this attracts the researchers to explore in the inverter field. The above-mentioned applications work in the range of medium power, high power at a higher voltage. With the help of semiconductor device technology, power converters are to be designed with higher operating voltage. As a single device fails to support such high voltages, a number of devices need to connect in series to meet the voltage rating. Another challenge in the industrial sector is the requirement and maintenance of the sinusoidal power supply with variable voltage and frequency. The above demerits are overcome by the introduction of Inverters. The series connected switches in the inverters and through control mechanism, the voltage stress with respect to high voltage rating is shared among the series switches and also the losses are minimized. Due to advantage of minimum losses, inverters is also used for medium voltage applications. The classical square wave inverter operating at higher voltage introduces the dominant harmonics, thereby the performance on the load side and on the front end of the inverter has a large impact and the performance is affected. Though the solution is sought through the passive filters, the loss are increased and occupies more space. The alternative path is provided by Multilevel Inverters (MLI). MLI generates sinusoidal voltage waveform in the form voltage steps through switching sequence. The other advantages of MLI are reduced electromagnetic interference, reduced current distortion, good quality voltage waveform, good current waveform. The basic types of MLI are neutral point clamped MLI, flying capacitor MLI and cascaded H- bridge MLI. To synthesize nearly sinusoidal voltage, higher number of levels needs to be generated with the help of more number of switches, more number of sources and more number of gate drivers. Due to this, the efficiency decreases as more number of switches are utilized in the conduction path.

DESIGN AND IMPLEMENTATION OF FIFTEEN LEVEL INVERTER FOR SOLAR PV APPLICATION

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Abstract: - **It is suggested to use a modern multilevel inverter with fewer power switches. This novel cascaded H-bridge multilevel inverter. Power generation from solar power plants is increasing daily to lessen its negative environmental effects. For the AC loads or to connect to the grid without impairing grid performance, the generated DC must be converted to AC. A multilevel inverter is an excellent choice because it produces an output voltage with a stepped waveform that is close to a sinusoidal and has less harmonic distortion. The harmonic distortion decreases as the number of levels rises, but at the same time, more switching devices and DC voltage sources are needed, which makes the system design and control more difficult.**

Key Words: Multilevel inverter, H-bridge, AC Load, DC Load, Harmonics, Switch, Waveform.

1.INTRODUCTION

The use of renewable energy sources for power generation is increasing quickly because of the rapidly shrinking fossil fuels and their adverse environmental impacts. Proper synchronization is a crucial need when several renewable energy units are coupled and integrated with the grid. As solar PV systems generate DC power, an inverter must be connected to produce the AC needed to connect to the grid [2]. The power fed into the grid contaminates the electrical system if the inverter's output contains harmonics. Thus, a good inverter design with minimal harmonic distortion is required [5]. Multilevel inverters are widely used these days compared to their range in voltage operation and function. By utilizing numerous diverse independent sources of dc voltage, the multilevel inverter generates the necessary output. By using a switching frequency and a rising number of DC sources, the inverter voltage output waveform is almost sinusoidal. Many dc sources result in minimal switching losses and low voltage stress [1]. Minimal Electro Magnetic Interference (EMI) output, high efficiency, minimal switching losses, high voltage operation capabilities, and ongoing multilevel inverter operation are all signs of this inverter's benefits. A three-level inverter serves as the root of the word "multilevel"[3]. Multilevel inverters are becoming more common in power electronic applications because they have a good ability to fulfil the increased demand for power. A consensus has been reached that the power electronics will take a main role in the future energy area. But which favorite type of grid-tied inverters for the future is still discussed. Dependent on the efficiency evaluation, the smaller inductance in the power loop will cause a higher efficiency, since the power loss caused by power device has become smaller and smaller [12]. Thus, it may be a good way to achieve high efficiency through decreasing the total inductance in the power loop.

AN ANALYSIS OF THE NATIONAL STANDARD DEVELOPMENT QUALITY PARAMETER REQUIREMENTS FOR BATTERY SWAP IN ELECTRIC VEHICLES

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Abstract: Every year, it is anticipated that the electric vehicle market would grow. Batteries were utilized to store energy for use in electric cars. When the battery's energy runs gone, it needs a lengthy energy charge. A battery swap mechanism provides the solution to this energy charging time. This study set out to examine the parameters of the quality criteria for the creation of an electric vehicle national standard battery. Non-probability sampling using a purposive sampling strategy was used for the sample process. The strategy is anticipated to address the standard specifications of electric car swap batteries in India, as the respondents comprise a diverse range of stakeholders with a direct connection to electric vehicles. Descriptive analysis was used to analyze the data. Numerous characteristics, including battery type, size and dimensions, security system requirements, communication, protection against electric shock, equipment construction requirements, electromagnetic compatibility, marking and instructions, and protection against electric shock, were obtained based on the research results. These specifications should be able to be taken into account when creating the Indonesian National Standard that controls battery swapping in electric vehicles.

Keywords: Battery swap Electrical vehicle Indian National Standard Parameter

1.   INTRODUCTION

The electric vehicle industry is increasing from year to year. The share of the electric vehicle (EV) market is expected to grow from around 1% to around 30% in Europe and around 15% in the US in 2025, totaling 130 million by 2030 globally [1]. The increase in the electric vehicle industry is accompanied by the awareness that there has been an increase in emissions of gases that are harmful to the environment, as well as a reduction in natural resources in the world. Electric vehicles are one of the most effective ways to reduce petroleum consumption [2]. Compared to petroleum-fueled vehicles, electric vehicles have low engine noise levels and high energy efficiency [3]. Electric vehicles are a good form of transportation as a substitute for fueled vehicles because they do not produce emissions and are environmentally friendly. The development of electric vehicles will not only help reduce carbon emissions from the transportation sector but will also support the development of electrical installations [4].

Electric vehicles use energy stored in battery packs. The battery is a storage medium consisting of two electrodes on an electrolyte. These electrolytes provide a medium for ion exchange which generates electricity [5]. When the battery is connected to an external circuit, the electrolyte will move as ions and a chemical reaction occurs at both poles. The movement of ions in the battery will drain the electric current out of the battery so that it produces work [6]. The battery will determine the mileage of an electric vehicle.One of the electric vehicles that are widely developed today is an electric motorcycle. Electric motorbikes are expected to replace motorcycles that run on oil. Motorbikes as a means of personal transportation have the highest percentage of inter-city transportation in Indonesia [7]. The following is data from the Indonesia's Central Statistics Agency (BPS) regarding the number of various vehicles in the last five years, starting from 2014 to 2018. According to data from the Central Statistics Agency, the number of motorbikes in 2018 reached 120,101,047 and the number of passenger cars was 16,440,987 vehicles (Figure 1). This data is the latest data released by the Statistics Indonesia and no latest data explains the number of vehicles in 2020, but according to data from the Association of

A REVIEW OF THE TECHNO-ECONOMIC ANALYSIS PER SAUDI REGULATIONS TO SUPPORT BUILDINGS WITH PV-GRID-CONNECTED SYSTEMS

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Abstract: The need to develop ways to improve power output is growing as Saudi Arabia's demand for electricity keeps rising. However, traditional methods of generating electricity, including burning fossil fuels, release greenhouse gases into the atmosphere that are harmful to human health and the environment. Using solar energy, which is advantageous in Saudi Arabia because of its location in the sun belt, is one possible solution to this issue. Solar energy is a competitive substitute for traditional power generation techniques, especially when one takes into account the indirect costs associated with fossil fuels, such as damage to the environment and public health. One important way to generate renewable energy is by converting sunlight into electrical energy using photovoltaic cells.

Keywords: solar energy; Photo voltaic system; building energy; rooftop; PV-grid-connected; techno-economical

Introduction

Saudi Arabia primarily occupies the Arabian Peninsula. It is located far southwest of Asia, in the Middle East, between the latitudes 16° N and 33° N and longitudes 34° and 56° E. Almost two million square kilometers of the nation are uninhabited. Seven- rated arid sand and soil desert make up most of the country outside the mountainous south. In the west, along the Red Sea, Saudi Arabia has a coastline of approximately 1100 square kilometers; in the east, along the Arabian Gulf, it has a coastline of approximately 610 square kilometers. As a result of the presence of the two holiest cities in Islam (Makkah and Madinah), the nation receives about two million Muslim pilgrims every year for the Hajj. Saudi Arabia has thirteen different provinces, each governed by a minister in the Ministry of Interior. A 640,000 km^2 area in the southeast of the country is uninhabited, known as the Rub Al-Khali. Figure 1 shows Saudi Arabia's electrical grid, using color to indicate which facilities have been turned on (green), which are currently being built (red), and which facilities are still in the planning stages (blue) (dark blue).

Energy shortages are present in all countries, even those with abundant resources. Despite being a significant oil producer, Saudi Arabia is well aware that it will need to secure its energy supplies shortly. As domestic consumption far outpaces domestic production, some analysts forecast that the United States will be a net importer of oil by 2038 [2]. Fossil fuels, particularly the oil and natural gas found and extracted within Saudi Arabia's borders, provide the majority of the energy used by the country.

MODERN TRACKING-INTEGRATED CPV TECHNOLOGY: CATEGORIZATION AND TRACKING

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Abstract : With its focus on concentrating solar radiation onto smaller, more effective solar cells via the system's optics, concentrator photovoltaic (CPV) technology provides an alternative to traditional photovoltaic systems. Direct radiation is captured using CPV technology, which necessitates exact module alignment. In order to attain the required alignment, traditional CPV systems employ large, powerful solar trackers, which raise installation and running expenses. Tracking-integrated CPV systems have been created as a solution to this problem, doing away with the requirement for traditional trackers. The CPV module in these systems has tracking features built right in. This review offers an overview of this sort of system with several ways to integrated tracking, such as tracking concentrator elements, using external data sources, and includes a complete classification of existing designs in the literature.

Keywords: Parabolic concentrator photovoltaic; solar tracker; optics; tracking-integrated

, Introduction

Power generation using fossil fuels has been the traditional form for a considerable period. This mode of production faces significant challenges due to the limitation of these resources, and the growth of the population and industrial development has led to a rapid depletion of fossil fuel reserves. This situation raises both economic and environmental concerns, as the increase in demand for these fuels for energy generation coincides with a decrease in supply due to their scarcity. As a result, a country's economy can become increasingly unstable. Furthermore, the negative environmental impact caused by high greenhouse gas emissions during their combustion raises serious concerns [1]. Conse- quently, current environmental policy focuses on mitigating climate change by reducing carbon emissions and achieving the Net Zero Emissions by 2050 Scenario [2].

In this transition toward a more sustainable energy system, renewable energies are be- coming the primary development direction supported by the scientific community. Among them, photovoltaic (PV) solar energy and wind energy stand out above the rest. These sources of clean energy are experiencing accelerated growth in their share of electricity generation as their use is essential in reducing emissions and ensuring a sustainable, carbon-free energy supply in the long-term.

In the case of PV solar energy, its production reached a record 270 TWh in 2022 [3], surpassing wind energy for the first time in terms of generation. Currently, the accumulated capacity of PV energy represents 14.7% of the total, and this upward trend is expected to continue in the coming years [4]. It is projected that by 2030, the accumulated capacity of

Conventional CPV systems require precise alignment and normal incident radiation at the module input. This is usually achieved by an external solar tracker that follows the movement of the Sun [10]. However, solar trackers represent an additional cost for both assembly and annual maintenance, making them a necessary but costly element of CPV technology. Although CPV

## PFC BASED BRIDGELESS SEPIC CONVERTER USED FOR DESIGN OF EV CHARGER

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Abstract—The efficacy of conventional PFC circuits in battery chargers for electric vehicles (EVs) is limited. This work presents a bridgeless single ended primary inductance converter (SEPIC) with higher power quality in order to address the losses related to the DBR. Throughout the whole switching cycle, the charger's input current draws demonstrate a unity power factor operating. Significant control over conduction losses is achieved with the removal of DBR. Using a variety of operating modes, the overall performance of the proposed bridgeless SEPIC converter is examined.When the battery is charged in the constant current/constant voltage control mode, inherent power factor correction yields good results, enhancing the charger's overall performance.
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Keywords— Electric Vehicle; Bridgeless system SEPIC Converter; Diode bridge rectifier (DBR); Power Quality; Constant Current/Constant Voltage (CC/CV) control

INTRODUCTION

The recent and upcoming vehicle technology comprises an energy storage system known as BESS (Battery Energy Storage System), which charging system incorporates certain power electronic interfacing circuit as illustrated. These powerelectronics circuits that regulate the charging voltage for BESS, should be designed efficient enough to maintain international power quality (PQ) standards at the input side ofthe AC-DC converter, as given. Being a key component of anEV charger, the front-end PFC converter should be designed to achieve the efficiency and size goals along with inherent unity power factor operation. In order to have maximum power supply efficiency, lots of efforts have been made in literature to design bridgeless PFC converter topologies which reduces switches conduction loss by eliminating the diode bridge rectifier (DBR) and thus, making the current to flow through less number of semiconductor switches. For power factor correction, conventional boost converter, with diode bridge, has been the foremost choice in power electronics equipment but at high power levels, boost converters involve some severe issues like converter efficiency degrades due to
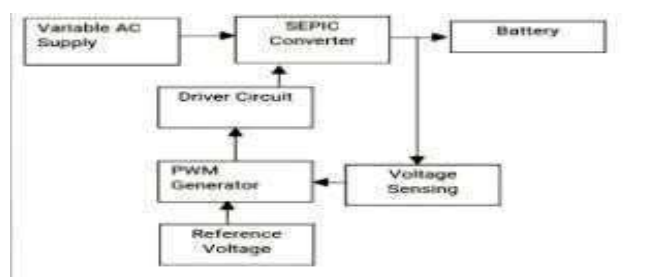
increased bridge losses, increased size of inductor and increased high frequency ripple in DC link capacitor if a low value of inductor is selected.. A comprehensive study of various single phase AC-DC PFC converters has been discussed in with their procedures, and control techniques employed and performance verification in different applications. Because of low conduction losses, reduce input current ripple, good efficiency at low level of input voltage and lower switch voltage stress.

Fig. 1. Block diagram of A EV Battery   Charger Using a PFC basedBridgeless SEPIC

ELECTRICAL VEHICLE SOLAR POWERED HYBRID CHARGING STATION

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ABSTRACT
This work presents a control approach for managing the power flow of a hybrid PV-AC system that uses an effective MPPT DC-DC (Buck-Boost) converter. The proposed system uses a microcontroller connected to a hybrid supply with the aid of a relay to meet load demands, minimize power outages, and regulate power flow from various sources. It also injects excess grid power to charge the battery when power from the PV panel is not harvested. While buck-boost converters are used to harness power from PV combined with battery charging/discharging control and are connected to relays, transformer coupled bridge converters are used to capture power from the AC grid. The relay operates as an open circuit when solar energy is used.

KEYWORDS:
Photovoltaic; electrica vehicle; carbon reduction; charging station; inverter Converter

INTRODUCTION
This project based on developing charging station for Electric Cars using combination of solar and grid power to encourage the use of Electrical Vehicle and to decrease power demand. Rapid depletion of fossil fuel reserves, ever increasing energy demand and concerns over climate change motivate power generation from renewable energy sources. Solar photovoltaic (PV) have emerged as popular energy sources due to their eco-friendly nature and cost effectiveness. However, these sources are intermittent in nature. Hence, it is a difficult to supply stable and continuous power using these sources. This can be addressed by efficiently integrating with energy storage elements. The interesting complementary behavior of PV power insulation and Grid power minimum utilization pattern coupled with the help of DC-DC converter, has led to the research on their integration resulting in the hybrid PV systems. To achieving the integration of multiple renewable sources to overcome the power interruption and power demand in our proposed system, the traditional approach involves using dedicated single-input converters one for each source, which are connected to a common DC-DC converter for maximum the efficiency of the system. However, these converters (DC-DC) Buck-Boost are not effectively utilized, due to the intermittent nature of the renewable sources. In addition, there are many power conversion stages which reduce the efficiency of the system.

WORKING
PV panel is connected to the MPPT, which act as Buck-Boost. When the power supply from PV panel is not enough then MPPT act as an Boost converter, When the power supply from PV panel is more than the optimum voltage then the MPPT act as Buck converter and fed to rechargeable battery. The microcontroller is connected to the system to monitor the voltage rating and display the

A NOVEL DESIGN FOR BATTERY/ULTRACAPACITOR ENERGY STORAGE SYSTEMS AND THEIR INTEGRATION WITH MOTOR DRIVES FOR HYBRID ELECTRIC CARS

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Abstract— In this study, a novel design for an energy storage system (ESS) that combines batteries and ultracapacitors (UCs) for use in electric and hybrid vehicles (HEVs) is proposed. A dc–dc converter is needed in the traditional designs in order to interface the UC unit. In this case, during periods of peak power consumption, the UC can be switched straight over the motor driving dc link. In this study, a simple modulator is presented to alleviate the broad voltage variance coming from UC power transfer, without interfering with the motor drive performance. This research also offers two ESS methods with various topologies, UC rating and energy flow control, based on this innovative methodology. Both lightly and heavily hybridized HEVs can use them. Each plan has advantages.

voltage across the motor drive dc link remains constant. The dc–dc interfacing converter introduces considerable switching and conduction power losses. It also poses stability issues, par- ticularly at high inrush currents [4], [5]. Moreover, it adds cost and weight to the system, particularly with its large inductor rated for the peak power transfer. In this paper, a new approach is introduced to directly interface the UC unit with the motor drive dc link. As shown in Fig. 2(a) (scheme I), no intermediate Link is required. This proposed ESS topology has a fault tolerance feature in that the UC is protected against overcharging when the controller malfunctions because of the discharge path via the antiparallel diodes D1 and D2, for smooth operation of electric vehicle.

Keywords—**Energy storage, hybrid vehicle, power manage- ment, regenerative braking, ultracapacitor (UC).**

I. INTRODUCTION

ENERGY storage systems (ESSs), which include both batteries and ultra capacitors (UCs), have been widely studied in hybrid electric vehicle (HEV) and electric vehicle (EV) applications [1]–[12], [17], [18]. Employing UCs relieves the high-energy-density battery unit from the peak power transfer stress due to their higher specific power and efficiency [13]–[18]. This extends the battery life span and greatly reduces the required battery size. As depicted in Fig. 1, conventional method of interfacing the UC unit is to use a bidirectional dc–dc converter to control the power flow in/out of the UC. Therefore, despite the wide variations of the UC terminal voltage, the

- **PROVISIONAL MICRO GRIDS: A REVIEW PAPER**

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Abstract: A new class of micro grids called provisional Micro Grids will be developed in this research work to address prevailing challenges in Micro Grid deployment associated with islanding requirements.. The literature survey shows that the Provisionalmicrogridscreatebytheconnectionoftwo beside microgrids to achieve economic benefits. So far, there have been many reviews on AC microgrids. However, due to the many advantages of DC microgrids, they cannot be ignored. To achieve the advantages of both AC and DC microgrids, hybrid structures were considered. and study of H infinity controller to achieve the volatage and frequency control of hybrid micro grid during islandedmode.

Key word : Provisional micro -grid, unconstrained
,optimal planning , optimal scheduling.power management studies.,H infinity controller.

1 INTRODUCTION
The Micro grid is defined by the U.S department of energy is a group of interconnected loads and distributed energy resources (DERs) with clearly defined electrical boundaries that act as a single controllable entity with respect to the grid and can connect and disconnect from the grid to enable it to operate in both grid –connected or other modes. The DER's consist of distributed generators and energy storage which could be installed at electricity consumerspremisestoprovidealocalsupplyofloads. The DER deployment must have three distinct characteristics to be considered as micro grids the electrical boundaries are clearly defined a master controller is present to control and operate available resources as a single controllable entity and installed generation exceeds the peak loads for enabling islanded operation. The Islanding is the most salient features of micro grids. These micro grids islanding capabilityenablesthemicro–gridstobedisconnected from the main grid in case of upstream disturbances or voltage fluctuations. The islanded operation of micro grids provides significant social cost savings and load point reliability enhancements during major outages, which would justify the islanding design as part of micro grid planning decisions. This feature however may result in some drawback which is identifiedasmoremicrogridsareinstalledworldwide . First, islanded operations require that the micro grids installed generation capacity exceeds critical local loads.Themicrogridsmastercontrollercannotrelyon the generation of non-dispatch able units for this purpose.Thisunitwhichprimarilyincludedrenewable energy resources, such as solar and wind produces a variable generation which cannot be controlled and thereispossibilitythattheforecastedgenerationisnot materialized. This issue is also a fairly applicable to energy storage as islanded operation may occur

AN ANALYSIS OF THE INDIAN DERIVATIVE MARKET'S EMERGING TRENDS

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Abstract: – It has been discovered that derivative markets play a major role in mitigating the inherent risk in financial transactions and have a favourable short-term economic development impact on India. These have several uses, including hedging a current market exposure, changing the character of an exposure, obtaining insurance against events like default, and providing downside protection to an exposure while maintaining upside potential. The global derivatives markets have expanded enormously in the last several years. Given India's background in informal derivatives trading, exchange-traded derivatives quickly attracted sizable volumes. Derivatives also aid in price discovery and effective capital allocation in the economy. The aim of this article is to examine the derivative market and its latest advancements in the commodity markets of India.

Keywords: Futures, SEBI forwards, over-the-counter trade, derivatives.

1. Introduction

Derivatives market in India began in 2000 when NSE and BSE commenced trading in equity derivatives. Since then, India has become a huge and vibrant market for derivatives. Equity derivatives play a great role in price discovery. They help to enhance liquidity and also reduce transaction cost. Derivatives in share market gained importance as risk adverse investors wanted to protect themselves against uncertainties due to fluctuations in prices of assets. As the asset prices are locked, derivative products lower the impact of fluctuations in asset prices and thereby serve as tools of risk management. These transfer risk from risk adverse investors to risk takers. Derivatives derive their value from other existing asset classes such as equity, commodity, currency, etc. The participants in the derivatives market are Arbitrageurs, Hedgers and Speculators and there are 4 types of derivative instruments such as forward, futures, option and swap. The derivative market in India, like its counterparts abroad, is increasingly gaining significance. Since the time derivatives were introduced in the year 2000, their popularity has grown manifold. This can be seen from the fact that the daily turnover in the derivatives segment on the National Stock Exchange currently stands at Rs. crores, much higher than the turnover clocked in the cash markets on the same exchange. The paper attempts to study derivative market in India and recent trends.

2. Objectives

The main objectives of this study were:

➢ To have an overview of derivative market in India
➢ To understands recent trends in derivative market.
➢ To identify opportunities ahead in the derivative market

3. Methodology of study

The study has been made on the basis of secondary sources. The different books, journals, newspapers and related websites have been consulted in this regard.

4. Derivatives

Derivative is a financial instrument whose value is based on or value is derived from one or more underlying assets. The under lying asset may be a share, stock market index, a commodity, an interest rate or a currency. When the price of asset changes value of derivative will also change.it isa contract

RESEARCH ON RECENT ADVANCES IN ACCOUNTING AND FINANCE

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Abstract
The relationship between finance and inequality has been the focus of policy discussions lately, rather than the relationship between finance and growth. Putting some structure on recent gains in financing for enhanced inclusivity has been an urgent policy concern throughout the shift from the Millennium Development Goals (MDGs) to the Sustainable Development Goals (SDGs). It has been said that this problem is the "inclusion challenge." This article will focus on the following main question: how much has the expansion of the financial sector helped individuals who are considered low-income to have more opportunities for their personal development, and through what mechanisms has this happened? We conduct a study of the literature on recently released papers to provide updates on the state of the art in inclusive development finance. Analytical steps one and two involve first situating concerns about exclusive expansion within the larger context of pertinent literature and then looking at present financial inclusion growth objectives. Industrialized and developing countries are following different paths to account for the differences in the benefits of economic expansion. The three subjects that make up the organization of the maintained financial innovations are the rural-urban divide, women's empowerment, and human capital in the form of skills and training. Investment strategies, case studies, and innovations are incorporated into the articulation of the financial instruments. Among other things, there is a focus on microfinance, crowdfunding, mobile banking, informal finance, remittances, and the Diaspora Investment in Agriculture (DIA) program.
Keywords: Finance, Inclusive Growth, Economic Development, Accounting.

INTRODUCTION
According to Lewis (1955), "Output may be expanding, but the majority of the people may be getting poorer." Lewis, 1955). The controversy surrounding "immiserizing growth" (Bhagwati, 1958) has resurfaced in the acclaimed "capital in the 21st century" (Piketty, 2014), as has Kuznets' (1955, 1971) assumption of an inverted U-shape linkage between inequality and industrialization. The shift in the paradigm is in line with a section of the research that emphasizes the need to explicitly express income inequality in interactions between poverty and growth. This incorporates, bury alia: the importance of growth elasticities in the formulation of policies (Adam, 2004); the crucial role that inequality plays in reducing poverty (Datt &Ravallion, 1992; 1993,

A SYSTEMATIC REVIEW OF THE PROMOTION OF HEALTH SERVICES IN SCHOOL

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Abstract
Programmes for health promotion benefit the school community. All of them, meanwhile, are unable to achieve the intended outcomes due to a multitude of circumstances influencing their development. These elements consist of the teachers' overwhelming workload, their exclusion from the centres' instruction courses, the absence of specialised instruction, their little time for activities promoting health, and the programmes' flexibility. Schools are the best places to implement health-promoting measures because they can reach all members of the population in particular age groups and implant positive behaviour patterns at a young age. Schools are an important venue for organising a variety of health-related activities. This systematic review set out to map the various types of health promotion programmes and activities in schools in order to examine the quantity of published evaluations and health promotion inside schools.

A systematic review with research synthesis was conducted using searches in 10 electronic databases (CINAHL, EMBASE, MEDLINE, Scopus, Social Science Citation Index, Web de Science, Google Scholar). Journal articles published between 2013 and 2023 that addressed the promotion of health services in schools were eligible for inclusion. Six articles were examined by the research authors after they were cleared for publication.
Health promotion in the context of schools can refer to any activity that is done to improve and/or protect the health of all school users. It encompasses programmes and efforts related to curriculum, community linkages, healthy school processes, the social and physical setting of the school, and health services. It is a more complete idea than wellness education. The findings highlight the diversity of health promotion in schools and point out key facets of this diversity. They stress the need for a more thorough comprehension of the reasons, methods, and circumstances that allow health promotion to be successfully implemented in a variety of educational contexts, including schools.

Keywords: health; health promotion programme; criteria for elementary and secondary education;

Introduction
Health Promoting Schools (HpS) are educational resources that are fast being recognized as essential to improving students' education overall, and especially in the health domain. The development of knowledge and abilities that allow students to reflect on their lives and make decisions about their health is given top priority in these educational establishments. By encouraging a common awareness among all participants in the educational setting, these centers gain an attachment to the creation of instruction on the use of techniques of the spread of healthy habits. Perez-Jorge and collaborators (2021)
The Concept of Health
To effectively tackle this task, it's crucial to first consider the concept of health concerning key skills for students' success in schools. Following (Hernández et al., 2017), the educational community agrees that health, encompassing mental, social, and physical well-being, is a universal human right. Health interventions, as outlined by (Hernández et al., 2017), operate through three models: the sanitary,

CONVENTIONAL FINANCE TO BEHAVIOURAL FINANCE IN THE FINANCIAL MARKETS TRANSITION

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Abstract
The financial market is divided into two categories: traditional finance, often known as conventional finance, and behavioural finance, which was just formed. Formerly, the Harry Markowitz Model, which is predicated on investor rationality, and the Efficient Market Hypothesis were the main topics of discussion in the financial market. The traditional finance theories were called into doubt in the 1990s because of their unacceptably high presumptions. The financial markets have expanded worldwide and are impacted by a wide range of issues, including information sharing, institutional and political limitations, domestic economic processes, and—above all—public perception and response. This study aims to examine the paradigm shift from conventional finance theories to behavioural finance and emphasise the significance of the latter.

Keywords: Behavioural finance, conventional finance, and reason.

Introduction

Finance in any organization is analogous to a flow of blood in the human body. Companies and enterprises require capital to expansion and diversification to stand in the competitive world. Capital can be raised through Financial Markets by companies. Financial market is the place where various financial assets are bought and sold by participants. Financial assets comprises of various securities issued by companies such as debentures, shares, bonds and stocks to raise funds. Thus, studying financial market has been centre of attraction for various research scholars.
Different theories have been developed and have broadly classified the financial market into Traditional Finance and Behavioural Finance theories. Traditional theory is based on the conceptthat investors act rationally, their aim is to maximize profit and they are usually risk-averse. These assumptions that market is efficient are violated because of speculations and unpredictability in the market often termed as –market anomalies‖. Thus, an alternative theory was developed which is termed as –Behavioural Finance –which emphasizes on sociological and psychological aspect of decision making of investors. This theory stresses upon market inefficiencies and anomalies.

AN ANALYTICAL STUDY OF WORKPLACE BULLYING AND EMPLOYEE PERFORMANCE

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Abstract
The purpose of this study is to investigate the connection between employee work performance and workplace bullying. Information was gathered from 215 representatives working in different IT associations in Bhubaneswar of Odisha in India to finish the targets of the study. The dependability test for work environment tormenting and work execution was altogether noticed. The information examination by SPSS 22.0 uncovered that there was a positive huge connection between work environment tormenting and representative work execution. The autonomous examples t-test uncovered that there were huge contrasts between work environment harassment and work execution among nearby and unfamiliar representatives. The Different relapses displayed there was a commitment to the seven factors of workplace harassment towards work execution. The investigation discovered that workplace tormenting was anticipated as an area of strength for representative work execution. An indicator model was developed using an examination of numerous relapse investigations. To create a high-quality working environment that encourages employees to perform well at work, several suggestions were made to managers, leaders, and organizations. The investigation found that the harassment suffered at work was expected to be one of the areas where representational work execution would be strong. Several relapse investigations were examined to create an indication model. Many recommendations were offered to managers, leaders, and organizations to establish a high-quality working environment that motivates workers to perform effectively at work.

Key Words: Workplace bullying, Workplace performance, Employee Satisfaction, Employee performance, Workplace harassment.

1.   Introduction
Working environment tormenting can be characterized as the rehashed less ideal treatment of an individual by one more or others in the working environment, which might be viewed as irrational and improper working environment practice. Behavior that intimidates, offends, degrades, or humiliates a worker, whether in front of coworkers, customers, or clients, is included in this category. All over the world, bullying has been linked to mental health issues, stress, and suicide. Principally viewed as a youth issue, harassing has been upsetting grown-ups too. Work environment harassing alludes to rehashed activities pointed towards representatives intended to affront them. Activities like this represent a gamble to workers' wellbeing and security [1]. There is a distinction among harassing and hostility. Hostility as a rule includes a solitary demonstration. Interestingly, tormenting conduct includes rehashed activities against an objective. It is an ongoing example of conduct [2].
Tormenting at work includes a maltreatment of force. Scary, embarrassing, and corrupting a representative are ways of behaving of tormenting. It makes a sensation of weakness in the tormenting objective. A work environment menace has self-centered intentions and a total absence of regard for other people. He could do without others, never thinks of them as equivalent, and uses all means important to force his methodologies. It's possible that some bosses have high standards for their employees' performance. Such supervisors may not really be menaces. Representatives for the most

DESIGNING AND CREATING A 3D PRINTER USING SOLIDWORKS 2016 BY FDM PROCESS

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ABSTRACT
With the help of CAD, rapid prototyping of physical objects can be achieved. In this method, objects are produced by stacking material inlayers. This technology is also known as additive manufacture. There are five of the most common rapid prototyping such as visualization, appropriate forms, product testing, tools, and use of spare parts. 3D printer is an example of a machine that uses rapid prototyping. In this paper, we have discussed about designing and creating a 3D printer using the FDM method, FDM utilizes material extruded from a nozzle which is then driven by a motor. The material used here is a thread-shaped thermoplastic (coil) which is heated above the melting point by the heater. Then the material is extruded through the extruder nozzle hole. The heater maintains a constant temperature and then deforms the material from the solid to semi-solid (liquid) so that it will be easy to extrude. There is a heat transfer at the nozzle. Then, result analysis of the experiment done at 208°C is done. The nozzle type used is E2A57.
Keywords: Rapid Prototyping, FDM, E2A57, Filament.

INTRODUCTION
Rapid Prototyping is a technology related to physical objects that are obtained from the CAD. This method can produce objects by way of stacking the ingredients layers in layers. This technology is often also referred to as addictive manufacturing; there are five of the most common use of rapid prototyping: visualization, the appropriate forms, test products, tools, and the use of spare parts. One example of a machine that uses rapid prototyping is a 3D printer. 3D-Printing is a new breakthrough in the world of technology. 3D-Printing is a printer able to print 3-dimensional object. Advantages of 3D-Printing are very possible to make different shapes of patterns. This is due to the motion of the printer in 3coordinates. Associated with the definition 3D-Printing can function in the world of manufacturing. 3D printer is a method of making prototyping in a short time on the process of product development, rapid prototyping technology needed in competition the manufacturing industry especially in the era of products with a short life cycle such as currently. The existence of these problems then authors takes the theme of the thesis is to design, redesign and analyze the rapid prototyping: 3d printers type Fused with Deposition Modelling (FDM) using the type of raw material Polylactic Acid (PLA) filament diameter 1.75 mm. Therefore, the authors compiled a thesis with the title "Designing 3D Printer Rapid Prototyping Using Software Solidworks 2016".

LITERATURE
Fused Deposition Modeling (FDM) is a Rapid Proto typing method that utilizes material extruded from a nozzle that is driven by the motor. The material is a thermoplastic shaped yarn (coil) that is heated above the melting point by the heater is then extruded through the vent extruder nozzle. Maintain the temperature of the heater and deformation material from a solid into a semi-solid (liquid) for easy extruded. Moving nozzle and dispense liquid extrusion forming layer. Plastic extrusion material will harden quickly once issued passes through the nozzle. After the first layer is formed, the platform moves down and then is the process of the formation of the next layer.

IDEAL SELECTION OF CIRCULAR INTERPOLATION FOR CNC TURNINGCENTERS

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ABSTRACT

A circular interpolation algorithm used to determine the parameters of separate circular paths was used to generate round shapes on a computer-controlled numeric (CNC) turning machine. It is suggested that this calculation should be included in the CNC lathes ' resident software program. This would decrease the amount of blocks of data required for part of the program. In a single block, a complete circular interpolation cycle for the number of passes could be specified. The suggested algorithm is optimized for minimal machining time and enhanced surface roughness. The programming of the new interpolation scheme, using circular and linear segments, must be applied to the specific part.

Key words: Circular Interpolation, CNC, Turning Machine, Surface Roughness.

INTRODUCTION

PC has superseded machine tools that are once installed and powered by hand driven models. The product for programming these machines has enabled specialists to create high-quality components. [1] Reference has been made to the fact that contemporary machine tool ideas, sophisticated machining procedures and techniques are essential to achieving general quality and productivity objectives in order to satisfy future market demands. [2] It is referred to the reality that CNC tool path capabilities are prevalent in CAD/CAM systems, but STEP-CNC and Super Model Standards are the basis of technology for programming and monitoring CNC. This standard will permit software providers to revolutionize computer programming. The error compensation software system structure that can offset software errors by recreatingCNC programs has been investigated [3]. Error compensation has proven to be a cost-effective method for improving machine tools precision.

The use of both spiral archimetrium segments and circulatory segments must be applied to accurate part programming on tri-axis lathes [4]. Where the polar coordinate system is more effective than the Cartesian coordination for rotating axes [5]. For the rotated component with steady forms, an optimization model has been formulated [6]. To study the work carried out on CNC machine devices to minimize surveillance and contour errors [7]. Experiments performed in the automatic five-axis CNC machine for contouring error detection [8]. The recommended vision and cross grid encoder are used to evaluate three kinds of paths contouring errors at distinct feed rates.[9] included an assessment of machined pockets surface roughness after machining and an enhanced pocket surface finish with real spiral tool path was achieved compared to the other tool paths under examination.

This suggests that CNC code-driven energy demand software which includes feed axis, vices and work pieces, the energy demand of the feeding unit for cutting is used to properly estimate the entire working time of the processing process by means of energy-efficient machining. [10] Reporting of the establishment, directly from its representation, of an efficient tool path schedule method, designed and used for 3axis CNC machining, for machining free-form surfaces without temporary surface fitting. The finished cylindrical bar sections are generated by CNC machines. The completed profiles consist of straight, facial and circular workmanship [11]. The programming of

ANALYSIS OF CUTTING FORCES OF INCONEL-718 DURING TURNING USING 3D FINITE ELEMENT METHOD

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ABSTRACT

Our paper investigates process of thermally assisted turning (TAT) of different cutting parameters such as cutting speed, feed rate, and depth of cut on cutting force. This is done under dry hard turning process of Inconel718. 3D FE simulations based ABAQUS/explicit of both orthogonal and oblique turning processes were performed. The results obtained after 3D FE modeling are reliable to predict cutting forces during turning process and are validated with the experimental results. Also, the results indicated that 3D models of machining are more accurate as compare to orthogonal models although computing time is more for 3D oblique machining models. Also, the results indicate that the cutting force decreases significantly with increase cutting speed while it increases with increase in the feed rate and depth of cut.

Keywords: ABAQUS, Thermally assisted turning, Inconel 718; Cutting forces;   3D-FE Simulation.

INTRODUCTION

Nickel-based super alloys are generally utilized in hostile environments such as gas turbines and jet engines because of their high corrosion and oxidation resistance, superior thermal fatigue resistance and fracture toughness. Inconel 718 is one of the nickel based super alloy which it was used in automobile, aerospace, and marine applications due to its high strength to weight ratio, mechanical and thermal properties. In addition, Inconel 718 alloy is an austenitic nickel-base super alloy which is utilized in the functions that require high strength to approximately 1400°F (760°C) with oxidation resistance to about 1800°F (982°C). However, Super alloys like alloys of nickel, nickel iron and cobalt have poor machinability and their characteristics that provide superior high-temperature strength make them difficult to machine [1, 2, 3, 4, 5, 6].

The heat generation during machining process has direct influence on the cutting force, tool wear and quality of the machined surface. The knowledge about the relation between the cutting force and cutting parameters like tool geometry, work piece material, feed rate, depth of cut, cutting speed etc. assists the designer and the manufacturer for raising the efficiency of machine tools [7, 8]. Therefore, many studies have been made to understand the relation between cutting parameter and cutting force. D. K. Aspin wall et al. [9] studied the effects of variables i.e. cutter orientation and work piece tilt angle on the cutting force during high speed milling of Inconel 718 under finishing conditions. The results revealed that the cutting force was highest with the work piece tilt angle. Tool chatter was evident with the horizontal upwards cutter orientation which cause the fluctuations in the cutting force signatures. A Mehta et al.[10] investigated the influence of different sustainable machining environments such as dry, minimum quantity lubrication (MQL), cold air and cryogenic on the cutting force. The results showed that machining using combination of cold air and MQL tends to reduce the cutting force by about 28% when compared to dry machining. Sana J. Yaseen [11] studied the effect of different rake angles, feed rates, work piece material on cutting force during turning process using a finite element analysis. Yash R. Bhoyar and Kamble [12] built a finite element analysis simulation model of orthogonal machining in order to obtain the cutting forces occurring at different points through the chip/tool contact region and the coating/substrate boundary for a range of cutting tool materials. AISI 1040 carbon steel (mild steel), is modeled as the workpiece with thermo-elastic plastic

METHODOLOGY FOR SELECTION OF CIRCULAR INTERPOLATION OF CNC TURNING CENTERS

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ABSTRACT

Parameters of separate circular paths are determined by circular interpolation algorithm and then used to generate round shapes on a computer-controlled numeric (CNC) turning machine. This calculation should be included in the CNC lathes ' resident software program. This method will decrease the amount of data required for part of the program. A complete circular interpolation cycle for the number of passes could be specified in a single block. Then, the proposed algorithm is optimized for minimal machining time and enhanced surface roughness. The new interpolation scheme is programmed using circular and linear segments, and must be applied to the specific part.

Keywords: Linear Segment, Circular Interpolation, CNC, Turning Machine, Surface Roughness.

INTRODUCTION

PC has superseded machine tools that are once installed and powered by hand driven models. The product for programming these machines has enabled specialists to create high-quality components. [1] Reference has been made to the fact that contemporary machine tool ideas, sophisticated machining procedures and techniques are essential to achieving general quality and productivity objectives in order to satisfy future market demands.[2] It is referred to the reality that CNC tool path capabilities are prevalent in CAD/CAM systems, but STEP-CNC and Super Model Standards are the basis of technology for programming and monitoring CNC. This standard will permit software providers to revolutionize computer programming. The error compensation software system structure that can offset software errors by recreating CNC programs has been investigated [3]. Error compensation has proven to be a cost-effective method for improving machine tools precision.

The use of both spiral archimetrium segments and circulatory segments must be applied to accurate part programming on tri-axis lathes [4].Where the polar coordinate system is more. Yaser Hadi effective than the cartesian coordination for rotating axes [5]. For the rotated component with steady forms, an optimization model has been formulated [6]. To study the work carried out on CNC machine devices to minimize surveillance and contour errors [7]. Experiments performed in the automatic five-axis CNC machine for contouring error detection [8]. The recommended vision and cross grid encoder are used to evaluate three kinds of paths contouring errors at distinct feed rates. [9] included an assessment of machined pockets surface roughness after machining and an enhanced pocket surface finish with real spiral tool path was achieved compared to the other tool paths under examination.

This suggests that CNC code-driven energy demand software which includes feed axis, vices and work pieces, the energy demand of the feeding unit for cutting is used to properly estimate the entire working time of the processing process by means of energy-efficient machining. [10] Reporting of the establishment, directly from its representation, of an efficient tool path schedule method, designed and used for 3 axis CNC machining, for machining free-form surfaces without temporary surface fitting. The finished cylindrical bar sections are generated b CNC machines. The completed profiles consist of straight, facial and circular workmanship [11]. The programming of circular profiles requires a number of circular passes.

An algorithm was introduced to improve the precision of interpolation in turning activities [12].

UNMANNED AIR VEHICLE USING SOLAR POWER

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Abstract— **General Aircraft uses conventional fuel. The disadvantages of these fuels are limited life, high cost and pollutant. This leads to great demand for non-exhaustible unlimited source of energy like solar energy. Solar aircraft utilizes solar energy. Solar panel in the solar aircraft collects the solar radiation for immediate as well as future use. Solar powered airplanes could be used for different types of aerial monitoring and unmanned flights. This paper focuses on design and fabrication of solar aircraft which is unmanned prototype. This paper deals with UAV using solar energy as their only source of energy for more than 24 hours flight.**

Key Terms: UAV, Solar Energy, Solar Panel.

INTRODUCTION

1.1 Unmanned Aerial Vehicle

Unmanned Aerial Vehicles, or UAVs, as they have sometimes been referred to, have only been in service for the last 60 years. UAVs are now an important addition to many countries air defence system. Modern UAVs have come a long way since the unmanned drones used by the USAF in the 1940s. These drones were built for spying and reconnaissance, but were not very efficient due to major flaws in their operating systems. Over the years UAVs have been developed into the highly sophisticated machines in use today. Modern UAVs are used for many important applications including coast watch, news broadcasting, and the most common application, defence.

1.2 UAV History and Timeline

The concept of unmanned aerial vehicles was first used in the American Civil War, when the North and the South tried to launch balloons with explosive devices that would fall into the other side's ammunition depot and explode

[2]. The Japanese for around a month in World War II also used this concept, when they tried to launch balloons with incendiary and other explosives. The idea was that high-altitude winds would carry them to the United States, where the dropping bombs would cause panic. Apparently, both these ideas were not effective. The United States did use a prototype UAV called Operation Aphrodite in World War II. It was an attempt to use manned vehicle. However, at that time, the US did not have the technology to launch or control the aircraft. Today's UAVs owe much to the design of the cruise missiles that were used in World War II by the US and British forces. At the close of World War II, Chance Vought Aircraft, a company with no missile experience, was contracted to develop new machines. What won Vought the contact was that the proposed test missile would have a landing gear, which would help save cost. This was the beginning of the UAV.

1.3 Use of UAV

In the 1960s, the US started to develop „drones‟, which were unmanned vehicles built for spying and reconnaissance. This was after they lost a manned spy aircraft to the Russians and a U-2 to Cuba. The first such drone was the „F ire bee‟ drone, a jet propelled by an engine made by Ryan Aeronautical Company. They were initially used heavily over Communist China in the 1960s, when major flaws were discovered and correcte

HEAT TRANSFER ANALYSIS BY REFLECTING SOLAR ENERGY THROUGH HEAT PIPES

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***Abstract:*-Solar power obtained from the sun is being converted into electrical energy. Solar energy is the pollution free and available in abundant manner. PV cells, concentrator, Fresnel lens plays an important role in this. In all of these systems a working fluid is heated by the concentrated sunlight, and is then used to generate power or energy storage. Concentrating Solar Power (CSP) systems use lenses or mirrors and tracking systems to convert a large area of sunlight into a small beam. The concentrated small beam is then used as a heat source for a conventional power plant. The main aim of this paper is to increase the temperature of the heat collected from the sun. This paper also shows the fabrication and experimental setup of trapping the solar energy in a parabolic manner through the reflecting mirror of dimension 0.3m x 0.3m and passes the energy rays on pipes of dimension 12.5mm diameter with length 1490mm. The absorbing materials used here are copper and aluminum with heat transfer fluid used is water and air.**

Keyword: CSP, Heat Transfer, solar energy, HTF, reflecting mirror, concentrator.

I.INTRODUCTION

In today's climate of growing energy needs and increasing environmental concern, alternatives to the use of nonrenewable and polluting fossil fuels have to be investigated. One such alternative is solar energy. It is quite simply the energy produced directly by the sun and collected elsewhere, normally the Earth. Much of the world's required energy can be supplied directly by solar power. Methods of collecting and storing solar energy vary depending on the uses planned for the solar generator. In general, there are three types of collectors and many forms of storage units. The three types of collectors are flat-plate collectors, focusing collectors, and passive collectors Focusing collectors are essentially flat-plane collectors with optical devices arranged to maximize the radiation falling on the focus of the collector. These are currently used only in a few scattered areas. Solar furnaces are examples of this type of collector. Although they can produce far greater amounts of energy at a single point than the flat-plane collectors can, they lose some of the radiation that the flat-plane panels do not. Radiation reflected off the ground will be used by flat-plane panels but usually will be ignored by focusing collectors (in snow covered regions, this reflected radiation can be significant). One other problem with focusing collectors in general is due to temperature. The fragile silicon components that absorb the incoming radiation lose efficiency at high temperatures, and if they get too hot they can even be permanently damaged. The focusing collectors by their very nature can create much higher temperatures and need more safeguards to protect their silicon components.

People use energy for many things, but a few general tasks consume most of the energy. These tasks include transportation, heating, cooling, and the generation of electricity. Solar energy can be applied to all four of these tasks with different levels of success. Heating is the business for which solar energy is best suited. Solar heating requires almost no energy transformation, so it has a very high efficiency. Heat energy can be stored in a liquid, such as water, or in a packed bed. A packed bed is a container filled with small objects that can hold heat (such as stones) with air space between them. Heat energy is also often stored in phase-changing or heat-of-fusion units. These devices will utilize a chemical that changes phase from solid to liquid at a temperature that can be

EXPERIMENTATION IN IMPROVING THE EFFICIENCY OF TWIN CYLINDER TRACTOR ENGINE WITH BIODIESEL USING COTTON SEED OIL

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ABSTRACT

Carbon fuel increases the air pollution in the atmosphere and also excessive oil costs leads for alternate sources which will be a substitute for carbon fuel that could increase the performance and efficiency of the vehicle. Biodiesel are the promising substitute for alternate fuel. To minimize the usage of carbon fuel the biodiesel blends are used. The biodiesel produced from cotton seed oil represents one of the most suitable options for use of conventional carbon fuel. Cotton seed oil is converted into cotton seed oil methyl ester known as biodiesel. This is prepared inthe presence of homogeneous acid catalyst. The properties of the cotton seed oil is discussed for preparation of biodiesel blend. The cotton seed biodiesel blend is initially a binary mixture of cotton seed biodiesel and diesel fuel. The work in this paper is aimed to reduce the emission and to increase the performance of the engine. The performance test is done on the twin cylinder tractor engine by using the biodiesel blend. The cotton seed curcas biodiesel is used up to 50% mixed with diesel fuel and the performance of the engine produces approximately 60% much less carbon emission and close to 80% much less sulfur dioxide. Biodiesel is more lubricating than diesel fuel, increasing the lifecycle of the engine. Air pollution prompted by means of the growing use of petroleumfuel, alternate clean burning gasoline must be explored.

Keywords: Diesel Engine, Performance, Emission, Cotton seed biodiesel blends.

INTRODUCTION

Biodiesel, an environmental friendly diesel fuel which is like a petro-diesel in combustion homes, has obtained wide spread attention inside the latest beyond international. Biodiesel is a methyl or ethyl ester of fatty acid crafted from renewable biological sources consisting of vegetable oils, recycled waste vegetable oil and animal fat [1]. The use of cotton seed oils as fuels has been around since 1900 whilst the inventor of the diesel engine Rudolph Diesel first tested diesel oil in his compression ignition engine [2]. However, due to reasonably-priced petroleum products such non-conventional fuels. Cottonseed curcas has been recognized as strength crop for the international locations to develop their very own renewable energy source with many promising advantages. With the growing hobby in biofuels international, there may be want for national governments in Africa to expand mechanisms for harnessing the ability of the quick growing industry and benefit from the growing worldwide alternate in biofuels. If Africa takes the lead within the manufacturing of bio fuel, particularly from cotton seed, the continent's efforts on this enterprise will function it as an exporter of biodiesel, hence growing its economic and political leverage in the global society. Many multinational organizations, especially Scandinavian, Chinese, European and Indian ones are scrambling for African land for cotton plantations. It is likewise said that wireless verbal exchange giants Ericsson, GSMA and MTN are making an investment in using bio fuel from cotton seed and other oils to electricity cell network base stations in the developing international for the untapped market place of the capability cellular customers [3]. Cruces Linnaeus plant originated from Mexico and then spread to Asia and Africa by the Portuguese traders as a hedge plant. Cruces Belongs to the family of Euphorbiaceous, which is the

DEFICIENCY REDUCTION OF FRONT AND REAR BUMPER USING LEAN MANUFACTURING

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Abstract – **Defect Reduction control of front and rear bumpers and its problems are studied in this paper. The study depends on the reduction of bumpers due to factors such as scratches, paint chip off, and minor damages. Analysis of some other damages during material handling and parts assembling are also done. Various problems in bumpers due to paint chip off in various parts of the bumpers is controlled. Reduction of bumpers due to scratches has to be controlled during material handling. Also, reduction of bumpers due to minor damages which causes part to bend and shape changes have to be controlled during the time of material handling and assembling.**

Keywords: Assembling, Paint Chip Off, Scratches, Minor damages, Slight deformation of shape.

ABOUT THE COMPANY

Hyundai Motor Company (HMC)

The Hyundai Motor Company is a South Korean multinational automated manufacture headquartered in Seoul, South Korea. The company was founded in 1967 and, along with its subsidiary, Kia Motors (acquired in 1998), together comprise the Hyundai Motor Group, which is the world's fifth largest automaker based on annual vehicle sales in 2013.

In 2008, Hyundai Motor (Without Kia) was the ranked as the eighth largest automaker. As of 2013, the company sold over 4.73 million Vehicles Worldwide in that year and together with KIA total sales were 7.56 million.

Hyundai operates the world's largest integrated automobile manufacturing facility in Ulsan, South Korea, which has an annual production capacity of 1.6 million units. The company employs about 75,000 people worldwide. Hyundai vehicles are sold in 193 countries through some 6,000 dealerships and showrooms

II.   INTRODUCTION:

The bumpers are mainly affected during material handling and assembling. These corners are undergoing major problems called Paint Chiff Off. But these kinds of Paint Chip Off are very small defects which will not lead to total reduction of bumper and it can be easily solved by touching of the similar color of paint at the final inspection. Even though Paint Chiff Off are one of the main problems in the bumpers. The scratches

PERFORMANCE ANALYSIS OF A FOUR STROKE SI ENGINE USING PONGAMIA OIL AS LUBRICANT

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Abstract: **Due to scarcity of petroleum products such as mineral oils, bio-lubricants are gaining commercial importance. The mineral oil consumption is becoming rampant due to rapid industrialization and transportation. It is predicted that the available resources will be completely depleted in near future. The vegetable oil based Bio-lubricant is fast becoming a promising alternative option for mineral oil. People are analyzing the physical properties such as Specific gravity, Viscosity, Flash point, Pour point and Fire point for vegetable oil (Pongamia oil) , blends of vegetable oil. These properties are compared with that of mineral oil (SAE 15W 40). The investigation has also been made to study the characteristics of bio-lubricants in four stroke SI engine for neat vegetable oil and blends of vegetable oil and neat mineral oil. The bio lubricant is also tested for higher range of operating temperature. The mixture of 40% (BL40) blend of lubricant is the most preferred to solve this problem without adding any chemical agent.**

Keywords: ***Chemical Agent, Bio-Lubricant, Pongamia Oil, Four Stroke SI Engine, Mineral Oil***

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INTRODUCTION

Engines are used as a power source for medium and heavy duty applications, because of the high efficiency and economy. Due to friction in the moving parts of an engine the excessive heat is generated by interaction between the surfaces. The friction and wear has to be controlled by lubrication and it also acts as a coolant facilitating heat dissipation from engine. Recent uncertainties concerning adequate, stable supplies of petroleum based lubricants have renewed interest in vegetable oil lubricants, especially for emergency use in spot shortage situations. Hence alternate lubricants have to be identified to have the lower friction and wear than the traditional lubricants and also meet out the demand of mineral oils. Bio-lubricants are products derived from renewable oils, such as the fatty acids from fats and oils, reacted with synthetic alcohols or polyols to produce esters. They are generally biodegradable and renewable. Also they possess good viscosity index, higher temperature withstand ability and considerable flash point, fire point, etc.

LUBRICANT

Lubrication is the process employed to reduce friction between, and wear of one or both, surfaces in close proximity and moving relative to each other, by interposing a substance called a lubricant between them. Lubrication plays a key role in the life expectancy of an engine. Without oil, an engine would succumb to overheating and seizing very quickly. Lubricants help mitigate this problem, and if properly monitored and maintained, can extend the life of an engine.

REASONS FOR SELECTING PONGAMIA OIL

Pongamia pinnata is one of the few nitrogen fixing trees to produce seeds containing 30-40% oil. Pongamia pinnata can be a definite source of raw material due to its easy availability in wild. Pongamia pinnata is drought resistant, semi-deciduous, nitrogen fixing leguminous tree. It grows about 15-20 meters in height with a large canopy which spreads equally wide. After trans-esterification process, crude oil shows excellent properties like calorific value, iodine number, cetane number and acid value etc. The leaves are

DESIGN OF TWO WHEEL DRIVE FORKLIFT - PEDAL OPERATED

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ABSTRACT

An improved and advanced technology like mechanical fork lift brought revolution in the all heavy engineering industries. Now a day, wide spread use of the forklift truck had revolutionized ware housing practices around the world. Mixture of material handling systems is already in use. Forklifts have revolutionized warehouse work. They make it possible forone person to move heavy weight items easily. Well-maintained and safely operated forklifts make lifting and transporting cargo items an easy process. In this paper, a method is proposed to move heavy items with the help of a Pedal Operated forklift to lift and transport medium weight goods. It is fast, efficient and low power consuming equipment that also requires less space to move around.

Keywords: Pedal, Forklift, Transport, Warehouse, Material handling

INTRODUCTION

This article guides a stepwise walkthrough of Forklift and its related Technology. Forklift is a device which is used to transfer goods from origin to destination point. Running on fuel (diesel mostly) they can generate required torque for defined applications. Segways are short distance transport domestic vehicle which are mostly used in malls and domestic transportation.

OBJECTIVES

- To modify mechanism of forklifts.
- Using two wheel drive forklift to simplify driving experience.
- To make effective loading/ unloading of object using latest robot techniques.
- To make operations environment friendly.
- To reduce cost of operation by substituting fossil fuel engine.
- Increase safety at work.
- Increase accuracy of work.
- Automation of application.

PROCEDURE

Bits and Pieces Together

We've taken references by analyzing needs of workers from our institute. By analyzing their need we`ve thought to combine various technologies like Forklift & Segway. By combining these technologies we can ease the workload of workers and maximize their capacity to lifting and transferring their goods effectively. After these thought we've started analyzing required Data to Design and Manufacture our two wheels drive forklift. We've taken references from some international journals containing research and data of 'Fork, Forklift and Segway'. All the References for Designing 'Two Wheel drive Forklift' are taken from respective data books and research papers.

Use of Simulation Software

There was numbers of software available which can mimic the process involved in our research work and can produce the possible result. One of such type of software was CREO parametric. We can easily make design and modeling of our desired production 3-D. Second such type of software was Ansys,

A REVIEW PAPER ON SPEAKING RESTRAINT IN APPLIED LINGUISTIC STUDENTS

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Abstract
Speaking skill is considered as a challenging skill for all language learners, especially non-native EFL learners. Non-native language learners, specifically, university level students, experience many difficulties and weaknesses in way of developing or improving speaking skill. According to the importance of speaking in means of communication and improving the related issues in spoken language, the present study reviewed twenty applied linguistics papers related to the speaking skill in order to classify and find problematic parts among university students. In other words, twenty papers which are related to the speaking difficulties and weaknesses were reviewed the university level students (applied linguistics students) in particular to enrich the review of article. According to previous studies, these applied linguistic learners (as EFL learner) can have problem in linguistic variables such as grammar, vocabulary, pronunciation, and intonation; psycholinguistic variables like anxiety, self-

confidence, and shyness, and also sociolinguistics variables such as culture, identity or sense of agency and etc. Moreover, educational related problems such as insufficient courses and lack of teachers' proficiency can put the learners in trouble. The main findings of this study can create a path toward improving and solving the difficulties and problems in speaking related issues in language studies.

Keywords: Difficulties, Weaknesses, Speaking Skill, EFL Learners, Applied Linguistic Students.

1.   Introduction
In today's modern world, learning languages, especially English, is one the main priorities of individual who wants to communicate with other people but learning a language is not always an easy task (Riadil, 2020). Learning English for non-native learners has been associated with challenges and difficulties which should be considered in order to improve the level of learning among these groups (Soodmand Afshar & Rahimi, 2016; Hayati, 2008). More particularly, speaking is one of the four macro language skills that should be improved in English for Foreign Language Learners (EFL) especially in non- native countries where people don't access to feedbacks and real context (Soodmand Afshar & Asakereh, 2016).

According the importance of speaking and purpose of communicating in English, many linguists and experts believe that speaking is

one the essential skill for each language learner in every stage of education, for instance in schools, language institutes or even in university level, specifically for applied linguistics students (Hayati, 2008; Ahmed, Pathan, & Khan, 2017). Although speaking by the means of communication is necessary for everyone, applied linguistic students should focus more on the speaking skills because they should represent the accurate and fluent way of speaking among non-native learners (Copp et al., 2021). Unfortunately, many studies revealed that applied linguistics as university EFL learners are not successful in speaking skill and they experience many difficulties and challenges during their education in universities where non-native context can change their potentiality to learn English (SoodmandAfshar & Asakereh, 2016; Zyoud, 2016). According to previous studies, these applied linguistic learners (as EFL learner) can have problem in linguistic variables such as grammar, vocabulary, pronunciation, and intonation; psycholinguistic variables like anxiety, self- confidence, and shyness, and

ENGLISH COMMUNICATION SKILLS AND ITS ANALYSIS

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Abstract
Communications is the act of conveying information from one place, individual, or organisation to others. Any communications involve a transmitter, an information, and a receiver. Although this might seem to be a simple notion, communication is really a very complex subject. The message's path from source to destinations might be influenced by a multitude of circumstances. Our feelings, our cultural background, the communication channel we use, and even our physical location are all aspects to consider. This study discusses the overview of English communication skills, Types of English languages used worldwide, Different category of English communication skills, 7C's of effective English communication, importance of English communication and semantics barriers in English communication skills. To make engagement meaningful and to make oneself known, two-way communications inspire, informs, proposes, cautions, commands, changes behavior, and establishes better connections. When a communicator is knowledgeable enough to speak skillfully, simply, clearly, truthfully, and dynamically, communications become successful. This study will help the reader to understand the importance of English communication skills.
Keywords: communication, clear, English, languages, skills

1.   Introduction

English is often regarded as a means of advancing one's education and career opportunities. The English language plays an important character in binding the world collectively in a single strand. English is regarded a second languages in practically every nation where it is not the native tongue. The primary purpose of learning any language is to acquire simple vocabulary that can be used in everyday situations. As a consequence, today's workforce is expected to be highly skilled, with the capacity to continually improve their talents and engage in lifelong development (H. T. T. Nguyen 2020). Language is a talent, and like any other skill, mastery is very improbable unless and until we practice it. The goal of learning languages is inextricably tied to the development of LSRW abilities. The four skills of language acquisition are L-S-R-W, a collection of four talents that enable a person to understand and generate oral language for correct and successful interpersonal communications. Listening, Talking, Writing, and Writing are the four talents. Communication, being a universal process, has an impact on the actions of the human society as a whole. Effective communication skills are essential for maintaining growth and development, and societal socialization is a key element of them (L. L. Jassim and H. Dzakiria 2020).

The need to study a language stem from the flexibility, efficiency, usefulness, universality, and teachability of the language. Sharing thoughts, ideas, and views with others is referred to as communication. This might be of a mental, interpersonal, verbal, or written character. We live in communities, and man is inherently a social creature. We share our opinions with others because societal necessities demand it (A. Malik Abbasi, R. Ahmed Mangrio, M. Ahmed Channa, and U. Hanif 2020). Communications is necessary for maintaining intimate, sympathetic connections in a community as well as the movement of individuals, materials, and ideas from one location to another. Initiation receipt and reaction provide as feedback in this phase. As a result, communication is inherently participatory (B. Mamo and A. Yigzaw 2015).

Learning English is now required not just for political reasons, but also for scientific and technical reasons. And English is no longer just a British language; it is the language that the rest of the world needs to communicate; it is the most international of language. English has evolved into a global language that serves as a joining link, a language of advanced science and techniques, a language of cutting-edge sciences such as knowledge technology and space science, and a language used in all competitive examinations, whether at the state, national, or international level. We are currently living

A STUDY OF THE MODIFIED DISTRIBUTION METHOD IN MODERN BUSINESS

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Abstract

The modified distribution method is also known as the MODI method or the (u - v) method. This analysis provides a minimum cost solution to transportation problems. The MODI method is an efficient way to synthesize the optimum from the original feasible solution. The MODI method is an improvement of the springboard method. This presentation examines the minimization of the cost of transporting a product from multiple sources to a given destination. We are aware of the demand and sources of supply for each commodity. The purpose of the application is to expand and evaluate an integrated transportation program that meets all storage requirements with minimal transportation costs.

Introduction

The basic transportation problem was originally developed by F.L Hitchcock (1941) in his study entitled "The distribution of product from several sources to numerous locations. In 1947 T.C Koopmans independently published a study on "Optimum utilization of transportation system. Subsequently the linear programming formulation and the associated systematic procedure for solution were given by Gorge B. Dantzig(1951).

The Transportation problem is to transport various amounts of a single homogeneous commodity that are initially stored at various origins, to different destinations in such a way that the total transportation cost is a minimum. It can also be defined as to ship goods from various origins to various destinations in such a manner that the transportation cost is a minimum. The availability as well as the requirements is finite. It is assumed that the cost of shipping is linear. MODI method is an improvement over stepping stone method.

Here researcher study an important class of linear programs called the transportation model. This model studies the minimization of the cost of transporting a commodity from a number of sources to several destinations. The supply at each source and the demand at each destination are known.

2. Idea of the study

This research work represents transportation modeling approaches and forecasting techniques addressing the transportation flow of cargo containers with semi-processed goods on the selected routes from a certain number of suppliers with various production capacities to the certain points of destination. The aim is to achieve the minimum cost of transportation flow and to forecast the future for the company's activities. Since the cost minimization directly relates to the company's profitability of which is representing operation efficiency that can be expressed as a fraction, respective transportation modeling methods can be solved using modified distribution method. The models were studied based on a real-life data and as example of transportation. Since the forecast of future activities can be also related to the company's strategic planning. The forecasting problem is solved by one of the most common forecasting techniques used in business life, namely the trend adjusted forecast approach.

The paper is conducted in order to introduce the transportation problem solutions by applying different methods of the transportation flow of a company, in order to find the points that could be improved and minimize transportation costs of the company. The paper was also conducted in order to show how basic figures of transportation flow can be transferred into a transportation matrix which is the basis of any transportation problem. Understanding of transportation problem methods can help to find an optimum solution for the transportation flow. Based on calculations and results of different methods and approaches to the same transportation problem, using different cases when demand was and wasn't equal to supply were also investigated. The researcher is also looking into the forecasting problem to show how forecasting approaches can help to predict transportation activities of the company in the

A MODIFICATION OF ACCELERATION DOUBLE STEP SIZE ALGORITHM FOR UNCONSTRAINED OPTIMIZATION

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ABSTRACT
We present a modification of acceleration double step size iteration with two vector directions. This transformation is the usage of a chosen three-term hybrid model .Derived acceleration double direction model keeps preferable properties of both include methods. Convergence analysis demonstrates at least linear convergence of the proposed iterative scheme on the set of uniformly convex and strictly convex quadratic functions. The result of numerical experiments confirm better performance profile in favor of derived hybrid acceleration double direction model when compared to its for unners.

Introduction and Preliminaries

The SM iteration from [1] is defined by the iterative process

$y_{(k+1)}=y_k - \llbracket t_k \gamma \rrbracket\_k^{(-1)} g_k$ (1)

Here current iterative point is $y_{(k+1)}$,where y_k is the previous iterative point, the gradient vector g_k, t_k is a step length ,the acceleration parameter is $y_k>0$ in [1] it is verified that the accelerated gradient SM iteration (1) out performs the gradient descent ,GD, as well as the Andrei's accelerated gradient descent AGD method from[2] . double direction and double step size accelerated methods, denoted by ADD and ADDS methods, respectively, for resolving the problems of unconstrained optimization are presentedin[3,4] thesetwomethod can be generally systematically through the next merged expression:

$y_{(k+1)}=y_k+\beta_k s_k+\alpha_k d_k,$ (2)

Where β_k and α_k denote two step lengths while the vectors s_k and d_k are two vector direction. y_k is the previous iterative point and real values . the values of the step lengthsare determined by backtracking line search techniques is basically used for defining a search direction , but some new suggestions for deriving a descending vector direction are given in [3,5] . taking the substitutions

$s_k=-\gamma_k^{(-1)} g_k$,$\beta_K=\beta_k^{(2)}$) (3)

Into (2) produces the ADD iterative scheme from [3]:

$\llbracket y \rrbracket\_{(k+1)}=y_k-\beta_k \gamma_k^{(-1)} g_k+\beta_k^2 d_k$ (4)

Where γ_k represents the acceleration parameter for the iteration (4). The parameter γ_k are explained in (3). The so called nonaccelerated version of ADD method (NADD method shortly) is defined in order to numerically verify the acceleration property of the parameter γ_k . three algorithm SM, ADD, NADD, are numerically related in [3] . derivation of the direction vector d_k is explained by the algorithm 3.2 in [3]. The ADD out performs its competitive SM method from [1] with respect to the number of iterations.

By putting the vectors s_k and d_k from (2) by $-y_k^{(-1)} g_k$ and $\llbracket -g \rrbracket\_k$, respectively , the next iteration is defined as

$y_{(k+1)}=y_k-(\beta_k \gamma_k^{(-1)}+\alpha_k) g_k,$ (5)

The previous method is noted as ADSS model and it is proposed in [4].In this article,a enormousimprovement in performances of this accelerated gradient descent method when compared to the accelerated gradient descent SM method is numerically conformed the major improvement of the current paper is modification of the double step size iterative scheme (5) for unconstrained optimization into an appropriate accelerated single step size contribution is given by the numerical confirmation that the TADSS algorithm developed from the double step size ADSS model (5)is evidently more efficient than the accelerated SM method obtained in a classical way. Surprisingly

AN EXPERIMENTAL STUDY ON THE USE OF PLASTIC WASTE IN PAVER BLOCKS

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Abstract-Daily plastic waste disposal is a necessity for solid waste management. As a result, this study looked into the possibility of using plastic waste to create paver blocks for a pedestrian walkway. A trial mix was used to develop paver blocks made of recycled plastic in order to determine the best way to make paver blocks. The goal of this project is to study the properties of pavement blocks made from recycled waste plastic. Pavement blocks are ideal for straightforward laying and finishing on pathways as well as streets. Here, the design considerations for pavement blocks incorporating waste plastic bags and the strength characteristics of pavement blocks made of waste plastic are presented. The environment and modern society will benefit from it. Utilising plastic in construction fields with minimal additions is the main goal.
Keywords: Plastic paver blocks, Plastic waste.

I.   INTRODUCTION

Municipal Solid Waste (MSW) includes plastic as one of its major constituents, and efforts to recycle plastic waste have led to extensive research projects, like those in concrete blocks. Plastic waste was also looked into for its potential to replace aggregate or cement to create concrete blocks with value-added performance in

addition to sustainability. The properties of the concrete can be slightly or significantly altered by the addition of recycled plastic. Recycling wastes can help cut down on the production of solid waste, as well as pollution and other risks. Making composite materials, for instance, is a creative way to get rid of plastic waste.

All over the world, concrete is a common building material. The three most typical components of concrete are cement, sand, and coarse aggregate. Concrete is extremely useful, but as time goes on, it is running out, making it necessary to look for alternatives.

In India, pavement technology has been used for parking lots and footpaths for many years, and it now serves a variety of purposes. This project conducts tests on properties like compression and oven performance. The raw materials used in this paver block are more readily available and affordable than those used in conventional paver blocks, including cement and readily available aggregates.

Karma Tempa, Nimesh Chettri, Gautam Thapa, Phurba, Cheki Gyeltshen, Dawa Norbu, Dikshika Gurung (2022)- an experimental investigation was carried out to recycle plastic waste as a substitute to cement as a binding constituent. Also, it reduces carbon footprint and reduces environmental pollution and health hazards. The maximum mass loss of 70.33

g was observed corresponding to 2.56% wear for PP/PS P50 samples. Other mix ratios show a lower loss in mass and percentage wear. All mixed and HDPE PW samples show compressive strength equivalent to M20 and M30 concrete respectively with lower values for PP/PS.

II.   AIM

Using materials that are readily available locally, this study investigates the viability of using recycled plastic as a paver block.

III.   OBJECTIVES

•   The main objective is to make paver blocks out of plastic rather than cement.
•   To provide affordable, effective paver blocks that the average person can easily afford.
•   To assess the feasibility of using waste plastic in the construction of pavement blocks.
•   Alternatively, we can reduce our reliance on plastic in our environment.

IV.   MATERIALS

1.   Plastic required
a.   PP

AN EXPERIMENTAL STUDY ON TOTAL REPLACEMENT OF FINE AGGREGATE WITH PLASTIC WASTE AND CRUSHER DUST IN PAVER BLOCKS

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Abstract

Recent urban infrastructure growth in India has led to an increase in the use of paved surfaces around buildings and a long road. Traditional concrete pavers are the most appropriate, affordable, and locally accessible material for this paving surface. As a result of increased industrialization and urbanisation, the Indian concrete industry must now satisfy the need for cost-effective and efficient building materials in order to meet the country's growing infrastructure demands. They are commonly used on sidewalks, garden paths, courtyard pavers, bus stop shelters, parking lots, and work spaces in industry. Increasing infrastructure development is concurrently accompanied by a rise in construction waste production. This project is comprised of three sets of concrete paver blocks cast using an M20 mix design. In the first batch of paver blocks, sand is completely replaced by crusher dust and plastic waste in proportions of 15%, 30%, and 45%; however, coarse aggregate is not utilized. In the second batch of paver blocks, sand is completely replaced by crusher dust and plastic waste in proportions of 15%, 30%, and 45%; however, coarse aggregates are still utilized. 7-day, 14-day, and 28-day tests were conducted on the compressive strength behaviour of paver block specimens. In addition to the compressive strength and water absorption tests, these blocks were also employed for the compressive strength test. Utilizing waste materials helps to address the problems of scarcity, reduction of disposal costs, low prices, and available quantity of construction materials. Safeguard the environment by lowering production costs and resolving the problem of building waste disposal.

Keywords: Paving surface, Paver block, Compressive Strength, waste disposal.

I.   INTRODUCTION

For many years, concrete paving blocks have been widely employed in many nations as a problem- solving technologytosupplypavement in locations where conventional forms of building are less durable due to several operational and environmental restrictions.Initially implemented in India's building industry several decades ago to meet a specific need (footpaths, parking lots, etc.), the technology is now being widely used in a varietyofcontextswherethefabricationofpavement

utilizing bituminous combination or cementitious technology is neither possible nor desirable.

Large infrastructure demands owing to rising industrialization and urbanisation provide the greatest issue now facing the Indian concrete sector. Because of this, it is essential to utilise high-quality concrete that maximises strength, durability, and other desired concrete attributes while minimising the usage of resources like lime stone, energy, and money.

The aggregates needed to make conventional concrete blocks for sidewalks, highways, and airport runways have been depleted in recent years due to rising global demand. Since local supplies have been depleted by the massive quantities of aggregate previously used, the only option for filling the gap is to import resources from outside. Spoilheapsarean un pleasant reality in most cities, occupying valuable real estate that cannot be developed.

II.   LITERATURESTUDY

In this article, researchers Sarang Shashikant Pawar and Shubhankar Anant Buj one present their findings from an experiment with fly ash, plastic drooping strip, and plastic wire. The plastic bags used in the production of paver

ANALYSIS OF THE PROGRESSION OF THE COLLAPSE OF REGULAR AND IRREGULAR RCC BUILDINGS

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Abstract: Analysis of the progressive collapse of three 20-story conventional buildings with Using STAAD.Pro V8i SS6 software, linear elastic static and nonlinear static techniques are used to analyze RC frame buildings without a central atrium and with uneven shapes. By using stepped-type geometry along a shorter bay, irregularity is created. Each step of the study is carefully examined, and DCR values are quantified, briefly stated with benefits and drawbacks, and compared considerably in accordance with GSA recommendations. Investigating the structural linear and nonlinear behavior of various building structures is the goal of this research, which also aims to create design guidelines and tactics for creating economically sound structures that are resistant to progressive collapse. Rotation and displacement of plastic hinges are observed using nonlinear static analysis, coupled with the percentage of GSA load attempt, as a result of the rapid removal of the principal load-bearing column member of the ground floor from various places.

Keywords Progressive collapse _ LSA _ NSA _ Multi-storied RCC building GSA

1.   INTRODUCTİON:
When an important basic member of a structure collapses due to natural or artificial disasters, the loads from the lost member are transferred to connecting members, which then fail as a result of the redistributed loads. This process continues until a disproportionate amount of the structure is damaged or collapses. Localized damage that causes progressive collapse is referred to as starting damage. Progressive collapse is a nonlinear phenomenon in which structural components are stretched past their elastic breaking point. The goal of this study is to develop a methodology for assessing a structure's propensity for gradual collapse utilizing various analysis approaches. For examining the structure, static linear analysis and static nonlinear (Pushover Analysis) methods are compared.

1.1 Building Geometry:
For study, three 20-story RC Frame buildings one without an atrium, one with an atrium, and one stepped along a shorter span are taken into consideration (Fig. 1).All buildings are 40 m x 32 m in size, with 4 m x 4 m panels, and a 57 m overall height. The lowest three floors, which are used for parking, are 2 m tall, while the top 17 floors have storey heights of 3m.

With a 150 mm slab thickness, the size of the beam and column are assumed to be 250 mm x 300 mm and 450 mm x 450 mm, respectively. Fe415 & Fe250 steel grade and M25 concrete are employed as material attributes. For the design of a building in accordance with IS 456-2000, the dead load of a structure with walls around the building's perimeter and the live load of 3 kN/m2 are taken into consideration.

The size of the atrium is 16 m 16 m for the structure with a central atrium, but stepping is done along a shorter span after the 7th and 12th storeys in a stepped construction.

DAM BREAK ANALYSIS USING GIS APPLICATIONS

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Abstract— This work describes the analysis of a dam break in the aspects of simulation and various parameters. The parameters and outflow predictions are mainly for the understanding of dam break mechanics, which is essential for the dam break analysis, and eventually determine the flood in each river station for a specific interval. In this work I use USACE HEC-RAS model tightly coupled with the ArcGIS based on available geometry data by considering neyyar dam as study area. It was modeled using ArcGIS and analyzed using these. HEC-RAS is a 1-D steady flow hydraulic model designed to aid hydraulic engineers in channel flow analysis and flood plain determination. Here, parameters associated to specific spatial features having coordinates are located on object classes and connected its corresponding features like by means of database relationships. The information content in HEC-RAS input and output files along with coordinate time (t) is recreated in a geodatabase data model to promote model interface and take advantage of GIS spatial analysis and visualization capabilities which gives an animated effect. Here I model this based on a limited geometric data

Keywords— DEM, HEC-GeoRAS, HEC-RAS, Dam Breach, Unsteady Data, Water Surface profile, Model

I.   INTRODUCTION

In 1979 the Central Water Commission (CWC) Of India Establish Dam Safety Organization taken up measures for ensuring dam safety in their respective jurisdiction. Dam provides many benefits for our society, but floods resulting from the failure of constructed dams also produced some of the most devastating disasters. Simulation of such dam break events and the resulting floods can reduce threats due to potential dam failures. A breached dam releases large volumes of water very rapidly we can't predict dam-break floods using observations of natural floods. Most of the dam- break models were complex, tricky and time-consuming Dam break was modeled and analyzed using USACE Hydrologic Engineering Center's River Analysis System (HEC-RAS) model based on available geometry data. HEC-RAS can incorporate both steady and unsteady, one-dimensional flow computations using the same set of geometry data for either analysis. Unsteady flow computations use the full equations of motion

II.   LITERATURE REVIEW

A large number of numerical models are available for computation of dam break flows like Simplified Numerical Model, ID Model , 2D Model and Integrated 1D-2D Model that include Dam failure analysis models developed by National Weather Service (NWS) such as DAMBRK, SMPDBK, and FLDWAV are widely used in the aspect of

dam break flood routing. The Simplified Dam-Break (SMPDBK) was developed by the National Weather Service (NWS) for predicting downstream flooding produced by a dam failure. SMPDBK does not provide time varying results for a dam break simulation. This method is useful for situations where reconnaissance level results are adequate, and when data and time available to prepare the simulation are sparse FLDWAV Model is used for unsteady flow analysis using the full equations of motion. The FLDWAV
[3] program is a combination of two popular NWS programs: the Dynamic Wave Operation Network Model (DWOPER) and the Dam-Break Forecasting Model (DAMBRK). The NWS developed DAMBRK specifically for simulating the failure of a dam and the resulting flood wave through the downstream valley. The model has been used in numerous dam break

EXPERIMENTAL INVESTIGATION OF PAVER BLOCK BY USING MUNICIPAL SOLID WASTE

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Abstract: Now-a-days municipal solid wastes are increased and it causes a great threat to environment and it decomposes very slowly that causing lots of pollutions. One of the global environmental impacts of solid waste is the emission of methane which is regarded as a powerful greenhouse gas, whose impact can be felt within a short period of time. Therefore, utilization of these wastes in making building construction materials can reduce the magnitude of the associated problems.
The aim of this project is to reduce environmental pollution by using municipal solid wastes and waste plastic to produce paver blocks. The plastic material is first shredded and melted in a container at a temperature range of 250 ºC - 260 ºC and Municipal solid waste and M-sand was added in the different proportion of 25%,50%,75%. The paver block was prepared and tested and results were compared with cement concrete paver block and fly ash paver block of different proportion.

Keywords: - Paver block, municipal solid waste, M sand, cement concrete paver block, Fly-ash paver block compressive strength.

I.   INTRODUCTION

Plastics are used in day today life. At present nearly 56 lakhs tons of plastic wastes are produced in India per year.
[1] Plastic is one of the daily increasing useful as well as a hazardous material. At the time of need, plastic is found to be very useful but after its use, it is simply thrown away, creating all kinds of hazards. Plastic is non-biodegradable that remains as a hazardous material for more than centuries. The waste plastic will be large in household time.[2]
The common and oldest management of plastic waste in the municipality as observed in most parts of the country is through burning and landfilling which are not environmentally friendly and sustainable since these may release smoke, carbon dioxide, carbon monoxide and nitrous oxide, major contributors to global warming (greenhouse gases - GHGs) and methane as leachates that contain pathogens. Moreover, landfilling polymer waste such as plastic waste is not desirable since plastic is non- biodegradable and no economic value would have been derived from the waste in that case. Furthermore, livestock in the municipality may die because they are dieting on plastic waste and being choked [3]
Usually these wastes are either burnt or land filled. This is an approach which could cause various environmental problems like air pollution, emission of greenhouse gases and occupation of useful land. The increasing charges of landfill are further aggravating the problem. Moreover, these methods of disposal are certainly wastage of a

primary resource. In addition, the biodegradation of these wastes in landfills emits methane, a greenhouse gas which has 72 times heating effect relative to that of CO2. Therefore, utilization of these wastes in making building construction materials can reduce the magnitude of the associated problems. To reduce use of natural resources, and dumping spaces are being achieved through the use of recycled the solid waste in building materials. Using waste and recycled materials in concrete mixes for paver blocks becoming increasingly important to manage and treat both the solid waste generated by industry and municipal waste
[4] This type of pavement will absorb stress, such as small earthquakes, freezes and thaws, and slight ground erosion, by flexing. Therefore, the pavers do not easily crack, break or buckle like poured asphalt or poured concrete.[5]

Thus, the results of productive use of waste material represents a means of reducing some

FLOOD SIMULATION MODELLING IN PARTS OF KUNDAH RIVER, THE NILGIRIS, TAMIL NADU

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Abstract - The Kundah river is one of the important rivers in The Nilgiris, Tamil Nadu, South India. The entire river is flowing on the steep slope hilly terrain. Some major reservoirs like Avalanche, Emarald and Kundah were constructed across the Kundah river and mainly used for generating hydroelectric power to fulfill the local domestic needs. The aim of this study is to simulate flood situation on one-dimensional model and identify the possible prone for flooding. In this simulation study, a river length of 6 Km. was taken on the downstream side of Avalanche Reservoir in Kundah river. MIKE 11 1D model was used for generating water profile surface of the study area. River feature and river cross-section were extracted from CARTOSAT1 DEM. The result obtained from flood simulation model shows that the flooding will affect between 2.70 Km. to 2.95 Km. stretch to a proximity of 250 m on right bank of Kundah river.

Keywords: CARTOSAT1 DEM, River cross-section, MIKE11 1D model, Flood Simulation Study & Kundah River

1. INTRODUCTION

A flood is an overflow of water that submerges land surface and causes damage to human life and property. Mays and Tung (1992), Kyu-Cheoul Shim et. al. (2002) and Huaixiang Liu et. al. (2012)) have worked on the assessment of flood hazard and related problems.

Flooding is mainly caused due to heavy rain and subsequently causes an overflow of water from the River or Lake. In the ancient period, Floods were not managed well. This is because of lack of knowledge in storing the flood water / diverting the water in an optimized way so that the impact of flood is minimised. In the later stage, due to the construction large number of Dams and Reservoirs, impacts due to flooding has been under controlled and hence gradually decreased. However, some threats still rose due to dam breaking and flash flooding.

Dam breaking and flash flooding are interlinked and have one to one relationship with each other. These phenomena severely affect the infrastructures and lives on the floodplain of the river, generally downstream side. By developing a flood simulation of a dam breaking situation, the same will help to take decisions and prevent heavy loss to the lives and infrastructure. Geographic Information (GI)

Technologies and flood numerical models like HEC-RAS, MIKE, SOBEK and ISIS were used to build the flood simulation models by various researchers. Morten Rung et. al. (2003), Vanderkimpen P. et. al. (2009), Kiran Yarrakula et. al. (2010) and Durga Rao K.H.V. et. al. (2014) have used various numerical models for flood simulation at different scenario.

2. STUDY AREA

The area selected for the present study is part of Kundah river in the hilly terrain of The Nilgiris, India. The Nilgiris is situated in the Western Ghats and The Nilgiris mountain is famously called as Blue Mountain. Kundah River originates from Avalanche and Emerald Reservoirs located in southern part of The Nilgiris. The river flow southeastward and joined with Bhavani river. In this simulation study, a river length of 6 Km. was considered for flood simulation from the downstream side of Avalanche Reservoir. Along this river stretch, six habitations namely Inbasagarnagar, Kuttimaninagar, Nehrukandy, Nehrunagar, Periyarnagar and Surendranagar are existing. These habitations were identified within the proximity of 500 m. from the centre-line of the Kundah river. In these six habitations,

PAVER BLOCKS BY USING FLY ASH AND GGBS (GEOPOLYMER CONCRETE)

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Abstract:- The living planet earth has encountered global warming due to various issues. One of the main reasons is construction industries since the foremost component of concrete is cement, which has its own environmental problems. The cement industry is one of the prime producers of carbon-di-oxide. It is estimated that about 7% of greenhouse i.e. Carbon-di-oxide gas is being emitted into atmosphere on account of production of OPC alone at global level. On other hand disposal of solid waste is a major problem. Coal power plants produce solid waste called fly ash whose disposal is difficult. Therefore urgent changes are required relating to emissions, production and application of sustainable and eco-friendly materials. This led to concept of geo polymer concrete by which cement can be entirely avoided in the concrete. This paper aims to develop geo-polymer paver blocks. The paver blocks developed are tested for their compressive, split tensile, flexural and abrasive strength as per Indian Standards 15658:2006

Need for the study:
•   To find Alternate material for cement to Control and reduce the global warming from the emission of carbon dioxide during cement production.
•   To Preserve natural resources by replacing river sand by M-sand
•   To minimize the dumping of waste material into ground .
•   To reduce the environmental problems by replacing industrial by-products into useful construction materials.

INTRODUCTION

Paver block has been used in construction for about thousands of years. Paver block is nothing but an unreinforced solid block appropriate for outdoor applications. The first concrete pavers were shaped just like a brick,

4" × 8" (10cm × 20cm) and they were called Holland Stones. These units turned out to be cheap to produce and were exceptionally strong. In addition to being economical, interlocking concrete pavers are also broadly obtainable in water-permeable designs, which have additional ecological benefits. These paver blocks allowed water to drain through their interlocks and prevent soil

erosion or increase wter level in the neighboring land area. Production of ordinary Portland cement had resulted in emission of greenhouse gas i.e. Carbon-di-oxide. As of 2010 the world production of OPC was 3300 million tons annually. This accounts for 5% of man-made emission of carbon-di-oxide at global level. On other hand clearance of solid waste is a major problem. Coal power plants produce solid waste called fly ash whose disposal is difficult. As the intricacy of environmental issues and solid waste management increases day by day it has become essential to develop sustainable and eco-friendly materials. This led us to develop geo polymer paver blocks for medium traffic with thickness of 80 mm. paver blocks were produced and tested for their properties. Geo polymers involves the activation of fly ash by alkaline solution which does not require water for curing.

MATERIALS USED:
The material used in the experimental work namely,
Cement
a substance made of burned lime, clay, sand and water to make mortar or sand, water and gravel to make concrete. FLYASH
Fly ash is extracted from pulverized or crushed coal by suitable process such as by cyclone separation or electrostatic precipitation. Fly ash collected at later stages of electrostatic precipitator is finer than the fly ash collected at initial stages of electrostatic precipitator.

LANDSLIDE SUSCEPTIBILITY MAPPING USING GIS BASED STATISTICAL MODELS AND REMOTE SENSING IN TROPICAL ENVIRONMENT

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Keywords—GIS, Slope failure, environment, landslide.

Abstract— Most shallow landslides are occurred by heavy rainfall on hill slopes which result in large casualties and huge economic losses in mountainous regions. Slope failure in hills occurs as soil resistance decreases in the presence of the stress acting which is been developed due to reasons such as increase in soil moisture content, changes occurred in land use causing slope instability and many more. Landslides occurred by rainfall can possibly be foreseen in real time by jointly using rainfall intensity-duration and information of land surface susceptibility. Terrain analysis applications using spatial data such as aspect, slope, flow direction, compound topographic index along with information derived from remotely sensed data such as land cover

The project presents GIS based spatial data analysis for landslide susceptibility mapping in parts of Nandi hills. Six important causative factors for landslides were selected and corresponding thematic data layers were prepared in GIS. The input data were collected from the topographic maps, satellite image, field data and published maps. Numerical weights for different categories of these factors were determined based on a statistical approach and then integrated in GIS environment to arrive at landslide susceptibility map of the area. The landslide susceptibility map classifies the area into five classes of landslide susceptible zones i.e., very high, high, moderate, low and very low. An attempt was also made to validate the map with the existing landslides of the area. The results of the analyses also showed that the Geographical Information System (GIS) technology provides a powerful tool to do spatial analysis and to model landslide hazard

INTRODUCTION

The Earth consists of atmosphere, hydrosphere, and lithosphere. These layers are subject to different processes due to mutual interaction or self-interaction. Interactions can lead to variousphenomenon, weathering, erosion, floods, hurricanes, landslides, earth quakes, volcanoes, tectonic movements, etc., which can lead to natural hazard. Natural hazards are an integral component of life on Earth

Natural disasters are grouped as:
Hydro-meteorological disasters: avalanches/landslides,

droughts/famines, extreme temperatures, floods, forest/scrub fires, windstorms and other disasters, such as insect infestations and wave surges

Geophysical disasters: earthquakes, tsunamis and volcanic eruptions. The number of recorded natural hazards has increased in the last 50 years with the greatest increase in frequency attributed to hydro- meteorological disasters, with a lesser increase attributed to biological disasters and a slightly lesser increase attributed to geological disasters. The pressure for infrastructure development to meet the need of rapid urbanisation and global competition has led to expansion of construction activities even in hilly terrains and has catapulted frequency of landslides to dramatic proportions in recent decades. Landslide refers to the movement of a mass of rock, debris, or earth down a slope or any down slope movement of soil and rock under the direct influence of gravity. This includes various types of slope failures, like, earth and debris flows, slumps, slides, and soil and rock fall. Landslide is a phenomenon of a mass

MODAL ANALYSIS OF BEAM TYPE STRUCTURES

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Abstract : The purpose of this project is to study Modal behaviour of Beam type structures. Beams under study include Cantilever, Simply Supported and Fixed beam. Mode shapes and natural frequencies of these three types of beams are obtained using Theoretical analysis, Simulation in ANSYS and Experiment using FFT analyser. Finally natural frequencies obtained from Simulation and Experiment are compared with Theoretical values of natural frequency. The mode shapes obtained from simulation and experiment are matching closely with analytical ones. Natural frequencies obtained by simulation are within 6% deviation when compared to theoretical results whereas for experimental natural frequencies the maximum deviation from theoretical values is 19.31%.
Keywords—Modal Analysis, Beam type structure, FFT Analyzer, Natural Frequency, Mode Shapes

I.   INTRODUCTION

Modal analysis is the study of the dynamic properties of structures under vibration excitation. The goal of modal analysis in structural mechanics is to determine the natural mode shapes and frequencies of an object or structure during free vibration.

The various research papers studied are based one valuation of specific properties or characteristics of vibration of beams by various techniques. L.Rubio"s [4] work focuses on crack identification by means of modal parameters. P.Šuránek et.al[6] work is on decaying rate of vibration in cantilever beam for which they used an aluminum frame as an accessory to increase decay rate. Farooq and B. Feeny"s[5] work is on new approach in theoretical modal analysis where they have used and evaluated the results experimentally for validity. H. Auweraer[2] has adopted a black box approach and evaluated them on industrial application. S. Mahalingam[1]has found changes occurring in modal parameters when support changes its position at an instance. A. Cusano et.al[3]used Bragg grating sensors instead of conventional accelerometer in experimental modal analysis and results were evaluated by experiment and simulation.

The literature survey shows that lot of efforts have been taken for determining the modal properties of beam type structures using numerous methods. Industry is focusing on reducing noise and vibration level for betterment of performance of various products. Beam type of structures are used in various application, hence it becomes an important structure to be studied for noise and vibration reduction. Mode shapes of beam type structures may provide more information to control vibration. The present study will

attempt to conduct experimental modal analysis of beam type structures namely Cantilever, Simply Supported and Fixed Beam. Thus, the scope involves:
-        Determination of Mode Shapes of Beam type structures analytically.
-        Simulation of Beam type structure in ANSYS.
-        Experimental Modal Analysis.

II.   THEORETICAL ANALYSIS

Beams are slender members used for supporting transverse loading. It is a basic structural element that is capable of withstanding load primarily by resisting bending. Simply supported, cantilever and fixed beam are considered for analysis and description of them are given below.

Cantilever beam:
A beam which is supported on the fixed support and having the other end free is termed as a cantilever beam: Fixed support is obtained by building a beam into a brick wall, casting it into concrete or welding the end of the beam. Such a support provides both the translational and rotational constrain to the beam, therefore the reaction as well as the moments appears, as shown in the figure below.

A SURVEY ON DEEP LEARNING METHODS FOR ASPECT BASED SENTIMENT ANALYSIS

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Abstract— The practice of examining, interpreting, drawing conclusions from, and extrapolating sentiment from subjective materials is known as sentiment analysis. Businesses utilize sentiment analysis for market research, customer experience analysis, brand reputation analysis, public opinion analysis, and social media influence research. It can be further classified as document-, sentence-, and aspect-based granularity based on the various needs. An aspect-based sentiment analysis challenge is explained in this article along with the newly suggested solutions. Currently, lexicon-based, conventional machine learning, and deep learning techniques are the three main approaches. We offer a comparison of the most recent deep learning techniques in this survey article. We discuss a number of widely used benchmark data sets, evaluation measures, and the state-of-the-art deep learning techniques.

Key Words— Aspect-based sentiment Analysis, Deep Learning, NLP, Data Mining, Sentiment Analysis, Gated Recurrent Unit.

I Introduction

SENTIMENT analysis has become a significant research direction in NLP. It consists of a combination of information retrieval, NLP, and artificial intelligence. Sentiment analysis is also known as opinion mining or subjectivity analysis. It studies various aspects, such as opinions, sentiments, evaluations, appraisals, attitudes, and emotions [1]. The commonly used phrase for sentiment analysis is "opinion mining," which is derived from the data mining and information retrieval community. Its main goal is to determine the opinions of a group of people on a certain topic. Sentiment analysis is a commonly used term that focuses on identifying the sentiment expressed in a text. It has become a rapidly growing research area since 2000 when Pang and Lee [2] created a comprehensive study to determine the sentiment polarity of movie reviews. It has received attention from not only academia but also from the industry because it can provide feedback information of customers through online reviews, help in deciding marketing policies, and detect changes in customers' opinions about various subjects, e.g., COVID-19's handling. It is used to identify and extract opinions within texts, sentences, or documents. Its basic task is to classify the expressed opinion of a given text into positive, negative, and neutral ones.

Nowadays, reviewing online customer comments and ratings before purchasing a product has become a very common and popular trend practice. Studies have shown that consumers trust online reviews or comments from strangers before purchasing a product or service [3]. There have been many statistical surveys and studies conducted in this area [82]. A study conducted in [4] shows that 39% of customers read approximately eight reviews, while 12% of them read 16 or more reviews before deciding on buying a product; 98% of the customers admit that their purchasing decision is influenced by customer reviews of previous buyers according to [5]. As stated in [6], statistics show that potential buyers are willing to spend 31% more on a product or service having outstanding reviews.

The customer reviews have become so significant that a study in [7] shows that buyers are not likely going to choose a product that has fewer or no reviews whenever they are confused between two products; 98% of buyers are resistant to buy a product with less or no reviews, as shown in [8], while almost four out of five customers change their minds about buying a particular product recommended by their friends or family because of negative reviews [9].

There have been several investigations being conducted in this area. The survey article by Harrang et al. [10] discusses, in detail, the improvements done in the field of prediction of customer reviews and

E- COMMERCE SECURED PAYMENT IN INDIA AND ITS CHALLENGES

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Abstract

E-commerce, is nothing but the purchase and sale of goods and services between businesses and consumers over the Internet. Technologies used in electronic commerce include mobile commerce, electronic funds transfer, supply chain management, Internet marketing, online transaction processing, electronic data exchange (EDI), inventory management systems, and automated data gathering systems. Consumers benefit from the reduced costs supplied by wholesalers who retail their items. This tendency will grow as websites address customer security and privacy concerns. The popularity of e-commerce has resulted in a significant growth in regional and global trade in products and services. Nowadays, it serves as the world's virtual main street. This online business refers to e-commerce, which has recently gained traction in developing countries such as India. Today, e-commerce has grown into a massive sector. This report is the result of a review of e-commerce-related research projects. The purpose of this study was to explore the current trends in e-commerce in India, as well as the problems and opportunities that exist in the industry.

Keywords: Electronics Commerce, Online shopping, Payment Gateway

I.   INTRODUCTION

E-commerce stands for electronic commerce. It means dealing in goods & services through the electronic media & internet. The rapid growth of e-commerce in India is being driven by greater customer choice & improved convenience with the help of internet the vendor or merchant who sells products or services directly to the customer from the portal using a shopping basket system or digital cart & allows payment trough debit card, credit card or electronic fund transfer payments. In the present scenario e-commerce market & its space is increasing in demand as well as an impressive display or range of a particular type of services. E- commerce is already appearing in all areas of business, customer services, new product development & design. E-commerce business is growing in India because of wide range of product with minimum price wide range of suppliers & customer's internet. In this modern era every business unit want to join online business because increasing ratio of internet users in India. E-commerce in India is still in growing stage but it offers considerable opportunity.

WHAT IS E-COMMERCE?

E-commerce (electronic commerce) is buying and selling of goods and services or the transmitting of funds and over an electronic network, primarily the internet. E-commerce replaces the traditional business method. This can facilitate improvement in business growth leading to substantial cost saving and increased competitiveness and efficiency.

TYPES OF E- COMMERCE:

There are 4 types of E- Commerce

1)   Business-To-Business E- Commerce:

B2B E-commerce is simply defined as e-commerce between companies. This is the type of e-commerce that deals with relationships between and among businesses. About 80% of e- commerce is of this type, and most experts predict that B2B e-commerce will continue to grow faster.

2)   Consumer To Business E-Commerce:

Business-to-consumer commerce, or commerce between companies and consumers, involves customers gathering information; purchasing physical goods (i.e., tangibles such as books or consumer products) or information goods (such as software, or e-books); and for information goods, receiving products over an electronic network. It is the second largest and the earliest form of e-commerce.

A CONCISE OVERVIEW OF WEB TECHNOLOGY

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ABSTRACT- In recent years, technology has developed at a quick and effective rate. One of the technologies that enables computer communication between them is web technology, which makes use of multimedia applications and markup languages. In order to address the issue of many people being unaware of online technologies, the author has chosen to draw attention to the concepts associated with web technologies. The author of this review paper talks about the various types of Web technology. It comes with a detailed description of its applications and a browser. This topic also covers databases, data formats, and programming languages. SPA, serverless architecture, and motion user interface are just a few of the numerous trends that will persist in the future. The Web is incorporating new technology

KEYWORDS- Applications, Browser, Framework, Language, Web Technologies.

I.   INTRODUCTION

Web application development is becoming increasingly common in IT projects as a whole. Web applications are available in a range of sizes and forms. Some Web apps are used for organizational purposes, while others are designed as interactive tools, and yet others are used for communication and visual design
[1]. The use of markup language and multimedia packets to communicate between computers is referred to as web technology
[2]. In this article, the author discusses web technologies and their many forms, such as browsers, HTML and CSS, protocols, and so on.

A.   Web Technologies

Web technology is defined as the use of mark-up language and multimedia packets to communicate between computers
[3].It makes it easier for us to engage with online material such as web pages. The many sorts of Web technologies are described here:

B.   Web technologies Categories

There are different types of technology involved in web as mentioned in Figure 1

Figure 1: The above diagram shows different types of web technologies

C.   Browsers

A browser, often known as a web browser, is an application software programme that is used to access the World Wide Web. In simple words, a browser is a piece of software that responds to a user's request [4]. When a user requests a web page, the web browser retrieves the necessary information and displays it on the user's screen [5]. Table 1 lists some of the most popular web browsers. A web browser is not

A REVIEW ON MEDICAL IMAGE ANALYSIS USING DEEP LEARNING

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Abstract—
This survey focuses on the analysis and processing of medical images, including MRI, CT scans, PETs, ultrasounds, and X-rays, using Artificial Intelligence (AI) and machine learning techniques. Software frameworks like Nifty Net and Milson are used to study various body parts, and big data datasets like Image Net are used for analysis.
Keywords—Deep Learning, Medical Image Analysis

I.   INTRODUCTION

Various fields of life are using Artificial Intelligence (AI). Medical and healthcare sector is not untouched by ANN, ML and then ultimately deep learning. CNNs are used for various medical image analysis purposes. Field of X-ray radiology [1], Ultrasound, CT scan, Medical Resonance Imaging (MRI) scans, positron emission tomography (PET) are being improved using DNNs and CNNs [2]. Gone are the days, when medical images had limited datasets. Now a day, big data is being analyzed and evaluated using deep learning techniques. Many software algorithms and software's like Nifty Net [3] and MIScnn [4] are being developed continuously, particularly used for medical image analysis. Imaging techniques like classification, segmentation, localization, detection and registration are being studied [5]. Medical application areas like neuro, retinal, pathology, cardiac, breast etc are being studied [6].

II.   CONVOLUTIONAL NEURAL NETWORK

CNNs have many layers like input layer, Rectified Linear Unit (RELU) layer, pooling layer and output layer decide whether image is disease infected or not [5]. Image acquiring, image artifact removal, normalizing images and image quality improvement is done using different deep learning methods [7]. Supervised and unsupervised learning techniques have been used for these purposes [5].
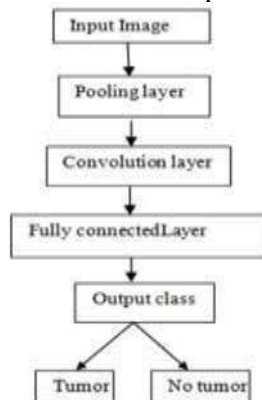
Figure.1 CNN layered architecture

III.   MEDICAL IMAGE ANALYSIS IN PRESENT DAY

X. Chen et al. (2021) – In this paper, image registration algorithms have been studied. This paper discusses all deep learning based medical registration since 2013. Various image registration methods in recent times are studied [8].

Muller & Kramer (2021) - In this paper, opensource Python framework MIScnn is discussed for image segmentation. It is used for deep learning model training, prediction and evaluation. MI Scan is run on Kidney Tumor segmentation. It is an open source library available at Git repository [4]. Jungo et al. (2021) – Pymia is an open source Python based package for data handling and evaluation in medical image processing using deep learning. Data handling is flexible (2D, 3D, full or patch wise) with

CLOUD SECURITY ISSUES, CHALLENGES AND THEIR OPTIMAL SOLUTIONS

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ABSTRACT—
Cloud computing is a modern, flexible, and cost-effective IT service delivery platform, improving grid and network computing. However, it faces security challenges due to third-party outsourcing of essential services. This paper analyzes these issues and proposes simple methods to secure cloud computing, addressing the differing views on cloud security and its potential growth. Cloud is an Internet based Service provided on-demand to a User who doesn't need to worry about implementation details or maintenance.

Keywords— Cloud computing, Security, SPI model (SASS, PASS, IASS), SLA (Service Level Agreement).

1.   INTRODUCTION

The word cloud computing define as delivering host services over the web (internet). It provide to storing, accessing and sharing computer resources over internet, instead of local server or personal devices to handle application (programs). Some research defines cloud computing as a virtual server available over the internet. The word cloud computing' define as —A type of web (network) based computing‖ [1]. Cloud is an Internet based Service provided on-demand to a User who doesn't need to worry about implementation details or maintenance. In the last few years, cloud computing has grown, one of the fast growing area of the IT industry. The importance of Cloud Computing is increasing and it is receiving attention in the organizations and scientific communities.

Figure. 1. Simple view of cloud computing [1]

According to Gartner's study Cloud Computing consider as one of the most important technologies and with a better prospect in successive years by companies and organizations. Cloud Computing authorize universal, ondemand, appropriate network access to a shared computing resources (e.g., applications, servers, storage, and services) that can be expeditiously provisioned and absolved with minimal management effort or service provider interaction. The cloud has different architecture based on the services they provide. The data are organized at one centralized place called data centers, keeping a large size of data storage. That data processed using online servers. So, the customers have to trust the vendor on the availability as well as data security. The cloud enhances collaboration, agility, scalability, availability and ability to adapt to fluctuations according to request, potential and speed up development work for cost decrement through accomplished and optimized computing [2]. Even if there are so many benefits to opt Cloud Computing, there are also some limitation to adopt it. One of the most significant problem with cloud is security, followed by issues regarding compliance, privacy and legal matters. We divide security issue into two categories:-Security issue faced by provider (SASS, PASS, IASS related) and security issue faced by customers (organizations, companies and

AN EXPERIMENTAL STUDY ON IOT BASED HOME AUTOMATION

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Abstract
A Home automation is a topic that is becoming increasingly popular due to its numerous benefits. Home automation might be accomplished easily by connecting home appliance electrical bias to the internet. The reason for this surge in demand for network-enabled home atomization is that it is becoming increasingly simple and affordable. Platforms based on computing assist in connecting to the thing's surrounds, allowing one to easily pierce anything and anything at any time and place in a stoner-friendly manner.

Keywords: Home Automation, Internet of things, RF, ESP32

1.   INTRODUCTION

1.1   Kevin Ashton coined the phrase "Internet of effects" (IoT). As Ashton noted in the RFID Journal (June 22, 2009), "If we had computers that knew everything there was to know about effects - using data they gathered without our assistance - we'd be able to track and count everything, greatly reducing waste, loss, and cost." We'd know when effects needed to be replaced, repaired, or recalled, as well as whether they were current or out of style." At the same time, Gerstenfeld (1999) published his book "When effects Start to suppose," in which he saw the evolution of the World Wide Web as a condition in which "effects start to use the Net so that people don't have to." Also, early

1.2   Background

The concept of "home automation" has existed for quite some time. The words "Smart Home" and "Intelligent Home" were coined to describe the concept of networking equipment within the home. Home automation systems (HASs) enable centralized management and remote monitoring of lights, security systems, and other household equipment and systems. HASs increase energy efficiency, security systems, and, most importantly, drug users' comfort and simplicity of use. In the current market, HASs are growing popularity and have piqued the interest of a large number of drug users. HASs presents unique issues. Significantly, in the present day, end druggies, notably senior and disabled, even though monstrously served, are not seen to adopt the system due to its intricacy.

1.3   Iot Concepts

With specialized advancements, People no longer only encounter information technology at common points in their lives, similar as in services or at divisions, but as information and communication architectures, which are present in adding areas of everyday life. These architectures are characterized by the fact that they not only include classic bias, for illustration, PCs and mobile phones, but that information and communication technology is also bedded in objects and surroundings. Through the physical embedding of IT, everyday objects and our everyday terrain come "smart, "that is, able of processing and furnishing information, but not inescapably intelligent in the sense of mortal cognitive intelligence. In another largely regarded composition, Weiser together with Brown introduced the notion of "Calm Computing." The core generalities comprising IoT, as well as affiliated generalities and models, will be presented in the ensuing sections.

1.4   Iot Framework

The following paragraph's brief review of specialized, profitable, and social challenges demonstrates that IoT includes a broad range of topics and disciplines. To structure the field, we suggest the four-subcaste "Internet of Effects Framework" (Figure1.1). At its core, ultramodern information and communication technologies built on the specialized foundation of IoT (described in subcaste 1). IoT creates a network of explicitly identified physical things (effects). Networking, and hence

AN APPROACH TO FINGERPRINT IMAGE PRE-PROCESSING

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Abstract—
This paper uses existing algorithms to process fingerprint images in a specific order, resulting in better results for minutiae detection and feature extraction. However, the method assumes good image quality, and if captured using a high-quality device, it will produce equal quality output as other existing techniques. Image quality enhancement is not yet explored.
Index Terms— Original Image, Bifurcation, Termination, Dual Image

1.   INTRODUCTION

Biometrics is the most widely used area which helps in identifying a person via his behavioral and physiological properties. The most matured and accepted biometric system is the fingerprint recognition system. Fingerprint recognition implies mechanical means of matching fingers. Fingerprint recognition systems are getting more acceptance because of its invariability in different people. Fingerprint recognition is the readily available feature of biometrics, which provides an unbeatable, reliable and perfect identification of human beings. It has been proved that fingerprint is the most accurate biometric trait as compared to other traits [8]. That is, fingerprint systems are the most popular, matured and acceptable biometric trait [8, 11]. Fingerprint recognition is used not only for identification; it can also be used for other objectives as well. The probability of two fingers being same is 1 in 1.9×1015 [7, 9, 10]. This is the reason why these systems are so popular and are used in high security areas.

Fingerprints are the patterns present on a finger. Fingerprint contains complex patterns of stripes, called ridges. There exists some gap between the ridges, called valleys [7, 6]. In a fingerprint, the dark lines of the image are called the ridges and the white area between the ridges is called valleys.

A ridge can spread further in two ways, either it ends or bifurcates into two ridges. The place where ridge ends is called termination or ridge end and where it bifurcates is called bifurcation. Minutiae consist of these two basic types, ridge end and bifurcation. These two types of minutiae points are considered as the basic minutiae points.

Figure. 1: Basic Types of Minutiae in Fingerprints

Fingerprint recognition proceeds by identifying all the minutiae points and then extracting their features and last is to match the two points. Fingerprint Recognition involves three main steps. These steps need to be followed so that accurate matching of fingerprints can be performed. These steps involves:-
1. Image Pre-processing
2. Minutiae detection and feature extraction

HEALTHCARE MONITORING SYSTEMS USING IOT: A LITERATURE REVIEW

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Abstract
In the main stream of research on health requests primarily focuses on IoT techniques for cost savings, ease of interpretation, and patient satisfaction. The Mobile Healthcare Management System (HMS) is one such IoT app that links the Internet to mobile sensors, people, and devices. IoT-based smart HMS allows clinicians to monitor patients remotely. This paper helps to know how IoT can be incorporated into complex health care procedures. The Internet of Things cooperates with numerous technologies, such as the Wireless Sensor Network (WSN), which communicates with each other through 6LoWPAN, REST and other protocols, such as radio frequency data, smart mobile inventions and wireless sensor networks.

Keywords: HMS (Healthcare Management System), IoT, WSN, Radio Frequency.

1. INTRODUCTION

In "Kevin Ashton 1999" the word "IoT" was first created and considered it important as an arrangement for simulating multiple services. There are different definitions of IoT and the "Internet of Things" is a powerful network system that can be structured according to the framework of standard collaborative communication agreements based upon the IoT European Research Cluster (IECR) project concept. IoT is an infrastructure that links everyone, wherever, wherever and wherever to all facilities, flexibly, through connectivity and networking. It is seen as a groundbreaking development with several improvements over the years. The IoT came as a revolutionary idea, which was implemented in a smart world with a kind of rational energy efficient technology. "IoT has become a major focus of health, energy, the environment, public protection, food and water access, connectivity, manufacturing and so on, and much more in different areas of social use. Currently, 20.35 billion connected devices will hit 75.44 billion in 2025 globally and statistically.

2. LITERATURE SURVEY

The study of "IoT" was comprehensive and montages relations and constraints. The main goal of "IoT" is to ensure that, in conjunction with "electronic sensor" devices, Internet-based communications and the sending and reception of information are conventionally accessible. In a report "28.4 billion IoT users in 2017 and by 2020 they are going up to 50.1 billion" remained the result of one report. "IoT", according to scientific charity, provides a range of services. "Wi-Fi, mobile phone, NFC, GPS etc." is continuity of contact. The IoT main aim, though, is to incorporate organizations, mechanization so that messages can be transmitted without interruptions, compared to software creation; the start of the programmed is the most frequently recycled sensors with accelerometers, compression-embedding camps such as the "MCUS, MPUs". The services have improved "intelligent fitness, transportation, grids, parking and intelligent homes." Therefore, the core goal of IoT is to combine organizations and mechanization in order to provide messages continuously. The initial opinion for the "IoT phase is divided into criteria, specifications and implementation" is comparable to software development overall. An essential method is the final section containing the company process. "H." In order to understand the specifications of any IoT project Eskelinen submitted two questions and included them in the design phase. These moments of design- based science lead to adequate exploration of the following concepts, before the construction is funded, a strategy needs to be created that blends realistic goals with theory, and one has to bear in mind at the same time that real life is a research centre. Systematic and professional testing methods should be carried out. The designs should always be taken into account for any failure, and the designs chosen should be demonstrated to be durable over time. While Saini et.al developed its healthcare system, the consumer was the subject of the study:

SEMANTIC WEB IN PROGRAM MANAGEMENT

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Abstract
In an academic setting, information administration systems are typically fragmented, distributed among multiple departments, and designed to accommodate autonomous searches. This initiative aims to investigate the integration of these separate systems in order to support
The integrated platform is used to conduct intelligent queries. In order to provide a value-added semantic layer where annotation, querying, and reasoning may be done to satisfy management requirements, a framework is proposed that enriches data in the legacy systems. The creation of this framework is explored along with a case study of a typical engineering program to demonstrate how program stack holders might leverage semantic web technologies for improved academic program management. The comparative work presents applications that have been investigated in relation to the semantic web.

Keywords
Semantic Web, Web Technology, Integrated Academic Systems

INTRODUCTION
Unlike Content Management Systems (CMS) that provide educational services, such as Virtual Learning Environments (VLEs), course repositories, library archives, online examinations, online coursework submission, etc., the learning process management systems use Web-based technology to plan, implement, and assess a specific learning process. This technology allows the employee/student to take learning into their own hands while either staying current in their specific field or branch out and learning new skills. On the other hand, Academic Information and Management Systems (AIMS)are mostly used in academic environment to support information, finance, logistics, human resource and student services. Both types of systems create huge databases containing interrelated data. Generally, the academic and content management systems work in isolation (mostly maintained by different departments) and in many cases, not even designed to interact with each other at later stages . The growth of an academic system is measured through its evolution. Typically, the stake holders include students, faculty, administration, local industry and professional bodies etc. In absence of collaborative subsystems, the decision making in a distributed system would require tiring analysis of extensive data resulting in evolving rate that may not keep up to local industry needs. The yield from an academic system relies heavily on timely collection of data from stake holders and decision making based on faculty-administration nexus. With reference to engineering education, this slows down the local and international accreditation efforts. Ontology is a formal representation of a set of concepts within a domain and the relationships between those concepts. It is used to reason about the properties of that domain, and may be used to define the domain. In order to coordinate different semantic web activities, an educational ontology may be explicitly defined to share a contextual conceptualization of the educational domain, which can be then used to annotate lecture resources, program specifications, modules, assessments, etc. This allows the users to make their resources more machine processable by collaboratively constructing an enriched layer of the semantic web that links educational artefacts with formal semantics to support other semantic activities such as semantic query, aggregation and reasoning [9]. As semantic web opens up the data for reuse of learning resources within a domain (for example in an engineering college), the relations amongst data related to various college departments become clearer and thus rationale may easily be developed to initiate possible joint/multidisciplinary programs or identify common weaknesses within college departments.

BIG DATA ANALYTICS SERVICES TO BOOST INTELLIGENCE IN BUSINESS

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Abstract

The usage of big data analytics services to improve business intelligence is examined in this article. More precisely, this paper presents a big data analytics service-oriented architecture (BASOA) and suggests an ontology for big data analytics. It then applies BASOA to business intelligence, and our survey data analysis indicates that the proposed BASOA is feasible for improving enterprise information systems and business intelligence (BI). Additionally, this research investigates relativity, expectability, and temporality as BI intelligence traits. When it comes to an organization's processes, goods, and services, these are the qualities that decision-makers and customers anticipate from business intelligence. The method suggested in this study may make it easier to conduct research and develop big data science and big data analytics in addition to business analytics and BI.

Keywords: Big data, big data analytics, e-commerce, business intelligence (BI), intelligent agents, data science.

1   Introduction

This is the era of big data [1]. Big data and big data analytics have been revolutionizing innovation, research, development as well as management and business [2, 3, 4]. Big data analytics services have created big market opportunities. For example, the researcher of IDC (International Data Corporation) forecasts that big data and analytics- related services marketing in Asia/Pacific (Excluding Japan) region will grow from US$3.8 billion in 2016 to US$7.0 billion in 2019 at a 16.3% CAGR (compound annual growth rate) [5]. Big data and its emerging technologies including big data analytics have been not only revolutionizing the way the business operates but also making traditional data analytics and business analytics bring new big opportunities for academia and enterprises [6, 7, 4, 1]. Big data analytics is an emerging big data technology, and has become a mainstream market adopted broadly across industries, organizations, and geographic regions and among individuals to facilitate big data-driven decision making for businesses and individuals to achieve desired business outcomes [8, 9] [10].

This section proposes an ontology of big data analytics and looks at the interrelationship between big data analytics and data analytics. To begin with, this section first examines the fundamental of big data analytics.

Big data analytics can be defined as the process of collecting, organizing and analyzing big data to discover, visualize and display patterns, knowledge, and intelligence as well as other information within the big data [14, 7]. Similarly, big data analytics can be defined as techniques used to analyze, acquire and visualize knowledge and intelligence from big data [14]. Big data analytics is an emerging science and technology involving the multidisciplinary state-of-art information and communication technology (ICT), mathematics, operations research (OR), machine learning (ML), and decision sciences for big data [6, 2]. The main components of big data analytics include big data descriptive analytics, big data predictive analytics and big data prescriptive analytics [16, 7]. In other words, big data analytics can be represented as

Big data analytics = big descriptive data analytics + big predictive data analytics + big prescriptive data analytics (1)

IMAGE PROCESSING IN VARIOUS FIELDS

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Abstract

This paper explores the application of image processing in various engineering fields, focusing on its potential in quality inspection. It discusses the challenges of object recognition and feature extraction in image processing, and highlights its applications in construction, fluid flow, thermal imaging, medical, fruit and vegetable, and rock carving industries.

Keywords:

Image processing; Machine vision; Data acquisition; Strain measurement; Thermal; Fluid flow;

1.   Introduction

Image processing technique can be used for processing images, 3d models, printouts and to obtain the required data from the images. Researchers use a broad range of basic procedure of image interpretation while adopting analog visual techniques. This type of image processing is just restricted within the area of knowledge of the analyst. So analysts may apply a blend of personal knowledge and data in image processing. In digital image processing, computer based algorithms are developed to perform image processing technique. Considering the advantages of digital image processing against analog image processing and due to huge number of algorithms available that can be used with the input data. In digital image processing, few problems during processing such as noise creation, signal distortion etc., can be minimized and removed during preprocessing technique called signal processing. In late 2000, due to the advancement that happened in digital image processing with aid of computers has become the emerging form of image processing which is more versatile, and also the cheapest one. Image processing has strong relation with computer vision and computer graphics. The following steps describe the procedure for image processing: Hallucination (identifying the hidden objects), Image restoration and sharpening (for creating sharpened image), Image repossession (search for the area of interest), Measurement of pattern (calculating the color range of objects) and Image acknowledgment (differentiating the region of interest). In this study, a review on digital image processing, applied in various field has been given with suitable algorithms.

2.   Image processing in different fields

It can be noticed that substantial amount of investments has been going on civil infrastructures since past few decades. To assure the safety of the civilians, the priority has to be given to maintenance and the interventions should be defined to reduce both environmental impacts and costs. Due to climatic changes, the former leads to different new maintenance strategies. To achieve quick and reliable diagnostics, focused solution has to be developed to maintain the structures' robust. Thus the developed solution ought to ensure be effective, reliable and economical forever. The availability of the digital and optical equipment's gained importance in structural assessment. Currently, in construction sector to perform land survey, structural damage monitoring, structural health assessment, deformation and damage study [2]. Terrestrial Laser Scanning (TLS) method has been widely adopted. By means of 3D images of structures, this accurately collects both qualitative and quantitative information. For characterization and monitoring, Terrestrial Photogrammetric (TP) has been widely adopted [3]. Photogrammetric allows cost effective high-resolution 3D structural imaging systems. [4] It is not possible to characterize fluid flow pattern with high velocity. Image processing technique is most widely adopted to visualize and characterize complicated 3D fluid flow to acquire clear image of the physical phenomena for further processing. The foremost interests for researchers in fluid flow are pattern formation and flow structures, by analysis the phenomena through acquired images. Much more study has been carried out on jet

AUTOMATIC DIALER AND IVR SYSTEM EMPLOYING RASPBERRY PI

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Abstract--- Such a large number of organizations utilizing VoIP answers for their systematic call communities, communication promoting called auto dialers frameworks and voice message calling frameworks. VoIP utilizes the Internet as the primary correspondence media to transfer the voice as data packets on the system. These data packs are move to the normal PSTN network utilizing VoIP Gateways called FXS or GSM Gateway. Electronic Private Branch Exchange system (EPBX) is communication framework with wire line correspondence. This customary PBX framework for example EPABX was supplanted by IP-PBX framework, the web convention is found PBX framework dependent on (VOIP), which passes on voice as an information over the web. An IP-PBX framework is a finished communication framework that gives liberated from cost, without SIM card wireless calling. There is one significant specialized gadget called VoIP Gateway and for utilizing SIM card called GSM Gateway which is the go between the IPPBX dialer and the general public switched telephone network.

I. INTRODUCTION

A private branch exchange build relationship between the inside telephones of a independent association by and large a trade and moreover interface them to people in general exchanged phone organize for instance PBX requires part of upkeep and labor. It is substantially less impervious and considerably less adaptable .It needs further wiring for new augmentation that is indulgent and it is not reinforce propelled alternatives like phone message, communication ,guest ID and afterward forward. The Electronic Private Automatic Branch Exchange (EPABX) used by an enormous bit of the relationship for correspondence with inward agents and with the outside world. It is a phone line partition device and associate with the expansion. It is an augmentation littler than typical telephone exchange that interfaces you to the expansion. The augmentation telephone is associated with wires to the PBX framework. . Also this PBX is not suitable for telemarketing as well as general voice based calling as it does not consist of any call details record or voice recording. So the IP based correspondence framework called IP-PBX is utilized for both internal as well as external calling for the business organizations.

The IP-PBX will deal with the internal calling on the wireless network or local area network of the organization likewise due to the fact the outside business known as outbound. The autodialer is that the system performs that automatic appeal the phone mobile number and also the business agent get connected once decision person picks the call. This can save the time to dial the number manually likewise as number of calls per day is additional. This autodialer is connected to the GSM or FXO gateway for outbound calling. As IP-PBX is VoIP business and as per the govt. rules we tend to cannot create calls from VoIP to PSTN directly. GSM gateways square measure within the most demands because it is user friendly and that we will amendment the SIM card if needed.

This gateway gets the call from VoIP and transfer to the PSTN number to determine call connectivity.
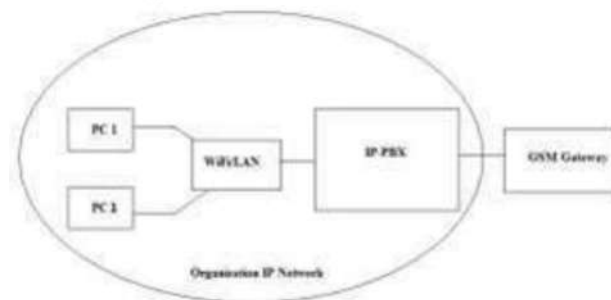

Fig.1. IPPBX System architecture with GSM gateway

FPGA IMPLEMENTATION OF CORDIC ALGORITHM

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Abstract: CORDIC means Co-ordinate rotation Digital computer is the uncomplicated and structured algorithm to enumerate the problem defined functions such as real and complex multiplications, division, square root etc using simple addition, subtraction and operations like level shifters, hyperbolic and logarithmic functions, calculation of trigonometric. Rectangular to polar and polar to rectangular is an important operations in CORDIC which are generally used in ALUs, wireless communications, DSP processors etc.
This type of conversion needs a hardware application of square root and arctangent circuits. The outcome of these applications gives complexity in hardware design, area and power consumption. The CORDIC algorithm is used to overcome these parameters. This paper proposes the experimental results based on various methodologies on design.

I.   Introduction

Co-ordinate rotation Digital Computer or (CORDIC) which is also known as Volder's algorithm is a easy and efficient algorithm used to calculate hyperbolic and trigonometric functions. When Jack E Volder proposed the CORDIC it was only based on the principles of two dimensional geometry such as trigonometric functions, after five decades the CORDIC has been emerged in various applications and have progressed in the areas of the design algorithm and developed the architectures to provide high performance and less expensive hardware solutions. It is realized that by varying a simple variables, the algorithm might become solitary which results in uniform implementation of the broad range of primary transcendental functions that involves methods like exponentials, log functions and square roots etc. all this parameters was very suitable for an application like scientific calculators.

The other applications which are drawn from the CORDIC algorithm are direct frequency synthesis, modulation and coding for speech/music synthesis and communication, direct and inverse kinematics computation for robot manipulation, and planer and 3-D vector rotation for graphics and animations. The conversion of rectangular to polar and polar to rectangular function are the two major operations in CORDIC. Basically they are the two different coordinates to represent the 2D plane. The rectangular coordinates are in the form of (x, y)where 'x' stands for horizontal plane and 'y' stands for vertical plane from the origin likewise polar coordinates are in the form of(r, Θ) where 'r' stands for distance from the starting point to the estimated point and 'Θ' is an angle measured from positive 'x' axis. The polar coordinates are habitually used in navigation in marine and aerospace using radars. They are used in different processors like ALU, DSP and various communication purposes like wireless and satellite communication. In this paper we will discuss about various methods on implementing hardware architecture on CORDIC.

In this paper, we have reviewed the different implementations of CORDIC algorithm like FPGA and some software implementations. Section III of the paper describes the software implementations of the algorithm, while Section IV outlines the FPGA implementations. In the last section we have discussed the various technologies used f the design of standard cells.

II.   The Cordic Algorithm Architecture

The authors [1] describe the CORDIC (CO-ordinate Rotation Digital Computer) algorithm is the most powerful method for understanding the multiple modulation schemes. The CORDIC algorithm is used in modulation to convert coordinates from polar to rectangular. Different digital modulation techniques in MATLAB realization and VHDL implementation include ASK, FSK and PSK with VHDL

IMPLEMENTATION OF FIR FILTER USING HYBRID ARCHITECTURE

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Abstract: FIR filter architecture for various filter applications are given. The combination of ripple carry adder, carry look-ahead adder and carry select adders is used for the designing of the core circuit components. The speed of the operation in the circuit is increased by the parallel generation of the carry by look ahead carry generation blocks and is propagated using modified carry skip adders. The radix-4 booth multiplier, which has a low-power-delay-product, is used as the multiplier in the design of the filter. The normal ripple carry adder in the booth multiplier is replaced by the modified hybrid adder for increasing the speed and performance of the multiplier unit. Thus the speed of the designed filter can be increased by the use of modified booth multiplier and lowers the propagation delay. The design and implementation is done using the cadence RTL compiler with gpdk of 45 nm technology.

I.   INTRODUCTION

Digital filters have bought a drastic change in the world. A filter is a frequency selective system. The digital filters are mainly classified into two; finite impulse response (FIR) and infinite impulse response (IIR), depending on the form of unit impulse response of the system. IIR filters mainly uses recursive structures and FIR filters uses non-recursive structures for implementation. FIR filter response depends on the present and past input values. But for IIR filter response depends on the present and past values of the execution as well as past values of the response. FIR filters has many advantages like linearity, bounded-input-bounded-output (BIBO) stability, and low sensitivity over IIR filters, which have made them suitable for many real time applications.
When converting an algorithm to hardware, addition and

multiplication is an inevitable operation. So as to improve the hardware efficiency, operations f these components has to be considered. The speed and power of these elements often dominates the overall system performance. Hence, a careful design optimization is required. For each module, multiple equivalent logic and circuit topologies exit, each of which has its own positives and negatives in terms of area, speed, or power. Reduction in area and path delays are the major challenges faced during the design of the compact circuit. Many works has been done in literature which focused on

the design and implementation of filters using various adders and multipliers [1]. The system can be enhanced by replacing traditional/conventional adders with efficient adders in terms of delay, area and energy. The basic ripple carry adder (RCA) requires less area and low power compared to most other adder structures. But, its propagation delay is proportional to the bit width. The other high speed adders are carry-skip adder, carry look-ahead adders (CLA) [2]– [7]. In [8] author improved the conventional carry skip adder (CSKA) by the using incrementation scheme. This it improved the speed of the operation, but it leads to higher power consumption. This idea has been used for the designing of the modular hybrid adder structure in [9].

The performance of a DSP system is mainly controlled by the multiplier performance. Multiplication is thus an inevitable part in digital system designing [10].hence its performance in terms of delay and power is of very much importance. Different multiplication methods are discussed in digital system designing. But high speed multiplication is achieved by the use of modified booth

IMPLEMENTATION OF MACHINE LEARNING IN AGRICULTURE

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Abstract –
The majority of India's agricultural products have been negatively impacted by climate change in terms of performance over the past 20 years. Prior to harvest, crop output predictions would aid farmers and policymakers in deciding on the best course of action for marketing and storage. Before cultivating on the agricultural field, this project will assist the farmers in learning the yield of their crop, enabling them to make the best choices. By creating a working prototype of an interactive prediction system, it tries to find a solution. It will be put into practice to implement such a system with a user-friendly web-based graphic user interface and the machine learning algorithm. The results will be made available to the farmers of the prediction. Therefore, there are various ways or algorithms for this type of data analytics in crop prediction, and we can anticipate crop production with the aid of those algorithms. It employs the random forest algorithm. There are no suitable solutions or technologies to deal with the scenario we are in, despite the analysis of all these concerns and problems, including weather, temperature, humidity, rainfall, and moisture. In India, there are numerous approaches to boost agricultural economic growth. Machine Learning is the technique most widely used in today's world. ANN is the most widely used algorithm for prediction. It is based on a collection of nodes. These nodes are called neurons. Neurons work in a way similar to the human brain. Hence, it gives more appropriate results.

Key Words: ANN, Machine Learning, Crop Prediction

1. INTRODUCTION

About 70% of Indians work in the agricultural sector, which is why it was important to include it in our analysis of the economy of the nation. Crop yield prediction is a huge problem in the agricultural sector. Crop prediction is the process of figuring out what the farmer can grow. Building a system that would operate with maximum accuracy and take into account all significant variables that can affect the outcome of the crop prediction is imperative. Numerous studies have been conducted to forecast the crop that a farmer can grow. Most of the farmers try to know crop yield and whether it meets their expectations. They evaluate the previous experience of the farmer on a specific crop

yield. The decision of a farmer on which crop to cultivate is typically influenced by his intuition and other unimportant variables, such as the desire to make quick money, ignorance of market demand, exaggeration of a soil's ability to support a particular crop, and so forth. The farmer's family's financial situation could be severely strained by a choice he made. Maybe this is one of the numerous factors contributing to the innumerable farmer suicide cases that the media reports on every day. we suggest a system, an intelligent system, which, before advising the user on the best crop to plant, will take into account environmental factors (such as temperature and rainfall) and soil characteristics such as pH value, soil type, and nutrient concentration.

A website created as part of the "Smart Farming using Machine Learning" project helps farmers by predicting the crop that will be grown. This calls for specific conditions including temperature, precipitation, and soil moisture. The suggested system specifies the kind of crops a farmer may raise on his property. A suitable dataset that describes the best crop is required for the crop prediction process in order to reduce the likelihood of crop failure. Another

LOW POWER AND HIGH SPEED 4-POINT DISCRETE COSINE TRANSFORM

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Abstract--- Discrete Cosine Transform (DCT) expresses a finite sequence of data points in terms of a sum of cosine functions oscillating at different frequencies. The utilization of cosine is basic for compression as incidentally, less cosine capacities are expected to estimate through for differential conditions. Being a transformation technique and one among the complex ones, any n point DCT has complex calculation procedures that also uses matrices. This results in a larger area and power trade-offs. This paper tries to cope up with these particular trade-offs and try to find more efficient ways by using the floating point multiplication/multiplier techniques as the floating point numbers are utilized to address non integer fractional numbers are utilized in most designing and specialized computations. The proposed DCT module operates with very high frequency and with very low dynamic power dissipation.

Keywords---
Discretecosinetransform,floatingpointnumbers andmultipliers,datacompression,trade-offs

I. INTRODUCTION

A discrete cosine transform (DCT) demonstrates a finite number of knowledge points in terms of a sum of cosine functions oscillating at different frequencies. The DCT is a largely used transformation technique in signal processing and data compression. "A discrete cosine transform uses n real basis vectors whose coefficients are cosines that are quickly being computed from a Fast Fourier Transform" [2]. "Also, it is a real transform with better computational efficiency than DFT as it compacts the data into sets of discrete blocks" [1] [5].

The utilization of these functions is basic for compaction, a DCT is a Fourier-related change like the (DFT) [6], and are identical to DFTs of generally larger length, working on real information with even symmetry, though in certain variations the information or potentially yield information are moved considerably by half a sample.

"And there are different types of DCT equations as mentioned below" [1].

DCT-1:Correspondstotheboundaryconditions

$$X_k = \frac{1}{2}(x_0 + (-1)^k x_{N-1}) + \sum_{n=1}^{N-2} x_n \cos\left[\frac{\pi}{N-1} nk\right] \quad k = 0, \dots, N-1.$$

DCT-2:Themostcommonlyused DCT

$$X_k = \sum_{n=0}^{N-1} x_n \cos\left[\frac{\pi}{N}\left(n+\frac{1}{2}\right)k\right] \quad k = 0, \dots, N-1.$$

DCT-3: Most commonly termed as the Inverse DCT(IDCT)

DCT-4: Data from various transforms is being overlapped and this is being termed as modified discrete cosine transform (MDCT).

DCT-5 to 8: These are the higher order types of DCT that concentrate more on the boundary conditions along with them being even/odd functions regarding the point of symmetry.

As the frequently used type of discrete cosine transform is DCT Type-2, we used it for the calculation of a N-point DCT(4-point).This is done in two ways, one being the conventional approach i.e., using the general formula/equation of type-2 DCT as mentioned above where, k=0,1,….N-1 and N is the radix point. And the other way is using the dct butterfly diagram and then comparing the results.

This paper deals with the calculation methods of both the processes.

LOW POWER AND HIGH SPEED CLASS B AMPLIFIER

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Abstract- This paper presents a hybrid Broadband power amplifier which provides high drain efficiency. AB and J, Two Classes of power amplifier are described using GaN HEMT with matching networks together with input and output compact elements. Using Load Pull method, the best input and output network in the central frequency of 3GHz for output power of 40dBm, 10dB high gain and high efficiency of 80%, has been designed. After describing the design of each of the amplifiers and comparing their performance, the proposed circuit, two-class AB/J is discussed to be the target of the circuit design, reducing the input power to achieve high efficiency output power and gain. Input and output matching proposed circuit elements in terms of theory and simulation are compared, and the results of both.

Key words- Darlington pair, Szikli pair, low power consumptions, temperature stability, bandwidth
Introduction- Long-term use of battery-operated devices is an important challenge in present times. To meet this challenge, simply increasing the battery capacity is not enough as it will increase the weight and size of the portable device. Therefore, this challenge cannot be controlled by increasing the capacity of the battery, but if somehow the power consumption is controlled, then this challenge can be controlled to a great extent, but along with this control, this thing Care should be taken not to affect the basic properties of the device i.e., voltage gain and bandwidth.

The determination of the efficiency of the transmitter used in the communication system depends on the fact that how much is the overall efficiency of the power amplifier. The main focus of any power amplifier is how well it can convert dc input power to ac input power to rf/micro wave output power without any harmonic distortion. To achieve this goal, the classical class b amplifier has been built. The most important feature of class b is that its efficiency is up to 78%, it also has a drawback; its conducting angle is 180 degree or semi-circular. Hence the class ab of the complete circle was constructed. In which two transistors have been used, in the first half cycle the first transistor is on, in the second cycle the second transistor is on, thus the conducting angle is up to 360.

In fact, there are many general paper and books available for class b amplifier study. These amplifiers designed using either complimentary compound pair or other method, basically two methods widely used to design class B amplifier one is Darlington and other is Szikli. This paper divided into four parts, first is introduction second reference and expletory circuit third simulation and result and fourth is discussions.

Part II reference and expletory circuits-
In this part of the article, we have presented the proposed circuit along with the reference circuit, the triplet transistor configurations are used for the first time in the construction of the reference class b amplifier and 25-volt DC voltage used with Diode and resistance for circuit stability. In the constructions of the proposed circuit, we have used Darlington and Szikli pair with one MOS transistor to design class B amplifier. One more thing we used triplet diode with resistance for circuit stability of the circuit.
The class B power amplifier's efficiency is higher as compared to class A because, in class B, there is no DC base bias current because its quiescent current (IQ) is zero so that the DC power is very small. In a Class-B amplifier, the transistors are biased to cutoff, so that there is no power dissipation of

MACHINE LEARNING BASED INTRUSION DETECTION APPROACHES IN WIRELESS SENSOR NETWORKS

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Abstract
. The medium of communication between devices may be wired or wireless, hence, the chance of attacks through the networks is increasing daily. For secure communication, intrusion detection and prevention are primary concerns. Thus, study and analyses of intrusion detection and prevention techniques are the necessity to secure the network. With the assistance of intrusion detection and prevention systems, we can determine and then notify the normal and abnormal activities of the users. Thus, there is a requirement to design effective intrusion detection and prevention system by the use of machine learning for wireless sensor networks. In this paper, we present a survey and a comparative performance analysis of machine learning based approaches for intrusion detection in networks. The performance evaluation of these techniques is done by experiments conducted on the NSL-KDD dataset. In this work, we analyse machine learning models including Support Vector Machine (SVM), Decision Tree, Naive Bayes, Random Forest, and K-Nearest Neighbour. Besides, we used the most important performance indicators, namely, accuracy, precision, recall and f1 score for evaluating the efficiency of several methods.

I.   Introduction

Any kind of illegitimate or unapproved behaviour in a network or a system will be considered as intrusions. An Intrusion Detection System (IDS) is a set of the tools, methods, and resources to facilitate distinguish, evaluate, and description intrusions [2]. Intrusion detection is a defence system that can detect abnormal activity. Intrusion is defined as: "any set of actions that attempt to compromise the integrity, confidentiality, or availability of a resource" [3]. IDSs are forever measured as a subsequent wall of defence from the security point of analysis. IDSs can be deployed along with other security measures, such as access control, authentication mechanisms, and encryption techniques to better secure the systems against attacks. Using patterns of benign traffic or normal behaviour or specific rules that describe a specific attack, IDSs can distinguish between normal and malicious actions [7]. According to Dewa and Maglaras [8], data mining which is used to describe knowledge discovery can help to implement and deploy IDSs with higher accuracy and robust behaviour as compared to traditional IDSs that may not be as effective against modern sophisticated attacks [9]. The necessity of IDSs is "low false-positive rate and high true positive rate". Intruders to a network can be classified into two types: external intruder and internal intruder. (1) External intruder: An outsider using diverse means of attacks to arrive at the network. (2) Internal intruder: A compromised node that used to be an associate of the network. IDS can detect both external and internal intruders, but internal intruders are harder to detect. This is due to that internal intruders have the necessary keying resources to counteract any protection taken by the authentication mechanisms. Intrusion can be of any type such as attempted break, Masquerade, Penetration, Leakage, DoS and Malicious use. IDSs may provide partial detection solutions to those attacks. The perfect IDS that would able to detect all of the intrusions listed above [4], [5], [6]. Based on deployment, the IDS can be categorized into two types: host-based intrusion detection system (HIDS) and network-based intrusion detection system (NIDS). HIDS is disturbed among the measures on the host with the purpose of them are working and they are able of detecting intrusions like changes to important system files on the host, numerous breakdown access attempts to the host, abnormal method memory allocations, unusual CPU activity or I/O activity. By monitoring the real-time scheme usage of the host or by investigative log files on the host

NEW TECHNIQUE FOR IMAGE CONTRAST AND ENHANCEMENT

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Abstract - *In the process of enhancement of image quality of different types of images which have huge applications in the number of areas of real world the contrast and brightness are two main concerns. For the sake of human interpretation not only the objective as well as subjective quality also matters. For subjective quality evaluation main parameter is the contrast present in every part of the image. Contrast rises if there is a contrast variation in the amount of luminance reflected from the two adjacent surfaces. Researchers have proposed various techniques for contrast enhancement in image processing while ignoring the illumination parameter present in the digital images. Main aim for the contrast enhancement of the images is for enhancing the details present of the objects present in the image. Image contrast enhancement is possible if stretching of pixel values is performed of a particular range where contrast improvement is needed. In tonal enhancement, there are many regions present in the digital image where darkness and brightened regions are more prone to variations and this scenario accurate and smooth contrast enhancement is required. In this present research work, there is a comparative analysis of various contrast enhancement of different color images is performed. Various techniques like Histogram equalization, brightness preserving technique and other techniques outcomes are discussed in detail with the help of various objective parameters.*

Key Words: Image contrast enhancement, image processing, color images, histogram equalization, entropy

INTRODUCTION
There are various color spaces in the real world and out of these two prime color spaces are RGB and CMYK and which are intended for various engineering and science communications.

RGB
This RGB color model is associated with the red, green and blue receptor is the retina of the eye of living beings. This color model is based on the additive color process where mixing of these colors produces other complimentary colors of the real world. It is the fundamental color model and which is the integral part of the color projected with the sun light. In the world of digital electronics, this model is used for graphics and also in printing applications. The secondary color like cyan, magenta and yellow are created by mixing two colors at a time from the red, green and blue colors. Cyan
is produced by mixing green and blue, magenta is produced by mixing blue and red, yellow is produced by mixing red and green. If red, green and blue are mixed in full proportions then white color is produced and if there is no value of these colors then black color is produced.

There are various techniques which are utilized to improve the contrast of the digital image. Some of the techniques that are utilized for implementation of present research work have been discussed below.

HE (Histogram Equalization)
Histogram equalization is one of the contrast adjustment techniques that is utilized in digital image processing. In this process pixel values are adjusted so that histogram of original image is uniformed and normalized. This technique is used to improve the overall contrast of the internal parts of the image where

METAL-ASSISTED ETCHING-MANUFACTURED SI NANOWIRES IN CRYSTALLINE SI SOLAR CELLS

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Abstract—Light-trapping structures can be used to drastically minimize both reflection and transmission through a solar cell. This method can be used to increase the light absorption and conversion efficiency of crystalline as well as thin-film solar cells. In this study, a metal-assisted etching approach was used to manufacture vertically aligned Si nanowires over a vast region. Nanowires were used to industrial-size (156 mm 156 mm) Si solar cells after a thorough parametric investigation. For the whole visible spectrum (350–750 nm), including the blue–violet region, the reflectance from the device surface was decreased to less than 5%.The proposed concept has potential as demonstrated by the results of comparing the efficiency of solar cells with and without Si nanowires to standard pyramid-textured cells, which were produced using normal solar cell manufacturing processes. The relationship between the length of the nanowires and the parameters of the solar cell was systematically investigated. The blue-ultraviolet portion of the spectrum showed relatively low quantum efficiency for the cells, while the red-infrared region showed enhanced carrier production, particularly for shorter nanowires.
IndexTerms—
Lightmanagement,monocrystalline,nanowires, siliconsolarcells,texturing.

I.   INTRODUCTION

At the moment, the photovoltaic market is dominated by crystalline Si solar cells. The biggest disadvantage of these systems is undoubtedly their high material and processing costs. Thinner silicon wafers with better light-trapping structures based on innovative designs should be employed to lower costs and increase the overall efficiency of the cell. Si wafers are not able to absorb the full solar spectrum when the thickness is less than 200 μm since Si is an in-direct bandgap material. In order to solve this issue and raise the cell's efficiency, absorption must be increased throughout by lengthening the light's path and increasing the number of incident photon scattering events by trapping. Traditionally, surface texturing and antireflection (AR) coatings have been applied.[1],[2].

Because of their special qualities and functions, nanostructures like silicon nanowires have garnered a lot of attention lately. On the surface of the solar cell, Si nanowires can be vertically aligned and arrayed in integrated arrays to produce exceptional light-trapping strength with reflectance values of less than 1% at 500 nm [3]. Compared to traditional pyramidal texturing, Si nanowires' light-trapping ability is especially better in the blue-violet region of the spectrum [3].

. A variety of techniques, including vapor–liquid–solid [4], laser ablation [5], direct reactive ion etching [6], and metal-assisted etching (MAE) [7]–[9], have been used to synthesize Si nanowire arrays. Because it can be done at ambient temperature and doesn't require pricey production equipment, MAE is the most enticing of these methods. Therefore, the total processing costs are not significantly impacted by the nanowire creation by MAE. Moreover, doping is not an issue in the MAE process, in contrast to traditional nanowire production techniques. The reason for this is that the produced Si nanowires' growth direction and doping level would be identical to those of the starting wafer because the nanowires are etched down from bulk Si.

Therefore, low-cost Si nanowire fabrication techniques that allow for controlled large-scale and large-area production could be applied to the industrial manufacture of solar cells. A few

DESIGN AND ANALYSIS OF A GRID-CONNECTED SOLAR PHOTOVOLTAIC INVERTER

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Abstract: The common mode voltage analysis of a single phase grid-connected photovoltaic inverter is presented in this work. For uses such as home powering, street lighting, water pumping, cooling and heating, numerous researchers have proposed various grid tie inverters. Traditional grid tie PV inverters use either a line frequency or a high frequency transformer between the inverter and grid, but as network losses increase, the system's efficiency decreases. Eliminating the isolation transformer is a practical way to boost efficiency while lowering the system's size and cost. However, the system becomes unreliable due to common mode (CM) ground leakage current caused by parasitic capacitance between the PV panels and the ground. Common mode current deteriorates electric magnetic compatibility, lowers power conversion stage efficiency, influences grid current quality, and creates safety risks. A performance analysis is conducted by comparing and implementing two multi-carrier PWM control techniques to reduce common mode leakage current in Transformer less PV systems. For improved system reliability, the shoot-through problem that typical voltage source inverters face is examined. THD and common mode voltage comparisons are performed with these control techniques. For analysis, the suggested system is created with MATLAB/SIMULINK software.

Keywords: common mode leakage current, transformer less grid connected PV inverter, SPWM, PD

INTRODUCTION

Grid tie photovoltaic (PV) systems, particularly low-power single-phase systems up to 5 kW, are becoming more important worldwide. They are usually private systems where the owner tries to get the maximum system profitability. Issues such as reliability, high efficiency, small size and weight, and low price are of great importance to the conversion stage of the PV system [1]–[3]. Quite often, these grid-connected PV systems include a line transformer in the power-conversion stage, which guarantees galvanic isolation between the grid and the PV system, thus providing personal protection. Furthermore, it strongly reduces the leakage currents between the PV system and the ground, ensures that no continuous current is injected into the grid, and can be used to increase the inverter output voltage level [1],[2],[4]. The line transformer makes possible the use of a full-bridge inverter with unipolar pulse width modulation (PWM). This inverter is simple and it requires only four insulated gate bipolar transistors (IGBTs) and has a good trade-off between efficiency, complexity and price [5].

Due to its low frequency, the line transformer is large, heavy and expensive. Technological evolution has made possible the implementation, within the inverters, of both ground-fault detection systems and solutions to avoid injecting dc current into the grid. The transformer can then be eliminated without impacting system characteristics related to personal safety and grid integration [1],[4],[6]–[8]. In addition, the use of a string of PV modules allows maximum power point (MPP) voltages large enough to avoid boosting voltages in the conversion stage. This conversion stage can then consist of a simple buck inverter, with no need of a transformer or boost dc–dc converter, and it is simpler and more efficient. But if no boost dc–dc converter is used, the power fluctuation causes a voltage ripple in the PV side at double the line frequency. This in turn causes a small reduction in the average power generated by the PV arrays due to the variations around the MPP. In order to limit the reduction, a larger input capacitor must be used. Typical values of 2 mF for this capacitor limit the reduction in the MPPT efficiency to 1% in a 5-KW PV system [8]. However, when no transformer is

EFFECT OF FREQUENCY OF SOLAR PV PANEL CLEANING ON ROOFTOP SOLAR PV PLANT PERFORMANCE

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Abstract—**Certain environmental factors, such soiling, can have an impact on a solar power plant's performance and lower the plant's overall efficiency. Dust buildup or soiling over the PV panels reduces the amount of solar energy that the panels can absorb, which can lower plant performance. The purpose of this paper is to examine the effects of soiling and routine cleaning on an industrial rooftop solar power plant and to assess the financial advantages of cleaning the PV panels more frequently. According to the case study, depending on the plant's location and three-month cleaning frequency, cleaning can improve system performance by up to 12%.**
Keywords—
NETmetering,PPA,PV,MGI,SSEL,GPS,PR

INTRODUCTION

Particularly in the area of solar energy, Bangladesh offers a lot of potential for renewable energy. Although this goal has not yet been met, Bangladesh's renewable energy policy specifies at by 2020 [1], 10% of all electricity generation should come from renewable sources. Government of Bangladesh (GoB) has been pushing utility or large-scale grid-tied solar projects under long-term power purchase agreements (PPA) in order to reach the target. NET metering legislation encourages solar rooftop systems for commercial use.

Bangladesh hopes to become a middle-income nation by 2021. Due to faster-than-expected remittance growth and exports, the GDP growth rate will need to be increased to 7.5–8% annually [2]. With natural gas making up roughly 45.07% of Bangladesh's installed capacity of 25190 MW (including captive power generation), natural gas is the primary source of power generation in the country [3]. The current evening peak demand, scheduled for September 22, 2021, is 12491 MW [4]. Every year, there is a steady rise in the demand

for power. The greatest amount of power generated in 2007 was 4,130 MW, and the maximum amount generated in 2021 is 13,792 MW, according to statistics [4], indicating a huge increase in the need for electricity. Bangladesh is implementing highly efficient power supply with low CO2 emission technologies in an effort to become a low carbon society [5].

One of the key tactics in a fuel diversification program is the growth of renewable energy, particularly solar energy. Under the 2009 Renewable Energy strategy, the government of Bangladesh is dedicated to promoting investment in renewable energy projects from the public and private sectors [5]. This policy seeks to increase the share of already produced power based on renewable energy sources while replacing non-renewable energy sources. 10% of the energy produced must come from renewable sources by 2020, according to the Renewable Energy Policy.

To meet the goal, the Government of Bangladesh (GoB) is exploring a range of renewable energy resource choices, with a focus on biomass/biogas, solar, wind, and energy efficiency. Renewable energy now makes up a very small portion of all energy generated. Currently, renewable energy accounts for about 3% of all energy production capacity [3]. In order to enhance energy security and create a sustainable energy regime in addition to traditional energy sources, the government of Bangladesh is giving top attention to the development of renewable energy resources.
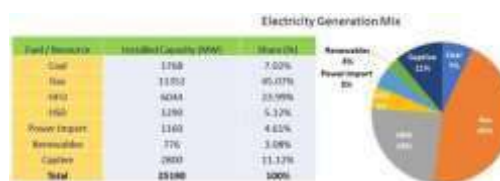

Fig.1:ElectricityGenerationMixofBangladesh[3]

IMPROVEMENT IN POWER PRODUCTION OF THE FIRST HORIZONTAL SINGLE-AXIS TRACKING PHOTOVOLTAIC SYSTEMS WITHOUT RETRACING

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ABSTRACT—The backtracking ("BT") shade avoidance algorithm has long been regarded as the optimum tracking technique for single-axis horizontal tracker PV systems. Although most c-Si modules are unable to backtrack due to internal electrical architecture, which does not result in a large shading cost, first solar modules have the option to do so (also known as "Truetracking" or "TT"). According to the research's studies on different PV systems, TT generates 1.7% to 2.5% more energy yearly than BT when First Solar modules are used. First Solar and independent third parties have shown that the industry standard PV prediction tool, PVSyst, overpredicts energy for systems in BT mode due to an incorrect assumption about diffuse shadowing.

Moreover, the limitations of other publicly available PV prediction tools prevent them from accurately forecasting and tracking the performance of PV systems. First Solar's PV system energy forecast tool, ISIS, accurately accounts for diffuse shade and other differences between BT and TT. ISIS predicts more energy for First Solar Systems in TT mode. TT is therefore the standard tracking arrangement for First Solar installations at the utility scale.

***Index Terms* — First Solar, Backtracking, shading, PV systemmodeling**

INTRODUCTION

Backtracking is an algorithm for horizontal single-axis trackers that has long been regarded by creators of crystalline silicon ("c-Si") PV systems as superior to all other tracking algorithms because it maximizes energy yield and minimizes the need for diodes, which lowers the risk of diode failure [1]. In order to minimize the angle-of-incidence between the sun and the photovoltaic modules, backtracking (or "BT") trackers monitor the sun's course during the day. Trackers in BT mode, however, instead of tracking directly against the sun, use a shade avoidance tracking algorithm in the morning and evening when the sun rises and sets. Using this method, the modules must track "backwards" toward a horizontal orientation to avoid direct beam shadowing.In Truetracking (TT) mode, trackers use a single axis of rotation to track the sun's path across the sky and minimize the angle-of-incidence between the sun and the panels as much as possible during the day, independent of shadow patterns. During the day, trackers for the BT and TT systems function in the same manner.

Since bypass diodes are used to protect the cell strings in the module, BT is required for the majority of c-Si PV modules. When a whole row of cells gets shaded, panels with bypass diodes can have a much lower energy output depending on how they are mounted. This is because the bypass diodes will cause entire rows of cells inside the module to stop producing energy. First Solar modules' PV cells are arranged so that uneven shadowing of the cells is extremely unlikely to happen. The power loss is almost linear with shade when the module is aligned with the shadow perpendicular to the cells, allowing for the option of TT

Thispaperpresentsinformationregardingenergya dvantagesofTTwithFirstSolarmodules,includingem pirical results from small and commercial-scale systems.Additionally, specifics of predicting energy output of BT andTTFirstSolarsystemswithcommerciallyavailable simulation tools such as PVSyst, PV*SOL, and PVWatts isdiscussed. Finally, ISIS − First Solar's internal prediction tool,isusedtopredict energygainofTToverBT.

EXPERIMENTONA100-KWARRAY

IMPROVED EFFICIENCY FOR INDUSTRIAL SCREEN-PRINTED N-TYPE REAR-JUNCTION SOLAR CELLS

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Abstract—On 5-in commercial grade Cz wafers, high-efficiency industrial n-type rear-junction silicon solar cells were screen-printed. Using a laser-doped phosphorous front-surface field and a furnace-diffused boron emitter, n-type rear-junction cells were created, with PECVD AlOx / SiNx surface passivation on the back and PECVD SiNx on the front. Every contact had a screen print. The highest efficiency recorded was 20.65%, with an average of 20.33%. According to the preliminary findings, enhancing the front pattern and metallization conditions may raise the possibility of a greater FF and hence increase efficiency.

Index Terms—N-type, rear junction, screen-printed solar cells,silicon.

I. INTRODUCTION

In order to achieve a high and stable cell efficiency, N-type Si solar cells present a strong alternative to p-type Si solar cells since they are more resistant to common metal impurities and do not experience light-induced deterioration. Moreover, all advancements made for the front side of p-type Si solar cells—such as metallization, patterning, and selective emitter formation—can be effortlessly applied to an n-type Si solar cell's rear-junction cell structure [1].Because screen-printed metallization is more affordable than other metallization techniques, it is a commonly utilized approach for the front contacts on commercial Si solar cells. Ag/Al paste has drawn a lot of attention lately for n-type solar cells because it forms metal connections on borondoped p+ emitters. However, the argument for adopting an entirely new metallization process that is not reliant on Ag gets stronger as there is rising demand to reduce cell costs and as Ag accounts for a larger share of the overall cost of solar cells. In this study, we have tried to replace Ag/Al paste on the p+ rear emitter of the n-type solar cell with

screen-printed Al metallization.Due to the structural characteristics of n-type rear-junction solar cells, the cell base must have outstanding front-surface passivation and bulk lifespan. The bulk resistivity has a significant impact on the necessary bulk lifetime. For instance, the wafers utilized in this experiment have an average bulk resistance of 5 $\Omega \cdot$ cm. A bulk lifespan of about 5 ms is anticipated. The bulk lifetime is approximately 1 ms for a bulk resistivity of 1 $\Omega \cdot$ cm. Minority carriers produced by the light entering from the front surface must pass through the base and arrive at the back, where the boron emitter collects them. By designing the FSF with a low surface doping concentration and a high sheet resistance (HSHR) in the passivated region and a high surface doping concentration and low sheet resistance (HSHR) under the contact, selective FSF enables the cell Voc and IQE to rise without raising the contact resistance. [3, 4] A selective FSF can be formed using a variety of techniques [5], such as laser doping, etch-back, and double diffusion. In order to boost Voc [4], laser doping provides an efficient method for defining extensively doped metal contact regions for solar cells. Over the past two decades, the PV industry has focused a great deal of study on this topic [6, 7].

Because it uses no toxic chemicals and has a very tiny footprint of production equipment, it is also thought to be safe, inexpensive, and simple to use in industrial production lines.

According to earlier studies, there is typically a significant improvement in efficiency with base resistivity in the 2–4 $\Omega \cdot$ cm range when compared to lower resistivities, and efficiency reaches a saturation point with base resistivity above 4 $\Omega \cdot$ cm [8]. Phosphorous-doped n-type materials often exhibit a high resistivity spread factor of 6 as a result of substantial phosphorous segregation during the Cz crystal growth process [9]. In order to prevent

ENHANCING EFFICIENCYGAINP/GAAS/SI WAFER-BONDED SOLAR CELLS IN DIRECT SUNLIGHT

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Abstract—Direct wafer bonding was used in the fabrication process to create highly efficient III–V/Si triple-junction solar cells: Metal organic vapor phase epitaxy was used to construct inverted $Ga_{0.51} In_{0.49} P$/GaAs dual-junction solar cells on GaAs substrates, which were then bonded to independently generated Si solar cells. The direct wafer link between highly doped n-Si and n-GaAs, activated by the rapid atom beam, allowed for a transparent and electrically conductive interface. By connecting the semiconductors at a moderate temperature of 120 °C, difficulties resulting from the disparate thermal expansion coefficients of silicon and III-V were avoided. A maximum efficiency of 30.0% was determined for a concentration factor of wafer-bonded triple-junction solar cells after a thorough investigation of their external quantum.

Index Terms—Multijunction solar cell, silicon, wafer bonding,III–Vsemiconductormaterials.

I.   INTRODUCTION

For more than 20 years, there has been a lot of research done on the integration of silicon and III-V semiconductors for the creation of multijunction solar cells [1]–[3]. It has been motivated by the desire to profit from both the high conversion efficiencies attained by GaAs-based multijunction solar cells and the comparatively cheap substrate costs of silicon solar cells. With focused sunlight, the widely used multijunction solar cell can attain efficiencies of up to 41.6%. Typically, it has subcells built of $Ga_{0.50} In_{0.50} P$, $Ga_{0.99} In_{0.01} As$, and Ge [4]. The primary benefit of this cell idea is demonstrated by the lattice-matched development of the III–V

semiconductors on the germanium bottom cell (and substrate), which allows for exceptional crystal quality.The expensive cost of Ge as a substrate is a disadvantage of this type of multijunction solar cell. Silicon has numerous advantages over germanium, including reduced costs, better availability, and increased wafer stability. Si-based triple-junction solar cells under concentrated sunlight can attain theoretical conversion efficiencies of up to 55.6%, according to simulations using EtaOpt [5–6]. With bandgap energies of 1.12, 1.42, and 1.89 eV, p-n junctions composed of Si, GaAs, and $Ga_{0.51} In_{0.49}P$ can theoretically achieve a 53.8% efficiency under 500 suns (ASTMG173-03 conditions) [6].

It is a well-known fact, nonetheless, that creating those triplejunction devices on silicon is extremely difficult. Different lattice constants (aGaAs = 0.56 nm, aSi = 0.54 nm [7]) and thermal expansion coefficients (αGaAs = 5.7×10−6 K−1, αSi = 2.6×10−6 K−1 [7]) of Si and the III–V compound semiconductors are the source of the issues. As a result, crystal defects frequently result from the direct epitaxial growth of GaAs on Si, which lowers the minority carrier lifetime and, subsequently, the efficiencies of III–V solar cells [1, 3, 8]. The use of templates made of a thin layer of Ge or GaAs that has been attached to silicon has been researched as a potential way to get around lattice-mismatch constraints [9]–[11]. Nevertheless, substantial thermal stress is still being caused by the high temperatures of 700 °C needed for epitaxial development, and as a result, flaws and cracks have been seen to emerge in the III–V layers [11].

In addition to direct epitaxial growth on Si, mechanical stacking [12]–[14] and direct wafer bonding [6], [15] can also be used to create III–

POSITIONING OF FACTS DEVICES IN DEREGULATED POWER SYSTEMS TO MANAGE CONGESTION

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ABSTRACT

Congestion control becomes crucial in the developing deregulated electric power market and may put obstacles in the way of trading in electric power. To reduce congestion in transmission lines, there are two different kinds of congestion management techniques. There are two types of methods: one is non-cost-free and the other is cost-free. The latter way technically reduces congestion, while the former is more economically related. In this research, a free method is used to reduce congestion. This study examines the usage of FACTS devices as one of the several free methods. It is suggested where TCSC and UPFC should be placed in order to reduce network congestion. Since the goal function in congestion management is nonlinear, the genetic algorithm (GA) technique is utilized to solve it. The above method is tested on IEEE 57-bus system and it can be readily extended to any practical systems.

General Terms

Congestion, Deregulated Power System, Flexible AC Transmission Systems (FACTS), Thyristor Contro lledSeries Capacitor (TCSC), Unified Power Flow Controller (UPFC), Genetic Algorithms(GA), Optimal Power Flow (OPF).

Keywords

FACTS, Unified Power Flow Controller (UPFC), Genetic Algorithm (GA) Deregulation, Optimal Power Flow (OPF) .

INTRODUCTION

The restructuring in electric power sector has lead to larger use of transmission grids. In deregulated power market, the power system is operated almost to its rated capacity all the times. Congestion may occur in transmission line due to lack of coordination between generation and transmission utilities. So congestion management becomes very essential in deregulated power systems. In regulated power system Transmission Companies (TRANSCOs), Generation Companies (GENCOs) and Distribution Companies (DISCOs) all come under one organization, g e n e r a l l y government. Whatever the expenditure incurred on power system will be bared by the government and at the same whatever revenue came it will go to government. On the other hand in deregulated power systems TRANSCOs, GENCOs, DISCOs are under different organizations [1]-[3]. To maintain the coordination between them there will be one system operator in all types of deregulated power system models, generally it is Independent System Operator (ISO). In deregulated environment all the GENCOs and DISCOs make the

GRAVITATIONAL SEARCH ALGORITHM-BASED OPTIMAL REAL POWER RESCHEDULING IN A DEREGULATED ENVIRONMENT TO REDUCE CONGESTION AND INCLUDE WIND FARMS

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Abstract- Congestion is regarded as one of the most important problems affecting the security and dependability of the system in a deregulated power system environment. The responsibility for controlling congestion in the open access electricity market falls on the Independent System Operator (ISO). In addition to implementing an effective and trustworthy meta-heuristic technique, this study proposes an efficient Congestion Management (CM) technique that incorporates wind farms as renewable resources. The Bus Sensitivity Factor (BSF) and Generator Sensitivity Factors (GSF) are taken into consideration while establishing the suggested CM strategy. Taking the BSF into account, the wind farm is positioned as optimally as possible. To determine which generators are the most susceptible to taking part in the CM problem, the GSF values are calculated. Introduced in is the Gravitational Search Algorithm (GSA). The goal of the Gravitational Search Algorithm (GSA) is to minimize the active power yield of the generators involved in the CM process as optimally as possible. One of the newest meta-heuristic algorithms, the GSA is based on Newton's Laws of Gravitation. The GSA result is compared to the results published in earlier publications. The effectiveness of the suggested CM strategy is implemented using a modified 39-bus New England system, which incorporates wind farms as a renewable resource.

Keywords Congestion Management, Gravitational Search Algorithm, Optimization, Wind farm, Renewable Resource.

Introduction

The dawn of the deregulation in the power sector led to the unbundling of the vertically integrated utilities. The Generating Company (GENCO), Transmission Company (TRANSCO) and the Distribution Company (DISCO) started functioning as separate entities. The independent operation of these entities ensures an arduous responsibly for the ISO to manage them under one umbrella [1]. In the electricity market, which is deregulated in nature, all the market players interact with each other in a way to maximize their own profit leading to the functioning of the transmission networks beyond their operational limits.

The power demand has increased all over the globe due to the intense competition in the electricity market caused by deregulation. Thus, to ensure a safe functioning of the power system network the transfer limits must be taken care while transferring power from one point to the other. The transfer limits are designated by the thermal limits, voltage limit and the stability limits [2]. The congestion in the transmission network is said to occur when there is a violation of any of the transfer limits. The procedure of preserving the transfer

AN ANTLION OPTIMIZATION METHOD IS USED TO DETERMINE THE BEST LOCATION FOR TCSCS TO MANAGE CONGESTION IN DEREGULATED ELECTRICITY NETWORKS

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ABSTRACT

One of the key concerns in the deregulated power systems is congestion   management. There are   multiple   ways to get rid of traffic. The use of FACTS devices is   a   suitable   choice   for rapid and large scale regulation of transmission line flows.Thyristor Controlled Series Capacitor (TCSC), one of the FACTS devices, can help to reduce losses and production costs by reducing the transmitting flow of power in congested lines. This increases the network's loading capacity.Owing to the significantly elevated cost of FACTS devices, it is imperative to ascertain their ideal placement within the network.In order to find the best location for the installation, a congestion management analysis has been conducted in this work using the Antlion optimization algorithm (ALO).

INTRODUCTION

In recent decades, an important structural reform has been made in many power systems, which has changed the power industry from a traditional structure to a restructured modern one. This fundamental change in structure and operational rules have become pervasive very soon throughout the world. The former is called restructuring of power systems, and the latter is called deregulation. In this regard, the generation, transmission, distribution segments and energy services were separated from each other in the first step. Then the generation and distribution sectors were divided into several independent companies which may have governmental or non-governmental ownerships or may be private equities.

Subsequently, each one of the generating and distribution companies was allowed to compete with other companies in the wholesale electricity market to exchange electrical energy as a seller or a buyer. Therefore, the increase in competitiveness of electricity commerce has caused the fair price of electricity which is determined based on the supply and demand trade-off mechanism which provides both sides of the trade with the level of satisfaction. The reduction of generation costs, the improvement in ancillary services quality, and improvement in demand-side satisfaction are other benefits of restructuring in power industry. The transmission network is a major obstacle for the deregulation of the power systems because of two reasons. The first reason is respect to the technical issues, which implies that it is not possible to separate the transmission network like generation or distribution sectors to make it competitive. In addition, the requisite of the existence of a proper competition between power providers in supplying electricity is the fair and not controlled interconnections across the power grid [1-2]. Although the concept of transmission network

MODELING AND FORMULATION OF TCSC IN OPTIMAL LOAD FLOW EQUATIONS
Static modeling of TCSC
Figure 1 shows the π model of a transmission line that is installed between the bus i and the bus j.

A REVIEW ON RECENT TECHNOLOGY IN THE FIELD OF WIND ENERGY

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Abstract- *This review paper examined the outline of wind innovation, where the approach depends on standards and down to earth executions. Wind vitality is the second biggest wellspring of sustainable power source after hydropower. It is incredibly reasonable, yet it is discontinuous. Even though the abuse of twist goes back a few centuries, the cutting edge wind vitality industry started amid the oil emergency of the seventies. Most these days wind turbines are onshore; however others are fabricated seaward, more often than not in wind ranches. Since wind vitality is discontinuous, it must be upheld by different wellsprings of power. Wind vitality can be productive as a rule. However, it has not yet accomplished full matrix equality with fossil vitality sources.*

Keywords- *Wind Forecasting Categories; Wind Speed and Power Forecasting Methods.*

Wind Energy- Introduction:

Rising oil costs feature the abuse of sustainable power source applications. Wind vitality is a standout amongst the most appealing sustainable power source advancements on account of its high proficiency and low contamination[1]. Be that as it may, since the vitality created by wind vitality transformation frameworks (WECS) changes with environmental meteorology and wind speed [2-3], surprising varieties in WECS vitality generation may expand the working expenses of the electrical structure in light of the fact that the stores will be developed and the potential dangers will be put for the unwavering quality of the power supply [4]. Power lattice administrators need to anticipate changes in wind control age to program turning save limit and oversee arrange tasks [4]. To lessen hold limit and increment wind infiltration, precise gauging of wind speed is required [5]. What's more, the forecast of wind vitality assumes a vital part in the portion of balance control. What's more, the breeze vitality conjecture is utilised for the day by day programming of conventional power plants and the commercialisation of power in the spot advertise [6]. Even though the conjecture precision of the breeze vitality figure is lower than the expectation exactness of the heap gauge. Wind vitality gauges still assume a crucial part in tackling the issues of misusing power supply. As of late, a few techniques have been utilised for the forecast of wind vitality. Various written works have been dedicated to enhancing wind vitality anticipating approaches by analysts with broad involvement in field preliminaries. A few techniques for estimating wind vitality have been created and propelled on wind ranches.

We can characterise into six gatherings to anticipate wind vitality: tirelessness strategy, physical technique,

factual strategy, spatial relationship strategy, human-made reasoning strategy and cross breed approach. [7-15] As indicated by the latest World Wind Energy Association (WWEA) information, even in 2009, the time of the worldwide money related emergency, the world's aggregate introduced limit will achieve 152,000 MW before the finish of 2009 [3] This implies in 2009, there will be 30,300 MW of newly introduced limit, which compares to

A THEORETICAL ANALYSIS OF ELECTRIC ENERGY GENERATION FORM SOLAR PANELS

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Abstract: the Solar Energy is produced by the Sunlight is a non-vanishing renewable source of energy which is free from eco- friendly. Every hour enough sunlight energy reaches the earth to meet the world's energy demand for a whole year. In today's generation we needed Electricity every hour. This Solar Energy is generated by as per applications like industrial, commercial, and residential. It cans easily energy drawn from direct sunlight. So it is very efficiency & free environment pollution for surrounding. In this article, we have reviewed about the Solar Energy from Sunlight and discussed about their future trends and aspects. The article also tries to discussed working, solar panel types; emphasize the various applications and methods to promote the benefits of solar energy.
Keywords: Renewable energy, Solar panel, Photovoltaic cell, Modelling of PV Panel, Solar Concrete Collector

I.   INTRODUCTION

Nowadays, due to the decreasing amount of renewable energy resources, the last ten years become more important for per watt cost of solar energy device. It is definitely set to become economical in the coming years and growing as better technology in terms of both cost and applications. Everyday earth receives sunlight above (1366W approx.) This is an unlimited source of energy which is available at no cost. The major benefit of solar energy over other conventional power generators is that the sunlight can be directly converted into solar energy with the use of smallest photovoltaic (PV) solar cells. There have been a large amount of research activities to combine the Sun's energy process by developing solar cells/panels/module with high converting form. the most advantages of solar energy is that it is free reachable to common people and available in large quantities of supply compared to that of the price of various fossil fuels and oils in the past ten years. Moreover, solar energy requires considerably lower manpower expenses over conventional energy production technology.

II.   SOLAR ENERGY

Amount of energy in the form of heat and radiations called solar energy. Shown in Fig.1. It is radiant light and heat from sun that is natural source of energy using a range of ever changing and developing of technology such as solar thermal energy, solar architecture, solar heating, molten salt power plant and artificial photosynthesis. The large magnitude of solar power available makes highly appealing source of electricity. 30% (approx.) solar radiation is back to space while the rest is absorbed by ocean, clouds and land masses.
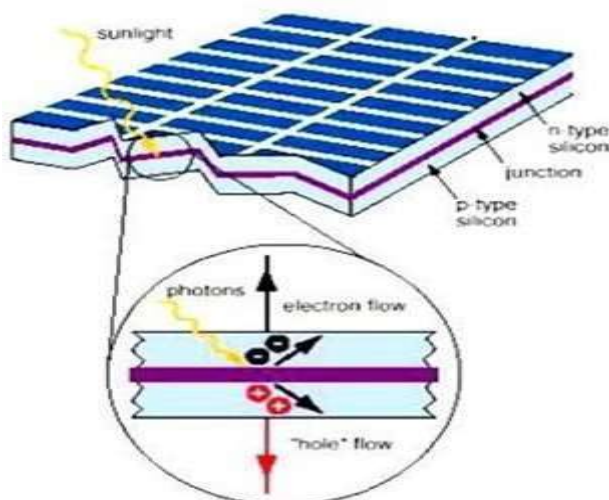
A REVIEW ON MICROGRID AND ITS COTROL

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Abstract—Increasing electrical demand, economic constraints of generation expansion, quality control of supplied electricity and utilization of renewable sources led to the invention of microgrid. A Microgrid is the system comprising Distributed Generation (DG), energy storage devices, distribution network, loads and hierarchical control & management networks. To integrate the energy from DG to grid, power electronic interfaces are used with control strategies. This paper gives insight of microgrid control and discusses various aspects related it.

Keywordss—Distributed generation (DG), inverter, voltage source inverter, switching pulse generator, SVPWM.

I. INTRODUCTION

Electrical energy is produced in large scale using con- ventional methods utilizing the non-renewable resources like coal, diesel, gas etc. Due to increasing population, electrical energy is being extensively used and the reserves of these non- renewable sources are getting depleted. Also, power generation from these sources results in environmental pollution and amends the atmospheric conditions.The existing power grid technology became old and is now having many concerns like increasing demand, restrictions in planning, variable market and lesser scope of generation expansion. As a solution,

to solve these issues and get the benefit of DG, the concept of microgrid was introduced. Maintaining quality and reliability of the supply is an important concern under all conditions which can be achieved through microgrid. Research is having a great scope in this area. A Microgrid is the system com-prising DG (like solar photo-voltaic, wind turbines, fuel cells, micro-turbines, gas based generation, CHPs etc.,), distribution network,

energy storage devices (fly-wheels, batteries etc.,), loads, power electronic interfaces and hierarchical control & management networks. Synchronous machine with regulator and governor control can also be a source in microgrids. There exists AC and DC microgrids out of which AC microgrid are more focussed as they operate in conjunction with main grid directly. DC microgrids are generally used in networks where communication is needed [1]–[7]. Objectives of the microgrid concept are increasing the reliability of the supply, reduce the transmission losses, provide electricity to remote places, reduce the environmental impact due to generation of electricity and reduce the power system expansion cost. A typical structure of a microgrid is depicted in Fig. 1.

the world is now looking towards development of efficient technologies which utilizes renewable sources and produces electricity. Electricity produced from these technologies may be smaller in magnitude, but it is clean.
Economically, it is not easy to extend a power system in terms of generation if the demand is increasing and it is a better idea to supply the excess demand using the distributed energy produced from the renewables like photo-voltaic, wind power etc., Energy which is generated at places where these renewables are obtained, integrated to the power system grid to supply the excess demands and reduce the burden on the grid. Some industries produce their own electricity so that the dependence on utility is reduced and such industries will supply the excess generated energy to main grid. This penetration of DG into main grid reduces the burden on main

grid but adds new issues which are to be solved. Power generated from DG is intermittent in nature and hence power electronic devices are needed to regulate the voltage and frequency of

ELECTRIC VEHICLES: TECHNOLOGIES AND CHALLENGES

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Abstract: Electric Vehicles (EVs) are gaining momentum due to several factors, including the price reduction as well as the climate and environmental awareness. This paper reviews the advances of EVs regarding battery technology trends, charging methods, as well as new research challenges and open opportunities. More specifically, an analysis of the worldwide market situation of EVs and their future prospects is carried out. Given that one of the fundamental aspects in EVs is the battery, the paper presents a thorough review of the battery technologies—from the Lead-acid batteries to the Lithium-ion. Moreover, we review the different standards that are available for EVs charging process, as well as the power control and battery energy management proposals. Finally, we conclude our work by presenting our vision about what is expected in the near future within this field, as well as the research aspects that are still open for both industry and academic communities.

Keywords: Electric Vehicles; Plug-In Hybrid Electric Vehicle; battery charging; batteries technology; charging modes; EV plugs

Introduction

The automotive industry has become one of the most important world-wide industries, not only at economic level, but also in terms of research and development. Increasingly, there are more technological elements that are being introduced on the vehicles towards the improvement of both passengers and pedestrians' safety. In addition, there is a greater number of vehicles on the roads, which allows for us to move quickly and comfortably. However, this has led to a dramatic increase in air pollution levels in urban environments (i.e., pollutants, such as PM, nitrogen oxides (NO_X), CO, sulfur dioxide (SO_2), etc.).

In addition, and according to a report by the European Union, the transport sector
is responsible for nearly 28% of the total carbon dioxide (CO_2) emissions, while the road transport is accountable for over 70% of the transport sector emissions [1]. Therefore, the au-thorities of most developed countries are encouraging the use of Electric Vehicles (EVs) to avoid the concentration of air pollutants, CO_2, as well as other greenhouse gases. More specifically, they promote sustainable and efficient mobility through different initiatives, mainly through tax incentives, purchase aids, or other special measures, such as free public parking or the free use of motorways. EVs offer the following advantages over traditional vehicles:

- Zero emissions: this type of vehicles neither emit tailpipe pollutants, CO_2, nor nitrogen dioxide (NO_2). Also, the manufacture processes tend to be more respectful with the environment, although battery manufacturing adversely affects carbon footprint.
- Simplicity: the number of Electric Vehicle (EV) engine elements is smaller, which leads to a much cheaper maintenance. The engines are simpler and more compact, they do not need a cooling circuit, and neither is necessary for incorporating gearshift, clutch, or elements that reduce the engine noise.

PERFORMANCE STUDY OF A HIGHER STATOR COIL PITCH, ENHANCED SAFETY HT INDUCTION MOTOR FOR A CLASSIFIED HAZARDOUS AREA

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Abstract: High tension (HT) motors with enhanced safety (Exe) are commonly utilized in areas with explosive atmospheres, such as the petroleum industry. For the Ex e motor, the time tE and IA/IN ratio value are crucial. Increasing the pitch of the stator coil can have an impact on the temperature rise, IA/IN ratio, and time tE of the rotor and/or stator winding. For three distinct ratings of three phase HT Ex e induction motors, the stator's coil pitch was adjusted. The stator was also altered to analyze performance, tE, and temperature rise. The pertinent tests were run, and the motor's performance characteristics were compared to those of a typical design motor. Under the design and supervision of the principal author, who served as the project leader, Bharat Heavy Electricals Ltd. (BHEL), Bhopal, India, produced the Ex e motors that are discussed in this work. Ex e HT motor designers are expected to greatly benefit from the study effort described in this paper.
Keywords: Increased safety motor, stator coil profile, time tE, IA/IN ratio, temperature rise

1.   INTRODUCTION

The increased safety concept is a form of "built in" protection in that the equipment is specially built to prevent it from becoming a source of ignition and this protection intends for safe use in Zone 1 and less hazardous area. Increased safety protection method is widely being used for junction boxes and motors for safe operation in zone 1 and 2 hazardous area but in India it is applicable for use in zone 2 area only as per IS 5571 [1]. The increased safety protection is a type of explosive protection method where, the apparatus does not produce spark, arc or become excessively hot in normal operating condition and specified abnormal condition. Ex e motor is in which additional measures are applied, so as to give increased security against possibility of excessive temperatures and occurrence of arcs or sparks in apparatus which under normal circumstances do not produce any arc or spark. The specific measures are applied to electrical apparatus to avoid ignition of a surrounding explosive atmospheres [2]. The Ex e motor should sustain normal and specified abnormal condition, therefore, the protection depends upon the length of time tE for which such a situation can exist prior to the protective devices operating. The Ex e motor is dependent mainly on the temperature rise of insulation of winding, IA/IN ratio and time tE with respect to safety of hazardous area.

The essential principle of electrical apparatus with increased safety concept is:

The internal and the external surface temperature of any part of motor should not exceed the ignition temperature of the surrounding gases under any circumstance where motor is to be installed.

Time tE : is the time taken by AC windings to reach the limiting temperature of winding insulation at rated operating conditions during starting or stalling. This time 'tE' should not be less than 5 seconds as per IS/IEC 60079-7 [3].

IA/IN ratio: it is the ratio of the starting current (IA) to rated full load current (IN) of Ex e motor.

It has been reviewed that during normal operating conditions, the induction machine produces synchronously rotating useful air gap field. However, the current in the stator end winding, produces stray field components. These components together with leakage components due to stator core magnetic saturation induce circulating current to flow in any closed conducting circuits. The current causes arcs and sparking at the joints of a multi-section motor enclosure [4, 5]. The stray end winding field will be the strongest during locked rotor and starting conditions. Sparking may also occur across the air gap due to the movement of the bars due centrifugal and electromagnetic influences. Sparking generally occurs during the starting condition [4, 5]. Corona discharges and surface tracking [6] on

VOLTAGE STABILITY OPTIMIZATION USING SVC APPLICATION ON IEEE 6 BUS SYSTEM

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Abstract: As people's awareness of power quality has grown, the issue of voltage or current imbalance has drawn greater attention recently. Power engineers are always concerned when there is an excessive imbalance between the phase voltages or currents in a three-phase power system. A related subject of study to the reactive power compensation issues of today's world is the study of shunt linked FACTS devices. The shunt operation of the FACTS controller has been examined and used in this work to maximize voltage stability using an IEEE-6 bus system.

Keywords: voltage stability, voltage collapse, Newton Raphson for load flow, SVC, IEEE – 6 bus system

INTRODUCTION

At the present time, power systems are forced to operate at almost full capacity. More and more often, generation patterns result in heavy flows that tend to incur greater losses as well as threatening stability and security of the system. This ultimately creates undesirably increased risk of power outages of different levels of severity [1]. A traditional alternative to reinforce the power network consists of upgrading the electrical transmission system infrastructure through the addition of new transmission lines, substations, and associated equipment. However, the processes to allow, locate, and create new transmission line has become tricky, costly, time taking and numerous times even controversial [7].

On the other hand, FACTS device, which can provide direct and flexible control of power transfer and are very helpful in the operation of power network. When it is been discussed about the power system performance and the power system stability we can enhance by using FACTS device [8-9]. Static VAR compensator (SVC) is one of the most effective measure device for enhancing the power stability and power transfer capability of transmission network, in this SVC it should be properly installed in the system with uniform parameter setting. The some factors considering for optimal installation and the optimal parameter of SVC, in which we improve Stability margin, power loss decline, power collapse avoidance and power transmission capability enhancement [15, 12, 20]. This study deals with the objective to optimize power system voltage stability .This is achieved through IEEE- 6 Bus system, using Newton Raphson load flow analysis and then by placing the SVC on the weakest bus to attain the maximum possible voltage stability.

VOLTAGE STABILITY & COLLAPSE

A power system is claimed to be voltage stable if it is ready to maintain voltages similar to the steady values once subjected to small disturbances. At any instant of your time, the ability system operative condition should be in stable limits, summit completely different operational criteria; furthermore it ought to even be secure within the event of any credible incident [1]. Voltage instability issues disturbances during installation of network wherever the voltage magnitude becomes uncontrollable and eventually ensuing into a collapse of voltage magnitude. The voltage decline is usually monotonous within the starting of the collapse and sophisticated to note. Voltage decline increase typically marks the top of the collapse. It\'s troublesome to differentiate this development from transient stability whereas voltages can also decrease in a manner just like voltage collapse [2, 17]. Post-disturbance analysis could solely be in those cases reveal the actual cause throughout the last

DESIGN OF AN INVERTER USING SOLAR PV CELLS FOR UNBALANCED AND DISTORTED INDUSTRIAL LOADS

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Abstract: The growing popularity of photovoltaic cells in low- and medium-power production can be attributed to their minimal maintenance requirements, ease of installation, and national price subsidies. The majority of loads in distribution systems are distorted and unbalanced, which can cause uneven voltage and current at the load and impair system performance as a whole. Variable power factors in each phase, distorted voltage and current, and voltage imbalance are detected as a result of these loads. In a solar photo voltaic (PV) inverter for an isolated load system, an effective algorithm to reduce imbalanced and distorted load and source voltage and current was taken into consideration. This solar PV system can be used for imbalanced loads as well as distant industrial loads including welding, heating, and small arc furnace-type distorted loads. The PV inverter's design allows it to reduce harmonics in voltage and current close to the load terminals and maintain a nearly constant voltage magnitude. A typical AC three phase grid connected system and a simulated solar PV inverter based on MATLAB/SIMOLINK were compared for results. The suggested demonstrates that the inverter can maintain a virtually constant voltage profile for a highly imbalanced system with very little harmonic content in the voltage or current.
Keywords: Distorted load, unbalanced load, PWM inverter, total harmonic distortion (THD), voltage mitigation

INTRODUCTION

Photovoltaic power generation is getting more significance over past decade. This increase can be expected due to the major factor like greenhouse effect, rapidly increasing fossil fuel price and diminishing resources. In tropical countries like India, sunlight is available for more than half of the time of the day; installation of solar cells is highly recommendable. It was observed that roof top solar panels are installed for water heating, reliable and economic power supply was increased in last five years [1-5]. The main advantages of solar PV cells are, it can be placed in the corner of the building where much sunlight is available; it requires very less maintenance and have more running life, excess energy can be stored in battery or can be pumped to grid.

The solar PV with battery energy storage system is helpful for maintaining continuous and reliable power supply to isolated agriculture type loads [6]. The solar panels can be applicable to residential loads by embedding on the roof top [7-9]. The solar panels are used for applications like road transport lighting and in electric power distribution network [10, 11]. There has been very less work been proposed for application for industrial loads like arc furnace etc. Application of PV cell for non-linear loads and its harmonics analysis was analyzed in [12, 13]. A three-phase DC to AC inverters with high efficiency, low cost, enhanced reliability are designed in [14- 17].

The present paper extended the application of photovoltaic cell to non-linear and unbalanced industrial AC loads by using DC to AC inverter. The PWM based inverter is designed to maintain nearly constant voltage profile for unbalanced load and harmonic mitigation for distorted non-linear diode rectifier RL load. In this, voltage and current unbalance and distortion values to be within limits and with optimum power factor value with inductance or capacitance loads. Equations for unbalanced load and source voltage and current with average power to be delivered by grid source or PV inverter are derived.

IMPROVED DYNAMIC TIME RESPONSE IN IEEE THIRTY BUS SYSTEM WITH FOPID CONTROLLED SHUNT ACTIVE FILTER

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Abstract: This paper aims to improve the dynamic time response of a Wind Energy Conversion System (WECS) with a Permanent Magnet Synchronous Generator (PMSG) in a closed-loop controlled Active Power Filter with Fractional Order Proportional Integral Derivative (FOPID) controller connected to the IEEE Thirty Bus System (TBS). Reducing both the steady state error and total harmonic distortion (THD) is the aim of the FOPID controller. The simulation results are shown in order to determine how effective a shunt active filter with a FOPID controller is. A simulation is performed on an Open Loop Thirty Bus System (OLTBS) with a variable load. The related time-domain parameters are shown along with a comparison of the simulation results using FOPID Controller based SAF and Proportional Integral (PI). According to the findings, the FOPID Controller system responds more quickly than PI controlled system

Keywords: PICSAF FOPIDSAF, Thirty Bus System(TBS),Open Loop Thirty Bus System (OLTBS)

1.   INTRODUCTION

The usage for power electronic converters for various industries, commercial sectors and residential applications increases day to day due to their improvement in the technology. These static converters polluting the utility supply due to the harmonics and inter frequency components generated by them. Harmonics have adverse result on the facility system network and lead to excessive heating of neutral conductors, bus bars, lug connections, control and switchgear, which can have an effect on current interrupting capabilities, Circuit breaker nuisance tripping, malfunction of on-board breaker physical science, excessive arcing, improper fuse operation or blown fuse interruption (artificial heating or "skin effect"), Meter, protective relaying, control and other communication and measuring instrumentation devices (including ground fault detection and digital displays). A shunt active filter shown in Fig.1 below is an alternate solution to mitigate harmonics generated by the non-linear loads and also provides reactive support to the system, hence system power factor is improved.
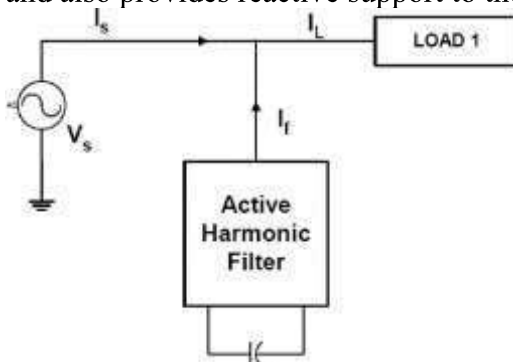
Figure 1. Shunt Active Power Filter block diagram

2.   THEORY OF SHUNT ACTIVE POWER FILTER

The concept of the Shunt Active Filter[1]-[2] is to produce harmonic compensating currents equal in magnitude but opposite in-phase to those harmonics that are present in the electric grid. The standard rules, just like the IEEE 519 limits the harmonics at the entranceway, enforce to limit the harmonic

REVERSE LOGISTICS'S IMPACT ON FINANCIAL PERFORMANCE

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Abstract
One important yet commonly misunderstood operation is reverse logistics. Many companies lack the knowledge necessary to handle reverse logistics efficiently or to adhere to the proper norms and processes. Although various reverse logistics tactics have been shown to have positive benefits, the researcher could not find any specific research demonstrating how adopting reverse logistics approaches might affect the performance of the organisation. The purpose of this study was to ascertain how much the firm's financial performance is impacted by reverse logistics methods that have been implemented.

Key words: Financial performance, key operations, and reverse logistics

Introduction
The Council of Logistics Management defines logistics as the process of planning, implementing, and controlling the efficient, cost-effective flow of raw materials, in-process inventory, finished goods, and related information from point of origin to point of consumption in order to meet customer needs.

All of the activities described in the definition above are included in reverse logistics. Because reverse logistics operates in the opposite direction, it comprises all of these processes. As a result, reverse logistics is the process of planning, implementing, and controlling the efficient, cost- effective flow of raw materials, in-process inventory, finished goods, and related information from the point of consumption back to the point of origin in order to reclaim value or dispose of it properly.

Reverse logistics, to put it another way, is the process of transporting things away from their usual destination in order to capture value or dispose of them properly (Rogers & Tibben-Lembke, 1998). This notion of reverse logistics may also encompass remanufacturing and refurbishment activities. More than just reusing containers and recycling packing materials is involved in reverse logistics. Redesigning packaging to utilise less material or lowering transportation energy and pollutants are significant operations, but they might be better categorised as "green" logistics. The operation is probably not a reverse logistics activity if no goods or materials are being sent "backwards." Damaged merchandise, seasonal inventory, replenishment, salvage, recalls, and surplus inventory all fall under the reverse logistics umbrella. Programs for recycling are also included.

Literature Review
The reverse logistics process, according to Larsen, Masi, Feibert, and Jacobsen (2018), entails the execution of actions connected to the creation of plans, supervision, and cost-effective raw material utilisation. This is done with the intention of coordinating the inventory's in-process and finished goods' operations utilising point-of-sale data. It aids in determining and recovering the value of used products so that adequate arrangements may be made for the disposal of goods that can no longer be reused or remanufactured.

Returns, disposition, green manufacturing, re-conditioning/refurbishing, recycling, remanufacturing , salvage, and dumping are all examples of reverse logistics, according to Jayaraman and Luo (2007). To ensure that the reverse logistics process is done efficiently, each process is carried out in a step-by-step way. Returns are the initial step, in which a product is returned to a store or manufacturer owing to poor quality or inability to satisfy and perform a specific utilitarian function. The pattern in which the product

A STUDY OF WORKING WOMEN'S WORK-LIFE BALANCE

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ABSTRACT

Because of societal demands and changes in the economy, working women's roles have evolved. As a result, professional women now face enormous pressure to pursue careers that are as fulfilling as those of their male colleagues while maintaining an active personal life. Working women are experiencing a plaster bandage effect from their ever-increasing workload, which means they have less time for themselves. In this day of information, the growing personal duties coupled with the benefits of modern technology such as sophisticated cell phones and notepads that enable seamless integration of work and personal life also lead to stress on both the personal and professional levels. This pertains to the individual's psychological, social, and physical health. Achieving a work-life balance is therefore essential for working to feel a fair level of liveliness. This report aims to investigate the difficult obstacles that working women must overcome to maintain a good balance in society.

Keywords: *Work-life balance, quality of life, exploiting women, personal spirit, professional life.*

Introduction

Women of the early centuries were largely limited to their kitchens and those who were hired to figure out in factories, farms, or shop works. Very few women received access to higher education and they were driven to beat the clemency of their fathers' or husbands' attitudes towards women and employment. The fast-growing knowledge economy has given space for several women to be enlightened by higher instruction. Education has not only authorized them but likewise has made them robust careers. With brain power being the requisite skill in this knowledge era, rather than endurance or physical force, the women workers look to flood into every industry on par with humans. Only this has indeed become a hard challenge for women as they have to perform a bunch of duties in the home and office as comfortably. As working women get married, they have additional responsibilities and when they become mothers, they bear to manage the principal attention of children and extended household and are thus, under heavier pressure to continue along a career track. Working mothers of today fulfill family duties and also prove to stay fully involved in their careers coping up with the competing demands of their multiple uses.

Literature Review

work–life balance is determined as an employee's perception that multiple domains of personal time, household care, and workplace are maintained and mixed with a minimum of role conflict (Clark, 2000; Ungerson &Yeandle, 2005). Work–family balance reflects an individual's orientation across different life roles, an inter- roll phenomenon (Marks and MacDermid, 1996).

The gift of this knowledge era for women is occupational opportunity and mobility. But this gift has become a great challenge for the working women of today as they are not only exposed to the same working environment as men but in turn are also exposed to the pressures created by the multiple role demands and conflicting expectations. "By fulfilling their economic needs, employment has no doubt made women independent with an identifiable social status, but it has also made them juggle into two main domains of work and family. They have stepped into the workplace, but the role responsibilities

IMPACT OF COVID-19 ON RETAIL INDUSTRY IN INDIA

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ABSTRACT
To stop the spread of the coronavirus, it is advised for everyone in the nation to remain indoors. The Indian government has asked citizens to keep their distance from one another and avoid making personal contact. The commercial and retail sectors have been most affected by the nationwide shutdown. Since the majority of offices and production enterprises are closing, the economy is in jeopardy. Due to a fragile supply chain, businesses that are prepared to sell their goods are unable to deliver them to the retailer. According to several sources, the lockdown will affect retail locations, consumer behavior, product demand, logistics, and other areas. It appears that COVID-19 will have an impact on the growth that the corporations are anticipating for 2020.

Keywords: Retail Marketing, Lockdown, Coronavirus, Covid-19.

INTRODUCTION
Retail is the sale of goods and services from businesses to an end user or a customer. Retail marketing is the process by which retailers promote awareness and interest in their goods and services to generate sales from their consumers. There are many different approaches and strategies retailers can use to market their goods and services. Retail marketing refers to the range of activities undertaken in the retail store by the retailers as well as the brand to promote the products to the customers to generate awareness, interest, and sales. In simple words, everything from the interior and exterior of the retail store to in-store advertisements, product placements, offers and promotions, and the behaviour of store representatives comes under retail marketing. Different retail marketing strategies can be planned and employed for different types of retail outlets.

IMPORTANCE OF RETAIL MARKETING
The traditional dependency of retailers on manufacturers has been reversed. Retailers have their brand, their loyal customers, and even have the power to sell, to up sell, to cross-sell or to downsell any product using smart retail marketing strategies. Smart retail marketing strategies help retailers enhance the customer journey in a retail store and make them perceive that their money is spent on the right products.
✓ A good retail shopping experience motivates customers to buy a product even when they have no intention to do so.
✓ Shopping from a branded retail store generates a feeling of satisfaction and confidence among the customers.
✓ Strategic placements and strategic store design improve the customer's experience and help the retailers sell the products that provide them with the most profits.
✓ Purchasing during limited-period offers makes the customers feel they have achieved a great feat by saving money.

STRATEGIES OF RETAIL MARKETING
The main objective of the retail marketing strategy is to differentiate the retail store from the competition by setting up and promoting a sustainable competitive advantage which leads to increased sales. The contours of the retail marketing strategy include:
1. Retail Branding
Setting up a good brand name, logo, and positioning of the retail store is among the topmost priorities of a retail marketer. Customers are more motivated to buy a product from a branded retail store than an unbranded one.
2. Price Drops

THE IMPACT OF WORKING FROM HOME ON WORK-LIFE BALANCE DURING THE COVID-19 PANDEMIC
(A CASE STUDY ON IT SECTOR EMPLOYEES IN ODISHA, BHUBANESWAR)

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ABSTRACT

The COVID-19 epidemic abruptly forced all businesses to adopt a work-from-home (WFH) policy for all of their operational activities. The abrupt modification to the operational activity system affected employees' work-life balance. The purpose of this study is to determine how employees' work-life balance was affected by working from home during the COVID-19 pandemic. A survey approach using a descriptive research design is the study methodology employed. The key data used were those collected through the distribution of questionnaires to 240 executives, both male and female, from different IT sector organisations located in Bhubaneswar, Odisha. Three main factors—time balance, work involvement, and job satisfaction—were the focus of the study. The findings demonstrated that employees' work-life balance is positively and significantly impacted by working from home. There are factors that can either positively or negatively impact work-life balance during pandemics, and the study's findings should be utilised by the organisation to reduce and foresee potential negative effects on work-life balance related to work-from-home arrangements.

Keywords: Work-life balance (WLB) and work from home (WFH)

INTRODUCTION

Immediately after entering the New Year 2020, the world was shocked by the emergence of a new virus that has spread throughout the world including in India, called as COVID-19 or commonly known as the Corona virus. The World health organization declared it as Pandemic and this took the whole world economy, social life, all to a standstill. This pandemic had amajorimpactonvarious sectors of industries affecting .Indian Economy as well.Almost all companies from different sectors has to do their operations from home except some essential services like health sectors, banks etc. Hence all businesses started running by making the employees work from closed peripheries of their home for the safety of the employees and to prevent further transmission. .This new and safe method of work from home though helped in running the companies at their usual pace but this new work culture of working from home (WFH) has a major impact on work life balance of employees both male and females.

Work-life balance is abroad concept that involves setting proper priorities between work (career and ambition) on the one hand and life (happiness, leisure, family, and spiritual development) on the other. So, a company that sets a work-life balance in its employee work system is a company that can help employees achieve a level of balance between work and personal life outside of work, in an effort for employees to achieve self-motivation and welfare that allows them to perform various roles effectively and efficiently

Work-life balance can be achieved by working time duration for approximately 6 hours a day. The intended schedule allows for6 hours of work followed by 1 hour of break. 10 works dedicated to non-work activities and 8 hours designated for sleep. Likewise, every entrepreneur is obliged to implement the stipulation of working hours,namely 40 hours a week. A person with a working duration of more

WHIRLING APPARATUS BASED FABRICATION AND DEVELOPMENT OF UNMANNED AIR VEHICLE

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Abstract:-In this paper a Hover craft has been built with the properties of the "Whirling Apparatus" constructed by Sir. George Caley in 17th century. This paper describes about the fabrication of an Unmanned Air Vehicle (UAV) which can be used for surveillance and for agriculture. This is air vehicle is having a single rotor that works on the principle of Coanda effect. In this paper, the rotorcraft model is fabricated and is successfully flown by remote control mechanism. The rotor craft is controlled through graphical user interface (GUI). Communication between GUI and spy craft is done by using wireless communication system. . This rotorcraft is fitted with better controlling and manoeuvring ability.

1.   Index Terms—morphed, fabric wing, optimizationlift force.

INTRODUCTION
Research and development of unmanned aerial vehicle (UAV) and micro aerial vehicle (MAV) are getting high encouragement nowadays, since the application of UAV and MAV can apply to variety of area such as rescue mission, military, film making, agriculture and others. In U.S Coast Guard maritime search and rescue mission, UAV that attached with infrared cameras assist the mission to search the target.

Rotorcraft or Spy rotor aircraft is one of the UAV that is major focuses of active researches in recent years. Compare to terrestrial mobile robot that often possible to limit the

model to kinematics, Rotorcraft required dynamics in order to account for gravity effect and aerodynamics forces. Rotorcraft operated by thrust that produce by four motors that attached to it body. It has for input force and six output states (x,y,z) and it is an under-actuated system, since this enable rotorcraft to carry more load.

Rotorcraft has advantages over the conventional helicopter where the mechanical design is simple. Besides that, Rotorcraft changes direction by manipulating the individual propeller's speed and does not require cyclic and collective pitch control.

Rotorcrafts and quad rotors in particular, are able to adeptly fly in 3-D environments with the ability to hover in place and quickly maneuver around clutter and obstacles. For this reason, rotorcrafts are an attractive platform for search and- rescue and first-response applications. However, one of the key challenges for autonomous flight is the lack of low power and lightweight sensor solutions for state estimation. While 3-D lidars are used in many settings, their mass exceeds most MAV payload capacities.

1.1   History of UAVs

Though modern-day technology is quickly advancing and improving UAVs and drones, developments in this field began decades ago, even before the first manned airplane flight occurred in 1903. The first and most primitive designs centered on balloons. The first attempts began in France in 1782 by the Montgolfier brothers1. These attempts continued through the years, one of which was developed by

A STUDY ON THE CORROSION AND HARDNESS PROPERTIES AFTER ADDITION OF CHROMIUM TO THE NICKEL ALUMINUM BRONZE ALLOY

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Abstract—Corrosion is a major reason for equipment failure. Materials used in marine environments have to withstand corrosion. Nickel–Aluminum bronze (NAB) alloys show better corrosion resistance under marine conditions. Cost effectiveness also considered an important parameter for the usage of material. Many authors studied the corrosion resistance of NAB alloys in sea water or 3.5M NaCl solution. To enhance the properties of NAB alloy, chromium is added additionally after excluding iron, manganese and bronze of the NAB alloy. This paper will focus on the influence of chromium addition to the aluminum nickel alloy to the corrosion resistance properties and hardness. Chromium is added in 4%, 8% and 12% using powder metallurgy route. The chromium addition is observed in the microstructure of the extruded specimens. The electro-chemical corrosion test was carried out to find out the corrosion properties of the alloys. 3.5M NaCl is the electrolyte that is used during the electro-chemical corrosion test. The corrosion properties are increased than the available alloy composition as per ASTM B505M – 14. It also indicates that the micro-hardness also has got increased due to the addition of chromium.

Keywords—NAB alloys, Hot-Extrusion, Electro-chemical

corrosion, ASTM B505M-14.

reported that the rate of crevice corrosion of the alloy in seawater is about 0.7 - 1.0 mm y-1 [7,8]. The optimum mix of tested mechanical proper- ties with ultimate tensile strength in the range of 325 MPa, elongation of around 60% and Rockwell hardness values of 46.5 - 63.7 HRc, making this alloy suitable as alternatives to steel in low/medium strength structural applications [9].Structural applications are mostly based on ferrous materials, steels in particular. Findings have shown that aluminium bronzes are fast replacing contemporary steel materials for some specific applica- tions especially in components for marine/sub-sea applications. The consumption of aluminium bronzes have increased sharply in the USA. And other countries due to their property of being non-rusting in marine environment as well as also their resistance to corrosion in highly aggressive environments. Aluminium bronze alloy construction for basic oxygen and electric arc furnace hoods, roofs and side vents was identified as a viable alternative for carbon steel construction for these equipments. The use of aluminium alloy was found to be as much as five times the life of comparable carbon steel. In propeller material stainless steel have been also used and it also has high corrosion resistance due to the presence of chromium. Thus, the chromium is added to the NAB alloy to improve its mechanical and corrosion resistance properties.

2. EXPERIMENTAL DETAILS

1. INTRODUCTION

The aluminum bronzes comprise a wide range of compositions, and alloys can bechosen with a correspondingly wide range of properties to suit many types of duty. Infact, the mix of properties available is so varied that alloy selection needs to be carefullyconsidered, and expert advice is always useful.Nickel-aluminum bronze known as NAB is a series of copper-based alloy with additions of 9% - 12% Al and 6% Ni and Fe. High corrosion resistance of this alloy has made it one of the most practical alloys in marine applications e.g. ship propellers [1,2]. Recently, a vast range of investigation have been carried out to study the corrosion behavior of the cast nickel-aluminum alloy [3,4] and it has been found that optimum corrosion resistant of the alloy in seawater can

EXHAUST EMISSIONS AND PERFORMANCE ANALYSIS OF A LOW HEAT REJECTION CI ENGINE USING JATROPHA OIL AS FUEL

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Abstract— Many fuels are being investigated as potential substitutes for the current highly pollutant diesel fuel derived from diminishing commercial sources. Vegetable oils are one such alternative and they can be directly used in diesel engines as they have a high cetane number and calorific value close to that of diesel. However, the brake thermal efficiency of vegetable oil is inferior to diesel. The usage of vegetable oil may lead to problems of high smoke, HC and CO emissions. This is because the high viscosity and low volatility of vegetable oils cause difficulty in atomizing the fuel and in mixing it with air. The problem of high viscosity of vegetable oil has been approached in several ways, such as preheating the oils, blending or dilution with other fuel, transesterification and thermal cracking / Pyrolysis. The objective of the project is to carryout experimental investigation on low heat rejection engine with raw jatropha oil, methyl ester of jatropha oil, methyl ester of jatropha oil–kerosene blend in the proportion of 70:30 and diesel. The results obtained indicate better performance and emission characteristics of the engine with methyl ester of jatropha oil.

Keywords— Diesel engine, Performance, Emission, Jatropha oil methyl esters blend.

1. INTRODUCTION

The increase in number of automobiles in recent years has resulted in great demand for petroleum products. Vegetable oils might provide a viable alternative to diesel since they are renewable in nature and environmentally friendly. The use of vegetable oil in engines without any modifications results in poor performance and emissions. Transesterification method is used to reduce the viscosity of the vegetable oil and solves the most of the problems of raw vegetable oil. Transesterification is the reaction wherein the vegetable oil is transesterified with alcohol and the process of removal of glycerol from fatty acids. This esterified vegetable oil is called biodiesel. In the present investigation biodiesel was prepared from jatropha oil and the blend with diesel in various volumetric proportions the prepared blends were fueled in the engine test rig. The performance, combustion and emission characteristics were analysed on a four stroke single cylinder direct injection diesel engine. The properties of Jatropha methyl ester and raw oil are compared with diesel as shown in Table.1.

Many investigators have used jatropha oil and pungam oil

methyl esters with various proportions as a CI engine fuel and the following conclusions have been made: Jatropha oil, diesel and their blends exhibited similar performance and emission characteristics under comparable operating conditions. Pungam oil methyl ester and their blends exhibited lower unburned hydrocarbon, carbon monoxide and soot emissions with a penalty of higher nitric oxide emission Jatropha methyl ester and its blends are a potential substitute for diesel. JTME produces lesser emissions than petroleum diesel, except NOx, and have satisfactory combustion and performance characteristics, Improvement in performance characteristics and reduction in emissions were observed by preheating jatropha oil. A significant improvement in the performance and emissions was observed by optimizing the injector opening pressure, injection timing, injection rate and enhancing the swirl level when a diesel engine is to be operated with neat jatropha oil8.Performance and emission characteristics of JTME are superior when compared to other methyl esters produced from other feedstock. Peak pressure

A FATIGUE FAILURE ANALYSIS OF BOEING 737 WING

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Abstract- Fatigue life is an important parameter for every aircraft to rectify several damages occurred on it. In this paper, the fatigue analysis of the aircraft wing of Boeing 737 series is done. CREO parametric 2.0 software is used to model the aircraft wing structure. The stress analysis of the wing structure is also done. The stresses are predicted using the finite element approach with the help of NX-NASTRON. This is done to find out the fatigue life and safety factor of the structure. In this paper, finite element analysis of spar, ribs of a wing is done. The objective of this work is to reduce the weight as much as possible. The response of the wing structure is calculated. In this paper, prediction of fatigue life, and safety factor is done.

Keywords-Stress analysis, Fatigue analysis, Boeing 737 series wing, CREO parametric2.0, NX-NASTRON

1. INTRODUCTION

Fatigue is a phenomenon associated with variable loading or more precisely to cyclic stressing or straining of a material. Just as we human beings get fatigue when a specific task is repeatedly performed, in a similar manner metallic components subjected to variable loading get fatigue, which leads to their premature failure under specific conditions.

In materials science, fatigue is the progressive and localized structural damage that occurs when a material is subjected to cyclic loading. The nominal maximum stress values are less than the ultimate tensile stress limit, and may be below the yield stress limit of the material.

2. DESIGN CALCULATION

In this project we estimated the load acting on the wing using the flow analysis in Ansys 12.The below figure 2.1 shows how the flow passes on 2D airfoil. From this analysis we come to know the total pressure acting on the wing. The maximum pressure acting on the airfoil is found to be 2.05Mpa. The total pressure acting on the wing is scaled according to the scale ratio of wing. Thus the pressure acting on the wing is considered to be as 4.1e5 pa.
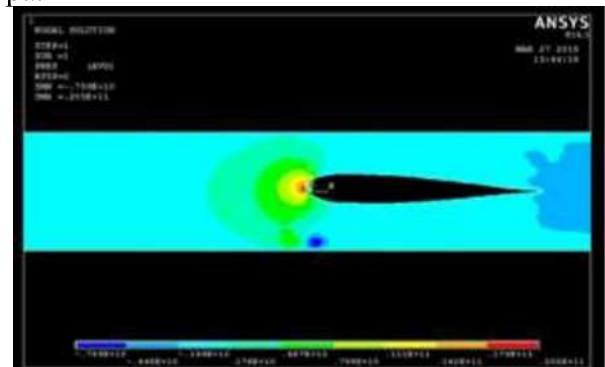
Fig 2.1: Flow analysis on Boeing 737 airfoil

2.2 Meshing

In the FEM analysis of wing components, meshing is the initial step that is to be followed after the model is being imported for the purpose of analysis. Meshing is the process that divides the model into finite number of elements for the analysis. The mesh used here is the 3D tetrahedral mesh is shown in fig 2.2.

Fig 2.2: Meshed model of the Wing Structure

2.3 Loading and Boundary Conditions

After meshing the structural part of the wing, the wing is fixed at one end and other end is free. The Pressure 0.41 Mpa is applied on the top layer of the wing, loading over the wing is shown in below fig 2.3.

AN EXPLORATION OF NATURAL FIBRES WITH GLASSFIBRE REINFORCED COMPOSITES

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Abstract: Composites is an important engineering material and their use has been increasing due to their benefits such as high strength to weight ratios, high modulus to weight ratio, corrosion resistance, and wear resistance. In this paper, a hybrid material using synthetic (glass) as well as natural fibres (Banana & Sisal) are used to reduce the overall use of synthetic reinforcement. This also reduces the overall cost, and enhances the mechanical properties. All composite materials with different weight percentages of fibres are manufactured using hand lay-up process and then tested by using ASTM standards. Experimental results shows that hybridization of composite with natural and synthetic fibres leads to enhanced tensile strength, flexural strength, and impact strength. The performance of Sisal and Banana with Glass fibre composites is better for tensile strength (65.5 MPa). Also this type of composite material are better for impact strength (1.1J). The performance of these glass fibre composites is reduced compared to that of the natural fibre.

Key Words: ASTM,Sisal fibres, banana fibre, glass fibre mat and epoxy resin.

1. INTRODUCTION

A composite material is made by combining two or more dissimilar materials. They are combined in such a way that the resulting composite material or composite possesses superior properties. Which are not obtainable with a single constituent material.
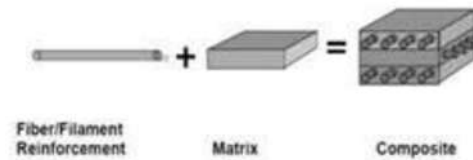
Fig 1.1 Fabrication of Composite material

The components do not dissolve or completely merge. They maintain an interface between each other and ad in concert to provide improved, specific or synergistic characteristics not obtainable by any of the original components acting singly. Bone is a simple example of a natural composite material having the best properties of its constituents. Bone must be strong and rigid; yet flexible enough to resist breaking under normal use. These requiste properties are contributed by its components. gives the required softness. The inorganic component, made up of

calcium phosphate, gives it the required strength and rigidity. The most common synthetic composite material is glass fibre reinforced plastics (GRP) which is made out of plastics and glass fibre.

Matrix

Matrix is also known as binder material. It (i) provides shape to the composite material, (ii) makes the composite material generally resistant to adverse environments and (iii) protects reinforcement material from adverse environments. The materials which constitute matrix of composite materials are plastics, metals, ceramics and rubber.

Fibres

STUDY ON EFFECT OF ELECTROLESS NIP COATING WITH CO-DEPOSITION OF ALUMINA PARTICLE

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Abstract:- Electroless nickel phosphorous (NiP) coating was deposited on mild steel body using acidic chloride base baths. Alumina (Al2O3) particles of size 80 to 100 nm were also deposited in nickel matrix for preparing nickel phosphorous alumina (NiP-Al2O3) coating. X-ray diffraction analysis is used to characterize the coatings. This is also scanned using electron microscope along with EDS analysis. Uniform distribution of Al2O3 in NiP coating is observed in scanning electron microscope. The presence of Al2O3 was confirmed by EDAX with reduction in phosphorous content from 11.3% to 9.8%. The X-ray diffraction result shows that both coatings are showing broad peak for Ni and confirms the amorphous structure. The hardness of the coating is measured by performing tests on depths sensing ultra micro indentation. The hardness of NiP coating is observed as 7.80±0.32 GPa with an indentation depth of 1.23±0.02 μm. Increase in hardness value for NiP-Al2O3 coating as 9.02±0.24 GPa with decrease in indentation depth 1.12±0.02 μm. It is observed from the results that hardness enhancement is due to dispersion strengthening of Al2O3 particles and grain refinement. The deposited NiP and NiP-Al2O3 coatings were investigated in rotating ball on disc test under constant load and sliding velocity. The wear resistance of the coating increases due to increase in sliding distance due to the formation of oxide layer. From the observation of wear in scanning electron microscope (SEM) adhesive wear mechanism in NiP coating and combination of adhesive and abrasive wear mechanism in NiP-Al2O3 coating are observed.

particle are large, micron particles are not uniformly distributed on the NiP coating and the performance of the coating has not fully achievable. The electrodeposition of nickel and co deposited SiC particles [4] increases the wear resistance with uniform distribution of particle in the matrix. In this recent era nano-technology has been developed and nano particle based coating has been received wide attention for its unique properties. On the other hand nano particles have high surface area and possible to get agglomerate. The efficiency of co-deposition of SiC and Si3N4 nano particles

[5] depends on particle nature and not based on its size. Analysis on the distribution of nano Al2O3 particle [6] were done and the results showed nano Al2O3 particles are homogenously distributed in nickel using electrolytic co-deposition. The distribution of particles depends on the free powder well isolated and dispersion [7] not depends upon the concentration of particle in the coating bath.

The present work aims to study the surface morphology, chemical composition, hardness and wear resistance of as deposited NiP and Al2O3 particles co-deposited NiP coatings.

II. EXPERIMENTAL DETAILS

Keywords –SEM, composite coating, wear, hardness; electroless NiP.

I. INTRODUCTION

To have an environment friendly process for surface coating and to replace the hard chrome surface treatment technique Electroless nickel phosphorous (NiP) coating was developed and was patented [1] in the mid of 20th century. NiP coating is one of the surface treatment technique used in industries due to its hardness, corrosion and wear resistance. Incorporation of second phase particles in the metal matrix lead to enhancement [2] of its physical and mechanical properties. SiC, Al2O3, WC, TiO2, ZrO2, B4C and diamond are the few hard

EXPERIMENTAL STUDY OF FATIGUE FAILURE OF FUSELAGE USING COMPOSITE MATERIALS

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Abstract;- This paper presents a method for fatigue analysis of aircraft composite fuselage. It is designed to have optimal structural weight with the safety margins needed. The structural stress, deflection, strain, and margins of safety distributions are visualized. The elasticity, stiffness, strength and stress are distributed more in the nodes of the structure. Here the fuselage frame is semimonocoque in construction. In the semi-monocoque structures, the skin carries the external loads, and the internal fuselage pressurization. This is strengthened using frames and stringers. The carbon fiber composites will have high strength to weight ratio when compared to aluminum alloy. CATIA software is used to model the fuselage structure of aircraft. The fatigue analysis of the original model is done using ANSYS software. Using Finite Element Analysis (FEA), composites in fuselage is analyzed and compared with Aluminum. These comparison will help in assessing the weight reduction. The fatigue life is analyzed using composite materials in the design.

Keywords: CATIA, FEA, Composites, Semimonocoque, aluminum, Finite Element, Fatigue, Safety Margins.

I.INTRODUCTION

Aircraft manufacturers have been gradually increasing its reliance on composite materials. For example, Boeing 777 featured an all-composite empennage and composite floor beams. Nevertheless, the composite materials community is very much aware of the cost implications of introducing more composite materials. It was only when a technological breakthrough on the manufacturing side came about that it considered widespread use of such materials, for example, in the Boeing 787. Basically, this involves the same fiber-resin system as used in the Boeing 777 empennage but with radically different automated fiber-placement techniques. These techniques allow rapid and accurate positioning of fibers onto a mandrel that will initially create the stringers and then apply the fuselage skin to varying thicknesses, as

desired. Each fuselage section is then autoclave cured and the mandrels are then disassembled and removed. The Boeing 787 fuselage is built in five main sections and composite materials that account for 50% of the aircraft's total structural weight. (Aircraft Technology Engineering

& Maintenance, 2005) Both Boeing and Airbus have recognized that they have the opportunity to increase the thickness of composite structures where there is a high probability of impact damage. Areas such as doors, door surrounds, wing tips, wing leading and trailing edges and wing-to-body fairings are all prone to ground vehicle impact damage and increasing the thickness of any composite structures in these areas should reduce the probability of significant damage.

The possibility of replacing damaged components at these locations still remains where the designs permit. (Aircraft Technology Engineering & Maintenance, 2005) Boeing intends to capitalize on in its 787 CFRP fuselage design as that it can work with larger pressure (from a cabin altitude of 8,000ft to a cabin altitude of 6,000ft) without adding substantial weight to the airframe structure. Furthermore, in view of the excellent corrosion resistance of advanced composites, Boeing is also contemplating the introduction of a cabin humidifier, also intended to make the flight experience a more pleasurable one. Finally, Boeing intends to make the windows on the 787

OPTIMIZATION OF PROCESS PARAMETERS OF INCONEL718 ALLOY USING TAGUCHI APPROACH FOR CYLINDRICAL GRINDING

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Abstract-In this research paper it confers the use of Taguchi for reducing the surface roughness in machining Nickel based alloy (Inconel 718) with a Silicon carbide grinding wheel. The experimentations have been done using Taguchi's experimental design method. The cutting factors such as grit size, cutting depth and coolants are used. The influence of cutting factors on surface roughness is calculated and determined the maximum cutting parameters by reducing the surface roughness. It is revealed from the experiments that the most important machining factor for surface roughness is depth of cut followed by grit size. The expected values and tested values are fairly close, which shows that the new developed model can be successfully used to expect the surface roughness in the machining of Nickel based alloy. The validation process for the experimental values have also been out to confirm the predicted value.

Keywords-Cylindrical grinding; Taguchi design; ANNOVA; MRR

I.   INTRODUCTION

The quality of surface finish is a significant factor in assessing the productivity of machined parts in machining operations. Surface finish quality of the components can be enhanced by grinding processes. In particularly, cylindrical grinding is an intricate, material removal process with an immense number of influencing parameters, which are nonlinear, interdependent and complex to compute. To maximize the surface quality, the selection of grinding parameters is essential. Numerous factors influence the grinding process that a reproducible workpiece quality is hardly ever, if ever, achieved. Although a lot of efforts have been made to envisage the parameters of the grinding process, many difficulties continue since the cutting edges of the grinding wheel are not identical and perform in a different way on the workpiece at each grinding processes are dynamic in nature.

The prediction of the parameters of grinding process is essential to quantify surface roughness, which is one of the significant quality limitations for the selection of grinding

parameters in process planning. Usually, practical knowledge gained by the process planners and help of data handbooks is used to select the grinding parameters [1, 2]. On the other hand, the process may be time consuming and cannot convince any financial criteria; also it cannot establish the precise optimal parameters because of limited

experiments [3]. Additionally, these results are not consistent or satisfactory for deciding the optimal cutting parameters from a productivity attitude. Efficient process set-up should be model based in which the necessary surface roughness is obtained.

Statistical design of experiments (DOE) refers to the process of planning the experiment so that the suitable data can be examined using statistical techniques, ensuing in valid and objective conclusions [4-7]. DOE methods such as factorial design, RSM and Taguchi method are now extensively used for optimize the machining parameters instead of one factor at a time experimental approach which is prolonged and very expensive [8]. To this end, a lot research has been carried out to decide optimum process parameters and to apply various optimization methods to grinding variables of wheel speed, work piece speed, depth of dressing, and lead of dressing using a multi-objective function model weighted approach [9-13].

FAILURES ANALYSIS AND OPTIMIZATION OF REHEATER TUBE

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Abstract— High pressure boilers are used in modern thermal power station. Any outage in a boiler causes the shutdown of the whole unit. Reheater tube failure is the most frequently listed reason for forced shutdown of boilers. This will lead to forced/ unplanned shut down of power station. In this paper, causes of tube failure and their types are determined. The low grade boiler materials used in reheater does not withstand high temperature, corrosion and erosion during operation. The failure of reheater tubes causes reduction in final temperature,

Keywords— HRH Coil, Reheater, CRH Coil, Tube Failures, Material Selection, Final Temperature, Economy.

I.   INTRODUCTION

The problem has been identified in the failures of pressure parts such as SH coils, Water Wall panels, RH coils, Economizer occur over a period of time. The complete detail of failures years and location wise is given in the appendix. Our project focuses on the failure of re-heater tubes, since the failure was becoming more deteriorated re-heater coils so that forced outage during operation is avoided.

Re-heater is a part where dream from high pressure gains some heat before expanding in the intermediate and low temperature turbines.

Re-heater has two headers namely Cold Re-Heater Header (CRH) and Hot Re-heater Header (HRH). The failure occurs more frequently in the HRH side of re-heater tube. Re-heater tubes made of low grade (T22) boiler material which is over heated due to scaling and starvation. Over hearing causes failure of boiler tubes. This is reduction in final temperature.

II.   REHEATER

Re-heater is used to raise the temperature of steam, which is exhausted from HP turbine after doing a work. The re-heater is composed of two stages: front pendant and rear pendent sections. There are 59 tubes assemblies in the front pendent and 89 tube assemblies in the rear pendent. The tubes are made of SA 213 T22 grade steel having Cr content of 2.60% and Mo 1.13%. The main causes of re-heater coils are between the platen and final super heater. The main causes of re-heater tube failure erosion, stress corrosion weld defects and punctures.
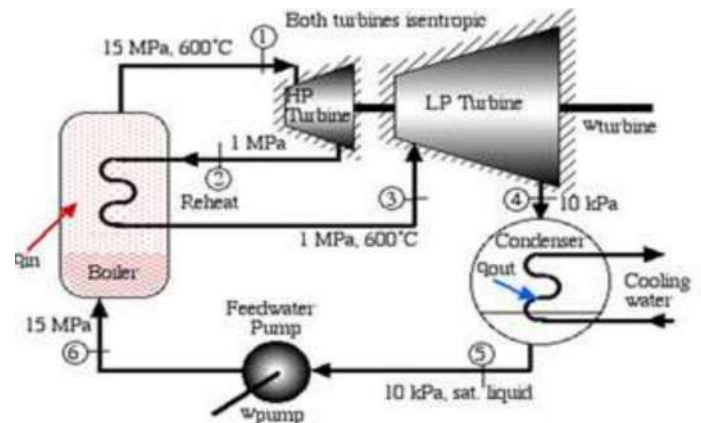

Fig 1.1: RE-HEATER

The steam after doing work in high pressure turbine comes to the front pendent and it passes through the serious of the tube assemblies and goes to the rear pendent. The steam while passing through the tube gets heated by the flue gas so that steam becomes superheated.

STUDY OF TAIL ROTOR SPAR OF HELICOPTER WITH COMPOSITE MATERIAL

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Abstract—**Analysis of the tail rotor spar of a helicopter is presented in this paper. The helicopter tail rotor spar is designed by modeling software. Different materials are used to construct different parts of the spar. Different materials used are carbon fiber, matrix composite and stainless steel. Lighter engine components play an important role to increase the power and efficiency in their engine designs. Current engine designs use traditional aircraft metal alloys which perform better in terms of temperature and weight. The efficiency of the helicopter is improved by increasing engine specifications. This paper compares the composite rotor spar with the generally using spar. The manufacture of rotor blades starts with the ultrasonic profiling of partially cured fiber reinforced plastics known as pre-pregs. This allows the production of advanced shaped and sectioned blades.**

Keywords—*Helicopter rotor spar design, Finite element analysis, Metal matrix composite.*

I. INTRODUCTION

In the earlier days the helicopter tail rotor spar is manufactured using wood materials. But the material they use may differ. The helicopter tail rotor spar will cause accident when it fails to work properly. This may occur even when the spar is damaged. Helicopter engine manufacturers are always seeking to increase power and efficiency of their engine designs via lighter engine components. Current engine designs use traditional aircraft metal alloys that are pushed to their design limits of temperature and weight. The purpose of increasing engine specifications is to improve the efficiency of the helicopter. Here we have another solution to increase it. That is just by material of the rotor spar. Here we analyze the tail rotor spar of the helicopter by a metal matrix composite. Aerodynamic and inertia forces act on the helicopter blade in forward flight. These forces deform the helicopter blade and as a result, the aerodynamic forces distribution changes. The new aerodynamic forces distribution deforms the blade. In addition, that changes the aerodynamic forces distribution again. At a certain instant the aerodynamic and inertia forces and elasticity forces will be balanced.

DESIGNING A MODEL OF FUZZY TOPSIS IN MULTIPLE CRITERIA

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ABSTRACT
The process of selecting the best option from a range of workable options is called decision making. In traditional multiple attribute decision making (MADM) techniques; the criteria's weights and ratings are well-known. The decision data's ambiguity makes the crisp data unsuitable for use in practical scenarios. Given that human judgments, including preferences, are frequently imprecise and difficult to quantify precisely, it is considered pertinent to use fuzzy notions to decision-making. In order to get optimal solutions, we incorporate suitable negations into our TOPSIS model for the fuzzy environment. Here, we use a novel fuzzy distance value measurement that includes a lower constraint on the available options. The degree of similarity is then used to rank the choices. There are examples displayed.

KEYWORDS

 TOPSIS Triangular fuzzy number, MADM, Fuzzy distance

INTRODUCTION DECISION MAKING

Multiple attribute decision making (MADM) approach is often used to solve various decision making and/or selection problems. This approach often requires the decision makers to provide qualitative and/ or quantitative assessments for determining the performance of each alternative with respect to each criterion, and the relative importance of evaluation criteria with respect to the overall objective.

Technique for order preference by similarity to an ideal solution (TOPSIS), known as a classical MADM method, has been developed by Hwang and Yoon [11] for solving the MADM problem. It is based on the idea that the chosen alternative should have the shortest distance from the positive ideal solution, and, on the other side, the farthest distance from the negative ideal solution. If the assessment values are known to have various types of vagueness/imprecision or subjectiveness, then the classical decision making techniques are not useful for such problems. In the past few years, numerous attempts have been carried out to apply fuzzy set theory to multiple criteria evaluation methods [2,3,26]. For example, Tsaur et al. [21] first convert a fuzzy MADM problem into a crisp one via centroid defuzzification and then solve the nonfuzzy MADM problem using the TOPSIS approach. Chen and Tzeng [5] transform a fuzzy multiple criteria decision making (MCDM) problem into a nonfuzzy MADM using fuzzy integral. Instead of using distance, they employ a grey relation grade to define the relative closeness of each alternative. Chu [8,9] also changes a fuzzy MADM problem into a crisp one and solves the problem using the TOPSIS approach. Differing from the others, he first derives the membership functions of all the weighted ratings in a weighted normalization decision matrix using interval arithmetic of fuzzy numbers and then defuzzifies them into crisp values using the ranking method of mean of removals. Chen [6] extends the TOPSIS approach to fuzzy group decision making situations by defining a crisp Euclidean distance between any two fuzzy numbers. Triantaphyllou and Lin [22] develop a fuzzy version of the TOPSIS approach based on fuzzy arithmetic operations, resulting in a fuzzy relative closeness for each alternative.

ALGORITHMIC METHOD IN OPTIMIZATION CONSIDERING UNRELIABILITY

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Abstract
This study presents a short lived assessment on some of the most important developments in the field of optimization under improbability. In exacting, the range and the significance of the papers integrated in this particular topic are analyzed. The value of improbability quantification and optimization technique for producing enhanced models and designs is systematically discussed. The center of the conversation is in three definite study areas, to be precise algorithmic-based optimization, vigorous sketch optimization and model updating. The point of view presented signify that optimization under improbability should be converted into usual in engineering design in the predictable future. Algorithmic aspects play a vital role in examine and modeling pragmatic systems and structures.

Introduction
In most engineering applications, the traditional approach to designing systems is to consider deterministic models and parameters, respectively. Thus, variations in loading conditions, material properties, geometry, boundary conditions, etc. are included in the design process by introducing simplifying hypotheses, e.g. the consideration of extreme or mean values and/or the application of safety factors. These hypotheses are formulated based on past experience and engineering judgment. Despite such a traditional approach has successfully been used in many practical design situations, the assumption of a deterministic model is certainly a simplification, because observations and measurements of physical processes clearly show variability and randomness in the different model parameters. Hence, a proper design procedure must explicitly consider these types of uncertainties, as they may cause significant changes in the performance and reliability of final designs (see, e.g. [31], [100], [113], [133]). For example, final designs obtained by deterministic models may become infeasible when the uncertainty in the system parameters is considered. The application of design procedures which consider uncertainties ensures that the analyzed system will perform within prescribed margins with a certain reliability, i.e. a quantitative measure of the system safety will be available.

Despite of the fact that an adequate level of reliability is a basic objective when designing a system, other design goals may be important as well, e.g. there is an increasing demand for structures which are safer and at the same time more economical. In consequence, engineering practice expects to have optimization procedures available which take into account the effects of uncertainty and which are applicable to realistic problems of the engineering practice.

Procedures which deal with optimization considering uncertainties are significantly more involved than their deterministic counterparts. Optimization processes may require the evaluation of costly objective and constraint functions hundreds or even thousands of times. The associated costs are usually prohibitive, especially under uncertain conditions, e.g. when the system is represented by means of a large and detailed finite element model or when the representation of the loading acting on a structure requires a numerically involved model, such as in earthquake engineering applications. Therefore, special procedures must be applied in order to make the design problem tractable. Such procedures include, for example:

The use of efficient optimization techniques which require less function calls. These techniques can take advantage of special characteristics of the problem under study by introducing, e.g. sequential approximations, construction of approximate representations of the objective function and constraints using reciprocal and/or hybrid variables, etc.

The introduction of approximation concepts at different levels of the optimization process.

TRENDS AND RISK FACTORS IN TRIBAL VS NONTRIBAL PRETERM DELIVERIES IN GUJARAT, INDIA

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CONTEXT: Despite extensive research on the risk factors for preterm deliveries worldwide, there is a lack of exploration into the trends and risk factors specifically affecting rural Indian populations, particularly tribal women.

OBJECTIVE: This study aimed to evaluate and compare the rates of preterm deliveries among women residing in a rural area of Gujarat, India, based on various socioeconomic and clinical parameters. Additionally, it sought to identify predictors or risk factors associated with preterm births.

STUDY DESIGN: A retrospective analysis of medical records was conducted for deliveries at Kasturba Maternity Hospital in Jhagadia, Gujarat, spanning from January 2012 to June 2019 (N=32,557). Odds ratio and adjusted odds ratio analyses were performed to assess risk factors for preterm delivery. Neonatal outcomes of preterm births were also examined, with a focus on tribal and nontribal mothers.

FINDINGS: Over the study period, the preterm delivery rate was 19.7% among tribal women and 13.9% among nontribal women, showing consistent rates over the seven years. Adjusted odds ratios revealed that tribal status, maternal and paternal illiteracy, low hemoglobin levels, and inadequate antenatal care were significantly associated with higher odds of preterm delivery. Among preterm births, tribal women had a higher incidence of stillbirths (11.77%) compared to nontribal women (8.86%).

CONCLUSION: This study underscores the importance of both clinical and socio demographic factors in understanding preterm delivery risks in rural India. It highlights the need for further investigation into the specific challenges faced by tribal women, aiming to elucidate underlying factors influencing their delivery outcomes. Keywords: India, maternal health, preterm birth, tribal communities, rural healthcare, South Asia, vulnerable populations.

Key words: India, maternal health, preterm, tribal, rural health, South Asia, vulnerable populations

Introduction

The World Health Organization(WHO) defines preterm birth as all births before 37 weeks of gestation.[1]Globally, the complications associated with preterm birth were the leading cause of death in children younger than 5 years of age in 2016, accounting for approximately 16% of all deaths and 35% of deaths among newborn babies; preterm births are the secondmost common cause of death in children under the age of 5 years after pneumonia.[2,3] Worldwide, an esti- mated 11.1% (14.9 million) of all live- births in 2010 were born prematurely, with preterm birth rates increasing in most countries with reliable trend data.[3] Although the risks of mortality and morbidity are much higher in early preterm birth (<34 weeks), late preterm birth (34<37 weeks) occursmore often and newborn babies born late preterm have significantly higherrisks of adverse outcomes than babies born at term.[4] The global burden of prematurity is not distributed equally, because preterm birth is more common in low- and middle-income countries and the

STRENGTH AND DURABILITY OF COIR CONCRETE IN AGGRESSIVE-ENVIRONMENTS

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ABSTRACT

Marine structures have suffered from seawater attacks for decades. Thus far, the best approach to minimize the deleterious effects on these structures is to use high-strength, high-performance concrete. However, this approach has its limitations. When a crack starts because of the expansion and shrinkage at splash zones and expansive products are formed because of sulfate attacks, the crack will grow and propagate uncontrollably. Ultimately, the durability of the structure is drastically reduced. The aim of this experiment is to mitigate this limitation by incorporating short, discrete coconut fibers into high-strength concrete. This method is based on the idea that the localized reinforcing effect provided by the discrete fiber can restrain the development of cracks caused by aggressive environments. The structures were exposed to three types of aggressive environments: air environment in a tropical climate (A-series), alternate air and seawater environments in a 14-day cycle (4 days wetting + 10 days drying) (N-series), and continuous immersion in seawater (W-series). Compressive and flexural parameters were used to examine the strength of each structure, while chloride penetration, intrinsic permeability, and carbonation depth were used to examine their durability properties. The mineralogy and microstructure were studied by means of X-ray diffraction and scanning electron microscopy examinations. The experimental results prove that the compressive and flexural strengths of the structures improve up to 13% and 9%, respectively, with the incorporation of coconut fibers.

However, in terms of durability, the chloride penetration, intrinsic permeability, and carbonation depth increase with the increase in fiber content. Most importantly, in the intrinsic permeability, the plain specimen in the N-series showed a sudden increase in intrinsic permeability when the exposure period increased from 365 days to 546 days. This result signifies that the fibers play a role in restraining the development of cracks. In general, the deleterious effects brought about by aggressive environments can be suppressed with fiber-reinforced concrete. However, the dosage of coconut fiber should be low, not exceeding 1.2% of the binder volume, due to the drawback of its natural degradation. This study recommends that the coconut fiber undergo treatment prior to its application in concrete to protect it against degradation or that it be replaced with a non-corrosive fiber.

Keywords:
Coconut fiber, compressive strength, High performance concrete, strength, durability of concrete

Introduction

Strength and durability are often regarded as the most important criteria in concrete structure designs. These criteria especially apply for marine structures, which are exposed to hazardous environments

AN EXPERIMENTAL INVESTIGATION ON THE MECHANICAL PROPERTIES OF GEO POLYMER CONCRETE

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Abstract: To reduce the greenhouse gas emission, efforts are needed to develop environment friendly construction materials. This paper presents the development of fly ash based geopolymer concrete. In geopolymer concrete, a by product material rich in silicon and aluminium, such as low calcium (ASTM class F) fly ash is chemically activated by a high alkaline solution to form a paste that binds the loose aggregates and fine aggregates and other unreacted materials in mixture. The test results presented in this paper show the effect of various parameters on the properties of geopolymer concrete. The concrete obtained after the reaction between sodium hydroxide, sodium silicate has high strength. In this research the geopolymer mix design & experimental studies on are made on the Mechanical properties. Viz, Compressive Strength, Split Tensile strength, Flexure strength & Modulus of Elasticity of concrete. Results of investigation indicated that there was improvement in Mechanical properties with increase in Alkaline/Fly ash ratio. (0.30 to 0.45). Strength also increased with increase in curing time and temperature.
Keywords: Alkaline, Strength

1. INTRODUCTION

Portland cement (PC) production is under critical review since high amount of carbon dioxide gas is released to the atmosphere. Therefore, attempts to utilise the Fly ash (FA) to partially replace the Portland cement in concrete are gathering momentum. Most of the FA produced as byproduct material in thermal power plants is currently dumped in landfills, thus creating a threat to the environment. However, geopolymer concrete is a "new" material that does not need the presence of Portland cement as a binder, because, the fly ash, which is rich in silicon (Si) and Aluminium (Al), can be activated by alkaline liquids to produce the geopolymeric material to act itself as binder.

There are two environment related situations in production of FA and PC:

1. The high amount of carbon dioxide released to the atmosphere during the production of Portland cement.

2. The large scale availability of fly ash, a byproduct from power stations worldwide.

The rate of production of these two by-products (CO_2 and fly ash) is increasing due to the escalating demand on infrastructure development, and hence there is an urgent need for proper attention and to minimize their impact on the sustainability of our living environment. Decarbonation of limestone in the kiln during manufacturing of cement is responsible for the liberation of one ton of carbon dioxide to the atmosphere for each ton of Portland cement, as can be seen from the following reaction equation.

$5\ CaCO_3 + 2\ SiO_2 \rightarrow 3\ CaO.SiO_2 + 2\ CaO.SiO_2 + 5\ CO_2$

$CaCO_3 = 40+12+48 = 100$, $CaO=40+16=56$

$SiO_2=28+32=60$, $CO_2=12+32=44$

$5 \times 100 + 2 \times 60 \rightarrow (3 \times 56+60) + (2 \times 56+60) + 5 \times 44$

$500 + 120 \rightarrow 228 + 172 + 220$ /Parts by weight

$500 + 120 \rightarrow 400 + 220$/Parts by weight

$1.25 + 0.3 \rightarrow 1 + 0.55$ Tonnes

To the above, we have to add the CO_2 produced during use of fuel for burning / clinkering operations of cement production. The production of Portland cement worldwide is increasing 3% annually. The current contribution of green house gas emission from the Portland cement production is about 1.35 billion tons annually or about 7% of the total greenhouse gas emission to the earth's atmosphere (Malhotra 2002). Furthermore, Portland cement is also reported to be among the most energyintensive construction materials, after aluminium and steel. Portland cement (PC) has been a very satisfactory binder for structural applications for more than 150 years.

However, since the very nature of production of PC involves emission of CO_2 gas because limestone has to be calcined before formation of anhydrous calcium silicate based clinker (Taylor, 1998), an alternate system needs to be developed. It is estimated that for every ton of cement produced, the

AN EXPERIMENTAL STUDY ON FIBRE REINFORCED CONCRETE USING WASTE POLYPROPYLENE FIBER

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Abstract—Normal or traditional concrete makes use of extra of the uncooked cloth like sand, gravels, Normal or traditional concrete makes use of extra of the uncooked cloth like sand, gravels, fly ash etc. its utilization has been expanded to an widespread quantity wherein there are probably possibilities of assembly with the call for of such production substances. It may cause growth the fee of the substances drastically. To conquer such situations, exchange constructing substances have been rising now-a-days. This examine has been made as an try in enhancing the technological disease through the usage of waste polypropylene fiber i. e. (0%, 0.25%, 0.5%, 0.75% and 1.00%). The density of Fiber ferroconcrete (FRC) became examined straight away after making ready the concrete blend while the compressive electricity and consequently the cut up lastingness of the Fiber ferroconcrete (FRC) have been examined after 7 and 28 days of curing. Results imply that the density of sparkling Fiber Reinforced Concrete (FRC) barely or negligibly decreases from 2397 kg/cm3 to 2393 kg/cm3 with the addition of polypropylene fiber.

Index Terms—Normal, traditional, constructing, situations, density, ferroconcrete.
I.   INTRODUCTION

Ceramics had been the primary engineering substances regarded to mankind and that they none the less represent the maximum used substances in phrases of weight [1, 2]. Hydraulic cements and cement-primarily based totally composites together with concretes are the primary ceramic-primarily based totally substances. Concrete gives many benefits within side the software because of its progressed mechanical characteristics, low permeability and better resistance towards chemical and mechanical attacks. Although concrete conduct is ruled extensively with the aid of using its compressive energy, the tensile energy is essential with admire to the advent and sturdiness of concrete. The tensile energy of concrete is especially plenty lower. Therefore, fibers are commonly added to beautify its flexural tensile energy, crack arresting machine and publish cracking ductile behavior of simple matrix. Concrete change via way of means of the usage of polymeric substances has been studied for the Beyond 4 decades [3]. In general, the reinforcement of brittle constructing substances with fibers has been acknowledged from historic length together with placing straw into the dust for housing partitions or reinforcing mortar the usage of animal hair etc. Many substances like jute, bamboo, coconut, rice husk, cane bagasse, and

sawdust in addition to artificial substances together with polyvinyl alcohol, polypropylene (PP), polyethylene, polyamides etc. have additionally been used for enhancing the concrete [4,5,6,7,8]. Research and improvement into new fiber bolstered concrete goes on nowadays as well. Polypropylene fibers have been first recommended as an admixture to concrete in 1965 for the development of blast resistant homes for the United States Corps of Engineers. The fiber has finally been progressed similarly and at giftit's far used both as brief discontinuous fibrillated cloth for manufacturing of fiber strengthened concrete or a non- stop mat for manufacturing of skinny sheet components. Since then using those fibers has elevated exceptionally in production of systems due to the fact addition of fibers in concrete improves the toughness, flexural electricity, tensile electricity and effect electricity in addition to failure mode of concrete. Polypropylene wire is cheap, abundantly available, and prefers all artificial fibers of a steady quality. Properties of Polypropylene Fibers the raw fabric of polypropylene is derived from monomeric C_3H_6 which is only hydrocarbon. Its mode of

AN EXPERIMENTAL STUDY ON PARTIAL REPLACEMENT OF CEMENT BY ALUMINIUM DROSS IN CONCRETE

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Abstract: The objective of this project is to study the replacement of aluminium dross in cement concrete. As all we know aluminium is one of the widely used construction material in the world,and during the aluminium production,the huge amount of waste is produced. The main advantage of using the aluminium dross in the concrete over the conventional concrete is the reduction in the quantity of raw materials. The result of this study indicates that aluminium deoss can be used as an ingredient in the range of certain limits to improve the corrosion resistivity of concrete. Aluminium dross have been used to replace cement by 5%,10%and 15%by its weight. Then using this concrete, concrete cubes are casted. The casted cubes are tested for compressive strength for 7days, 15days and 28days.

Keywords: Aluminium dross, Cement concrete, Waste management, etc.

INTRODUCTION

Aluminium is one of the widely used construction material in the world, and during the aluminium production, the huge amount of waste is produced. For instance,in Qatar, Qatalum 635.000 millions tons aluminium ingots and billets, annually and this production causes approximately 350illion tons of dross which is sent to the neighbouring countries for Re-extraction and recycling of the remaining aluminium. Aluminium dross mainly consists of metal, salts oxides, and other non metallic substance. Normally aluminium dross is divided into two parts are black and white whil;e the black aluminium dross contents low metal with high amount of oxides, salts and granular-like in form similar to stand.The white aluminium deoss has very high amount of oxides and salts nd forms large blocks.Aluminium deoss is mainly produced from the meling of aluminium scrap such as used beverage containers, aluminium sliding, casting and the treating of the melt with salt flux.

This aluminium dross is toxic and hazardous waste for the environment and so the safe disposal of the aluminium dross as a waste is a burden to aluminium manufacturing companies because its improper and careless disposal affects the eco- system, surface and the ground water. When these dross particles are allowed to escape into the atmosphere, inhalation can cause health such as
1)   Alzeheimers Disease
2)   Silicosis
3)   Bronchitis

Fig.1:
White dross in lumps form with high aluminium content

Fig.2: Black dross

Fig.3 Chemical composition of aluminium dross `

Mg	Al	Si	Mn	Fe	Cu	Zn
0,00	90,28	5,93	0,34	1,10	1,82	0,53

It is is envisaged that the process of recovery of useful metallic and non metallic residue will add to the cost of operation and will demand the application of a new technology of an existing

AN EXPERIMENTAL STUDY ON THE USE OF PLASTIC WASTE IN PAVER BLOCKS

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ABSTRACT-
Daily plastic waste disposal is a necessity for solid waste management. As a result, this study looked into the possibility of using plastic waste to create paver blocks for a pedestrian walkway. A trial mix was used to develop paver blocks made of recycled plastic in order to determine the best way to make paver blocks. The goal of this project is to study the properties of pavement blocks made from recycled waste plastic. Pavement blocks are ideal for straightforward laying and finishing on pathways as well as streets. Here, the design considerations for pavement blocks incorporating waste plastic bags and the strength characteristics of pavement blocks made of waste plastic are presented. The environment and modern society will benefit from it. Utilising plastic in construction fields with minimal additions is the main goal.
Keywords: Plastic paver blocks, Plastic waste.

I. INTRODUCTION

Municipal Solid Waste (MSW) includes plastic as one of its major constituents, and efforts to recycle plastic waste have led to extensive research projects, like those in concrete blocks. Plastic waste was also looked into for its potential to replace aggregate or cement to create concrete blocks with value-added performance in

addition to sustainability. The properties of the concrete can be slightly or significantly altered by the addition of recycled plastic. Recycling wastes can help cut down on the production of solid waste, as well as pollution and other risks. Making composite materials, for instance, is a creative way to get rid of plastic waste.

All over the world, concrete is a common building material. The three most typical components of concrete are cement, sand, and coarse aggregate. Concrete is extremely useful, but as time goes on, it is running out, making it

necessary to look for alternatives.

In India, pavement technology has been used for parking lots and footpaths for many years, and it now serves a variety of purposes. This project conducts tests on properties like compression and oven performance. The raw materials used in this paver block are more readily available and affordable than those used in conventional paver blocks, including cement and readily available aggregates.

Karma Tempa, Nimesh Chettri, Gautam Thapa, Phurba, Cheki Gyeltshen, Dawa Norbu, Dikshika Gurung (2022)- an experimental investigation was carried out to recycle plastic waste as a substitute to cement as a binding constituent. Also, it reduces carbon footprint and reduces environmental pollution and health hazards. The maximum mass loss of 70.33

g was observed corresponding to 2.56% wear for PP/PS P50 samples. Other mix ratios show a lower loss in mass and percentage wear. All mixed and HDPE PW samples show compressive strength equivalent to M20 and M30 concrete respectively with lower values for PP/PS.

II. AIM

Using materials that are readily available locally, this study investigates the viability of using recycled plastic as a paver block.

III. OBJECTIVES

• The main objective is to make paver blocks out of plastic rather than cement.
• To provide affordable, effective paver blocks that the average person can easily afford.
• To assess the feasibility of using waste plastic in the construction of pavement blocks.
• Alternatively, we can reduce our reliance on plastic in our environment.

IV. MATERIALS

AN OVERVIEW OF RAINFALL-RUNOFF MODEL TYPES

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Abstract: This paper aims to inform the audience of the strengths and weaknesses of various rainfall-runoff models. Runoff plays an important role in the hydrological cycle by returning excess precipitation to the oceans and controlling how much water flows into water systems. Water resource managers use runoff data from models to help understand, control, and monitor the quality and quantity of water resources. Access to runoff data can be time consuming and restrictive. The goal of the USEPA's Hydrologic Micro Service (HMS) project is to develop a collection of interoperable water quantity and quality modeling components that leverage existing internet-based data sources and sensors via a web service. Each component may have multiple implementations, ranging from coarse to detailed levels of physical process modeling. Each rainfall-runoff model contains algorithms that control the calculation of runoff. Models can be categorized by the structure and spatial processing of these algorithms into empirical, conceptual, physical, lumped, semi-distributed, and distributed models. Several runoff models, including SCS Curve Number, Hydrological Simulation Program-Fortran, and Penn State's Integrated Hydrological Modeling System, are described, providing information to determine which best suits the modeling objective.
Keywords: Rainfall-Runoff models; Runoff; Hydrological Cycle

1. INTRODUCTION

The hydrological cycle has many interconnected components, with runoff connecting precipitation to stream flow. Surface runoff results when some precipitation does not infiltrate into the soil and runs across the land surface into surface waters (streams, rivers, lakes or other reservoirs) (Perlman, 2016). By returning excess precipitation and controlling how much water flows into stream systems, runoff is important in balancing the hydrological cycle. Surface runoff is a central area of interest for monitoring water resources, as well as solving water quality and quantity problems such as flood forecasting and ecological and biological relationships in the water environment (Kokkonen et al., 2001). Runoff is also the main driver in contaminant transport due to excess nutrients and pesticides from agricultural lands being washed into waterways by rain events. Knowing this information helps water resource managers account for the pollution in water resources due to runoff.

Surface runoff modeling is used to understand catchment yields and responses, estimate water availability, changes over time, and forecasting (Vaze, 2012). Although there are many ways to classify models, not all models fit into a single category because they are developed for a variety of purposes (Singh, 1995). In this report we classify models as one of three general types; each type calculates the relationship between rainfall and runoff differently. The categories are empirical, conceptual, and physical, as arranged by the model structure. Researchers use different ways to classify and divide models based on spatial resolution, input/output type, model simplicity, etc. Another classification based on the spatial interpretation of the model's catchment area is described in this report. This separates models into lumped, semi-distributed, and distributed models. Choosing a rainfall-runoff model is based on the modeling purpose such as understanding and answering specific questions about the hydrological process; assessing the frequency of runoff events; or estimating runoff yield for management purposes (Vaze, 2012). Identifying the priorities of modeling and the limitations of data availability, time, and budget for models help to narrow the choices and ensure that the model is the best for the intended purpose. Modeling runoff helps gain a better understanding of hydrologic phenomena and how changes affect the hydrological cycle (Xu, 2002). Readers should use the information presented here to guide them on choosing rainfall-runoff models for their modeling or managing requirements.

Some runoff models and data are not readily available to the public, may have missing information which decreases their usefulness, and can be time consuming or cumbersome to access. To overcome this problem in accessing water resource data, web services allow researchers, managers, and the public to become more familiar with the data and better informed to make improved decisions. Improving model and data access can result in reduced duplication of efforts and save time and money. Accessing web services from data providers, downloading runoff data, shifting time-series to local

ASSESSMENT OF GROUND WATER QUALITY AND SUITABILITY FOR IRRIGATION PURPOSES IN PARTS OF GV- 41 WATERSHED OF AURANGABAD, MAHARASHTRA, INDIA

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Abstract— With the increase in population, industrial development, and agriculture, pollution, increasing food production and improving crops in the world need to irrigate the largest area of agricultural land and groundwater suitable for irrigation. According to this idea, a study was conducted to evaluate the groundwater quality in the Indian state of Maharashtra's GV-41 Gangapur area. Thirty samples were taken, examined, and evaluated in this investigation to determine whether the water was suitable for irrigation. Acidity, electrical conductivity, total lupus solids, cations represented by sodium, potassium, calcium, and magnesium, as well as anions represented by bicarbonates, and chlorides, were known as the key parameters for the analysis of the samples. and auxiliary variables such as the Sodium Absorption percentage, Residual sodium carbonate (RSC), Kelly's ratio (KR), Sodium percentage Na%, permeability index (PI), Magnesium absorption ratio (MAR), and Residual Sodium Bicarbonate (RSBC) were calculated to know the quality of irrigation water. Values suggested that the majority of groundwater samples were suitable for irrigation purposes. The USSL and Wilcox diagrams were also used to evaluate the groundwater in the study area.

Keywords— Groundwater; GV-41 watershed; Groundwater chemistry; Irrigational water quality; Aurangabad

1.   INTRODUCTION

Groundwater is considered one of the major sources of irrigation uses in India, especially in the arid rural areas, where agriculture is the main source of income for the population. The increase in population needs for increasing food, drought and climate change have a direct impact on agricultural land; crops and irrigation at the same time Around 275 million or about 20% of arable land in the world is irrigated, with irrigated agriculture accounting for 40% of all crop production (1). Groundwater quality has been deteriorating day by day because of the shrinking water table, improper sanitation, the introduction of chemical compounds, and inefficient or less efficient irrigation practices (2). Accessibility to groundwater is influenced by geography, surface drainage, geology, slope, and land cover. The topographic level and slope are the elements that control the tenacity of the water table's elevation. The drainage pattern also has a strong impact since it affects how quickly rain falls and how much of it may seep into the ground. The amount and distribution of groundwater as well as the permeability of the ground surface are significantly influenced by rainfall (3). The main reason why the quality of soils and the

crops cultivated on them has declined is due to the use of irrigation water of poor quality. Due to the presence of these ions in irrigation fluids at high concentrations, the buildup of different ions in the soil mass has been primarily blamed for this degradation. (4, 5, 6, 7). The quality of groundwater is the end product of all the actions and reactions that have been performed on the liquid since it first began to condense in the atmosphere until it is released by a well. As a result, the quantity and makeup of dissolved particles in groundwater determine its quality, which changes from location to location, with water table depth, and from season to season (8). Analysis of the water quality is one of the most crucial components of groundwater investigations. Water quality that is good for, agriculture is revealed by the hydro-chemical research. Additionally, it is feasible to comprehend how the quality of (1, 2) changed as a result of rock-water contact or any other

CURING APPLICABILITY IN GEO-POLYMER CONCRETE

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Abstract: Geopolymer are shaped by the soluble initiation of aluminosilicate rich materials named as geo-polymerization. The course of geo-polymerization requires raised temperature relieving which limits its application to precast and Prestressed portions. This study sums up the work completed on fostering the geopolymer concrete with the expansion of different mineral admixtures and solidness of cement at their restoring temperature conditions. An outline of studies advancing the geopolymer concrete overall structure development is introduced.

Keywords: Geopolymer, geo-polymerization

1.   INTRODUCTION

Natural contamination is the greatest danger to the individual on this planet today. It severely affects the environment. There are many reasons which cause contamination. In the development business, concrete is the fundamental element for the substantial creation. During the creation of concrete the outflow of CO2 stays higher that causes the greatest contamination. There are two unique wellsprings of CO2 outflow during concrete creation. Burning of petroleum derivatives to work the rotational furnace and other one is the synthetic course of calcining limestone into lime in the concrete oven likewise creates CO2.Combustion of petroleum products is the biggest wellspring of CO2 creation. In India around 2,069,738 a great many metric huge loads of CO2 is radiated in the time of 2010. While in 2008-09 it was around 198 million tones. The concrete business contributes around 5% of complete worldwide carbon dioxide emanations. The concrete is fabricated by utilizing the unrefined components, for example, lime stone, earth and different minerals. On the opposite side the interest of cement is expanding step by step. So to beat this issue, the substantial to be utilized should be natural cordial. Concrete is broadly utilized in the development and fix of framework. Conventional Portland concrete (OPC) is usually utilized as the folio in the creation of cement. The creation of one ton of Portland concrete emanates around one ton of CO2 into the air. For the most part, during the time spent delivering 1 ton of OPC, 1.5 ton of asset material is consumed and 0.9 ton of CO2 is delivered into the air. To create ecological amicable cement, we need to supplant the concrete with the modern side-effects, for example, fly-debris, Ground granulated impact heater slag (GGBS) and so on In this regard, the new innovation called geo-polymer concrete is a promising procedure.

Geopolymer are inorganic polymers which are orchestrated by the response of strong silicon and the aluminum in source materials of geographical beginning or result materials, for example, fly debris and rice husk debris which comprises of a three layered rehashing unit of sialate monomer. These fasteners are named as geopolymer.

The polymerization cycle includes a considerably quick compound response under antacid condition on Si minerals, that outcomes in a three layered polymeric chain and ring structure comprising of Si-O-Al-O bonds are framed.

The schematic development of geopolymer material can be portrayed by the accompanying conditions.

$$n(Si_2O_5.Al_2O_2)+2nSiO_2+4nH_2O+NaOH \text{ or } KOH \rightarrow Na^+,K^+ +n(OH)_2 - Si - O - Al^- - O - Si - (OH)_2 \quad (A)$$

(Si-Al materials)

$$\downarrow$$

$$(OH)_2$$

(Geopolymer precursor)
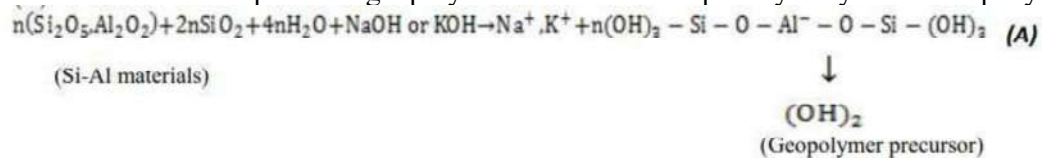
E-WASTE: AN ALTERNATIVE TO PARTIAL REPLACEMENTOF COARSE AGGREGATE IN CONCRETE

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Abstract **Globally, the management and disposal of E-waste is causing serious concerns as it is non-decomposable and hazardous to environment. One of the best management practices of E-waste is its reuse in concrete as E-Waste concrete (EWC) which will also be a partial solution to escalating cost of construction material. The significance of this research is to resourcefully use E-waste in concrete by achieving optimum performance by testing physical, workability & mechanical properties. The E-waste generated at Pillai HOC College of Engineering and Technology (PHCET), Rasayani was used as partial replacement of coarse aggregate (CA) in combination with fly ash. By replacing 0-30% of CA, concrete cubes were cast and slump cone test for determining workability and compression strength test were conducted after 28 days. The results indicate a remarkable increase in workability and strength of EWC thus making it feasible to use EWC as light weight concrete.**

Keywords **—***E-waste, E-waste concrete, Compressive strength of concrete, Reusable Material, Sustainable Material, Strength optimization*.

I. INTRODUCTION

The rapid growth of technology, up gradation of technical innovations and a high rate of obsolescence in the electronics industry have led to one of the fastest growing waste streams in the world which consist of end of life Electrical and Electronic Equipment (EEE). The countries of the European Union (EU) and other developed countries to an extent have addressed the issue of e-waste by taking policy initiatives and by adopting scientific methods of recycling and disposal of such waste. The EU defines this new waste stream as 'Waste Electrical and Electronic Equipment' (WEEE).

Since there is no definition of the WEEE in the environmental regulations in India, it is simply called 'e-waste'. Considering the current scenario, prohibition or even reduction in use of electrical items is not possible. With the advancement of technology, the demand and consumption of electronic items is also increasing at an alarming rate and with it comes the problem of disposal of these waste EEE (WEEE). E-waste is one of the parts of EEE. Several tonnes of E waste need to be disposed per year. Conventional landfill method is not an environmental

EXPERIMENTAL INVESTIGATION ON PARTIAL REPLACEMENT OF WASTE CERAMIC POWDER IN CONCRETE

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Abstract: Ceramic Waste is a non-biodegradable material its disposal in land up to 15% results in the soil pollution. To avoid this waste Ceramic can be used as partial replacements of cement. This study of examines the replacements of ceramic in the range of 0%, 10%, 20%, 30%, 40% and 50% by weight with M-25 grade concrete. Ceramic Waste added in crushed form . This results demonstrate in reduction of water absorption and improves durability of concrete. A total 15 samples of cubes, cylinders and beams were cast and tested for compressive strength, split tensile strength and flexural strength at 7 and 14 days of curing respectively. Ceramic waste can be used a partial replacement of cement or as a partial replacement of fine aggregate sand as a supplementary addition to achieve different properties of concrete are presented in the paper.

Keywords: Ceramic Waste powder, Aggregate, Concrete, water, Compressive strength, Flexural strength, Split tensile strength.

I.   INTRODUCTION

This research are analysis the impact and the use of ceramic powder obtained in the ceramic industry. The Ceramic Waste from the factories producing frequently rubbish tips and creating large piles. In this predicted that about 30% of daily production of Ceramic Waste in India changes in wastage and this amount reaches to million ton per year. This waste in not recycled in any form at present. However, the Ceramic Waste is durable, hardly and highly resistant to chemical, biological and disposal problems. These properties of this materials make them a good and suitable choice to use in the concrete. The concrete is a versatile material mostly used in constructions industry. Mostly cement plants consume such energy and to produce a large amount of undesirable products which are affect the environment. Concrete is widely used construction material in present industry. Also, the cement manufacturing industry on an average emits 7% of green house gases to earth's atmosphere which leads to global warning. In order to address these environmental affect extensive research is ongoing into the use of cement replacement using many waste materials like waste ceramic powder, plastics, fly ash and industry by products. It's possible to add ceramic in concrete by replacing either of the ingredient partially in a number of forms. Ceramic may be added in crushed form in powder form along with the addition of admixture or without addition of any of the alternate materials in the nominal concrete. It's although a

portion of this waste may be utilized on site such as for excavation pit refill. The disposals of these waste materials acquire large land areas and remain scattered all waste Ceramic into the land results in the soil pollution. So to avoid these disposable problems waste Ceramic is used as partial replacements of cement. This results in reduction of water absorption and improves durability of concrete. The addition of ceramic in concrete shows improvement in the compressive strength, flexural strength and tensile strength. The principle waste coming into the ceramic industry is the ceramic powder, Specifically in the powder forms. Ceramic wastes are generated as a waste during the process of dressing and polishing. It is estimated that 15 to 30% waste are produced of total raw material.

Crushed Ceramic Waste Powder

Ceramic waste from factory producing constructions industry materials has been accumulating on frequently creating increasingly large piles. Although they are usually chemically inert the waste accumulates depending upon their size and the environment control exercised have a significant visual impact of destroys the intrinsic quality during production.

EXPERIMENTAL STUDIES ON CERAMIC TILES USED FOR CONCRETE

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Abstract: - The availability of coarse aggregate i.e. Stone is reducing day by day. So, in order to replace the stone aggregate, we used tiles which are also wasted 30% in Indian industry. We used M20 grade concrete with different % of tiles which are 20%, 40%, 60% and 80%. Compressive strength, splitting tensile strength, flexural strength and modulus of elasticity test has been conducted on concrete specimens which are cured for 28 days, 54 days, and 90 days. We also used 150mm cubes for testing compressive strength, 150mm diameter and 300mm length for tensile strength and for modulus of elasticity, a prism of size 500mm length 100mm wide 100mm thickness for flexural strength.

INTRODUCTION

GENERAL

The availability of coarse aggregate i.e. Stone is reducing day by day. So, in order to replace the stone aggregate, we used tiles which are also wasted 30% in Indian industry. We used M20 grade concrete with different % of tiles which are 20%, 40%, 60% and 80%. Compressive strength, splitting tensile strength, flexural strength and modulus of elasticity test has been conducted on concrete specimens which are cured for 28 days, 54 days, and 90 days. We also used 150mm cubes for testing compressive strength, 150mm diameter and 300mm length for tensile strength and for modulus of elasticity, a prism of size 500mm length 100mm wide 100mm thickness for flexural strength. And we compared with conventional concrete of grade M20 of same days of curing which is 28 days, 54 days and 90 days. Finally, we got the safe value.

TYPES OF TILE

There are several types of tiles used for residential and commercial applications, they are:
a)   Ceramic tile
b)   Quarry tile
c)   Porcelain tile
d)   Mosaic tile
e)   Marble tile

Ceramic tile: ceramic comes from the Greek term Keramos, meaning "a potter" or "pottery". Since the infancy of ceramics, up to this very day, the process is still very much the same for the creation of all the ceramic materials, one need to bake a mixture of clays at a very high temperature. It is the most common tile used in the US in offices, stores and homes. Ceramic tile comes in two forms: glazed and unglazed. Ceramic tiles are made from clay and then heated.

The glaze is added after the firing of clay tile, which creates the color of the tile. The glazing process allows for the creation of infinite color combinations.

Quarry tile: It is unglazed ceramic tile. It is an inexpensive, durable and natural option for industrials, commercial and residential tile applications. Quarry tile is used a lot in industrial settings because it is so durable and can also be used outdoors.

Porcelain tile: it is a ceramic tile. The difference between porcelain and ceramic is that porcelain is fired at a higher temperature, making it more dense and moisture-resistant. Porcelain tiles are also less porous, making them more stain-resistant. For these reasons, most porcelain tiles are suitable for both indoor and outdoor installations. Porcelain tiles are hard to cut due to their density and hardness, so the cost and labor involved is often higher.

Mosaic tile: it allows you to creative with your tile design. Mosaics are most commonly used for smaller areas, such as a bathroom or kitchen backsplash, or even small counter space areas. Mosaic tiles are usually less than six square inches and made of porcelain or clay composition.

Marble tile: marble is a versatile natural stone which has been used for centuries in homes to create a luxurious and unique look. Because marble is a natural stone, there are variations in the color of each tile. Many homeowners like this, as it creates a unique, one-of-a kind design, while others prefer a more consistent look, like ceramic tile. Marble is porous and must be sealed just like all other tile types.

EXPERIMENTAL STUDY ON RED MUD, FLY ASH AND GGBFS BASED GEOPOLYMER CONCRETE
A GREEN SUBSTITUTE TO CONVENTIONAL CONCRETE

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Abstract — Rapid urbanization and industrialization has led to generation of abundant quantity of industrial wastes. Red mud (RM), Fly ash (FA) and Ground Granulated Blast Furnace Slag (GGBFS) are a few amongst the wastes that are generated is huge quantities and are indiscriminately disposed on to open lands which not only occupy space but also leads to soil and ground water pollution. Also increased construction activities have increased the use of conventional construction materials. Production of conventional construction materials such as cement poses a lot environmental threat during its production. Thus, there is a need to find sustainable alternate materials for a better future.

The objective of this study is to investigate a green alternate material for conventional concrete using geopolymerization of industrial wastes. In this study geopolymer concrete using RM, FA and GGBFS was tested for various physical and mechanical properties. The properties that were tested include water absorption, compressive strength, flexural strength, tensile splitting strength. The test results indicated that geopolymerization of industrial wastes can be a good and sustainable alternative to conventional concrete.

Keywords— Red mud, fly ash, ground granulated blast furnace slag, geoploymer concrete.

I. INTRODUCTION

Replacing conventional construction materials with wastes or by-products from industries will help cater problems related to waste management [1]. Red mud is one such potential replacement material which is found in abundance produced during extraction of alumina from bauxite ores by the Bayer's process. The quantity of red mud produced accounts to about 55% to 65% of processed bauxite depending upon the quality of bauxite ore. According to literature bauxite ore mined globally amounts to 202 million tons (MT) in 2007 and 205 million tons in 2008 [3]. Quantity of red mud produced globally per year approximates to 90 million tons [4]. In India red mud production is up to 4 million tons [1]. Bayer's process uses highly concentrated NaOH solution at high temperatures and pressures for ore digestion. Fresh red mud slurry thus produced is characterized by strong alkalinity (pH 10.5-13), high water content, concentrated heavy metals and other trace elements make the proper reuse or disposal of red mud difficult [5]. Widely used method of disposal of red mud is onto the land in waste ponds. But this method is not economical due to its high maintenance cost and also requires constant monitoring [3]. Disposal of red mud onto waste lands poses potential threat to public health and environment. Thus

new and sustainable methods of reuse or disposal is the need of the hour. Though a lot of efforts have been made on reuse, recycle and treatment of red mud, a widely accepted technology or method is yet to be established [5].

Rapid urbanization has resulted in increased construction activities. Concrete is one most widely used construction material [7]. Concrete also uses conventional construction material which again leads to increase in carbon footprint. Geopolymer is one such alternative for conventional concrete. Geopolymer are materials formed by activation of alumina silicate materials using alkaline solutions. Chemical solutions which are used as alkaline activators mainly include sodium or potassium hydroxide and sodium or potassium silicate [6]. Thus the present study focused on using industrial by-products such as red mud, fly ash and ground granulated blast furnace slag

FULLY REPLACEMENT OF CEMENT AND WATER IN GEOPOLYMER CONCRETE

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Abstract - The report presents a comprehensive summary of the extensive studies conducted on fly ash-based geopolymer concrete. Test data are used to identify the effects of salient factors that influence the properties of the geopolymer concrete in the fresh and hardened states. These results are utilized to propose a simple method for the design of geopolymer concrete mixtures. Test data of various short- term and long-term properties of the geopolymer concrete are then presented. The last part of the Report describes the results of the tests conducted on geopolymer concrete.
Keywords - Geopolymer Concrete, Fly Ash, Alkaline Liquid, Compressive Strength

I.   INTRODUCTION

India produces about 70 million tons of coal ash per year from Burning about 200 million tons of coal per year for electric power generation. Coal-ash management poses a serious environmental problem for India and requires a mission-mode approach. Considerable research and development work have been undertaken across the country towards confidence building and developing suitable technologies for disposal and utilization of fly ash in construction industries. At present about 10% ash is utilized in ash dyke construction and land filling and only about 3% of ash is utilized in other construction industries. This is very much in contrast with 80% or more fly ash used in developed countries for the manufacture of concrete, cellular concrete blocks, road construction, land fill application, ceramics, agriculture, insulating concrete, recovery of metal sand ceno-sphere sand dam constructions. Currently, about one acre per MW of land is needed for ash disposal. The manufacture of geopolymer concrete, is one of causes for which the fechnoclomic aspects are discussed in the following paragraphs

The global use of concrete is second only to water. As the demand for concrete as a construction material increases, so also the demand for Portland cement. It is estimated that the production of cement will increase from about from1.5 billion tons in 1995 to 2.2 billion tons in 2010 [6].On the other hand, the climate change due to global warming has

become a major concern. The global warming is caused by the emission of greenhouse gases, such as carbon dioxide (CO_2), to the atmosphere by human activities. Among the greenhouse gases, CO_2contributes about 65% of global warming. The cement industry is held responsible for some of the CO_2emissions, because the production of one ton of Portland cement emits approximately one ton of CO_2into the atmosphere [4].

In this respect, the geopolymer technology proposed by[4] shows considerable promise for application in concrete industry as an alternative binder to the Portland cement[5]. In terms of global warming, the geopolymer technology could significantly reduce the CO_2emission to the atmosphere caused by the cement industries.

Geopolymer is a new material which is being used for construction all over the world. As a new material for construction not much of information is available on the durability of geopolymer concrete. The durability of concrete is an important requirement for the performance of the structure in aggressive environments throughout its design life period. The durability of concrete primarily depends upon its permeability characteristics. Impermeable concretes can resist the ingress of aggressive ions into the concrete and thereby reduce the damages occurring due to the deterioration of concrete and the corrosion of steel in concrete. However, there appears to be no comprehensive information of the permeability characteristics and deterioration characteristics of geopolymer concretes

LAND USE AND LAND COVER CHANGE EFFECT ON SURFACE TEMPERATURE OVER EASTERN INDIA

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ABSTRACT:

Land use and land cover (LULC) change has been shown to have significant effect on climate through various pathways that modulate land surface temperature and rainfall. However, few studies have illustrated such a link over the Indian region using observations. Through a combination of ground, satellite remote sensing and reanalysis products, we investigate the recent changes to land surface temperature in the Eastern state of Odisha between 1981 and 2010 and assess its relation to LULC. Our analysis reveals that the mean temperature of the state has increased by ~0.3 °C during the past three decades with the most accelerated warming (~0.9 °C) occurring during the recent decade (2001 to 2010).

Our study shows that 25 to 50% of this observed overall warming is associated with LULC. Further we observe that the spatial pattern of LULC changes matches well with the independently estimated warming associated with LULC suggesting a physical association between them. This study also reveals that the largest changes are linked to changing vegetation cover as evidenced by changes to both LULC classes and normalized difference vegetation index (NDVI). Our study shows that the state has undergone an LULC induced warming which accounts for a quarter of the overall temperature rise since 2001. With the expected expansion of urban landscape and concomitant increase in anthropogenic activities along with changing cropping patterns, LULC linked changes to surface temperature and hence regional climate feedback over this region necessitates additional investigations.

Introduction:

The surface temperatures are increasing globally as a consequence of anthropogenic climate change. However, it is known that observed changes are a result of both climate forcing and numerous other feedbacks including LULC. The LULC could change as a response to climate and also act as a feedback. In addition to these natural forcing and feedback cycles, there are also additional aspects that are linked to anthropogenic activities. This results in further modification to the LULC and meteorological responses thereupon[1–10]. These LULC changes and their effects are mostly discernible over regions having higher population density, industrialization, urbanization, deforestation, agricultural diversification etc. Thus, the most visible effect of anthropogenic activities regionally and locally are changes in the LULC which modifies the surface energy balance which in turn affects the surface temperature altering the region's micro-climate[5,8,11–17].

The changes in LULC also modulate the incidence of heat/cold waves, clouds and rainfall patterns[18–24]. In addition, LULC change have also been linked to atmospheric aerosol emissions[20,25,26] which can modify the sur- face temperature through both direct and indirect effects, thereby modulating rainfall which can also result in droughts or floods through changes to extreme events under certain favorable circumstances[18].

Over the Indian region, there are only a few scientific investigations that have attempted to discern LULC induced temperature changes, but they are either limited to the major metropolitan cities[6,11,20,23,27–33] or have only focused on aspects related to urbanization[3,4,34–38]. For example, the surface temperature over western India is found to be warming by ~0.13 °C/decade due to the combined effect of greenhouse gases and LULC change of which ~50% was attributed to LULC change[27]. Also, in 2001 an area covering 26.4% of New Delhi had a diurnal temperature range (DTR) below 11 °C whereas in 2011 65.3% of New Delhi had a DTR below 11 °C which was attributed to the increase in built up area by 53%[24,29,31,39,40]. Furthermore, the LULC has also been linked to

AN OVERVIEW OF CURRENT RESEARCH TRENDS, DEVELOPMENT TOOLS, AND INDUSTRY APPLICATIONS IN NATURAL LANGUAGE PROCESSING

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Abstract--- Natural Language Processing (NLP) is a subfield of Artificial Intelligence and getting lot of focus on research and development due to emergence of its applications. The research areas in focus are conversation systems, Language processing, Machine Translation, Deep learning. The researches in these areas lead to development of many tools to build industrial applications. Combining Deep Learning techniques with Natural Language Processing is finding lot of applications in domains such as Healthcare, Finance, Manufacturing, Education, Retail and customer service. This paper provides bird's view of advancement in research, development and application areas of Natural Language Processing. This paper captures21research focus areas, 22 development tools and 6 domains where Natural Language Processing are making rapid advancements.
Key Words: Sentiment Analysis,Named-Entity Recognition, POS Tagging, Chatbots.

I. INTRODUCTION

Natural Language processing (NLP) is a subfield of artificial intelligence dealing with computational algorithms to automatically represent and process various forms of human (natural) language inputs and communicate with Human-Computer-Interface (HCI). It is also known by a name "Computational Linguistics".
Natural Language Processing involves following stages of processing namely, lexical (structure) analysis, parsing, semantic analysis, discourse integration, and pragmatic analysis. Some well-known application areas of NLP are Speech Recognition, Optical Character Recognition (OCR), Machine Translation, and Chatbots.
Recently, Machine Learning algorithms are used to process Natural Language input by studying millions of examples of text — words, sentences, and paragraphs — written by humans. By studying these samples, training algorithms gain an understanding of the "context" of human speech, writing, and other modes of communication. The machine learning and deep learning algorithms are widely is used to develop frameworks for NLP and efficiently perform common NLP tasks.

II. BRIEF HISTORY

Although the work on NLP dates back to around 1950 with the development of what is called as "Turing Test" and in 1957 a rule-based system of syntactic structures. The progress was slow until 1990 due to limited computational power and systems were based on complex sets of hand written rules and limited vocabulary. With the introduction of machine learning and steady increase in computational power, recently interest on research and applications are growing. The recent major breakthrough areas of NLP are: speech recognition, language processing, dialog systems and applying deep learning techniques.
While NLP is still facing lot of challenges (like human computer interfaces), there has been lot of research interests and it has opened to many opportunities for using the techniques in robotics, automation and digital transformation.

III. RESEARCH WORKS ON NLP

Until 1990, most of the research work was done on the NLP concepts and machine translation. Most recent research work on NLP have harnessed the power of statistical models, machine learning, Deep learning technologies that are using data driven approach.
The research topics on Natural Language Processing sometimes overlap with some artificial intelligence and Deep Learning topics. These approaches generally adopted recently to perform NLP tasks in most efficient way. The ACL 2018 Main Conference invited papers in 21areas which are Dialogue and Interactive Systems, Discourse and Pragmatics, Document Analysis, Generation, Information Extraction

REVIEW ON CYBER-SECURITY

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Abstract
A qualitative study conducted in Korea reveals that businesses use security techniques to protect their information systems, with a focus on preventing security threats using technological countermeasures. The study found a deep-rooted preventative mindset driven by the desire to ensure technology availability and a lack of awareness of enterprise security concerns. The research agenda for deploying multiple strategies across an enterprise includes combining, balancing, and optimizing systems. Nine security strategies were identified, and a qualitative focus group approach was used to determine their use in organizations. Many organizations use a preventive approach to keep technology services available, while some other methods support the prevention strategy on an operational level.
.
Keywords: Cyber security; Cyber space; Cyber terrorism

1. Introduction

Today an individual can receive and send any information may be video, or an email or only through the click of a button but did s/he ever ponder how safe this information transmitted to another individual strongly with no spillage of data? The proper response lies in cyber security. Today more than 61% of full industry exchanges are done on the internet, so this area prerequisite high quality of security for direct and best exchanges. Thus, cyber security has become a most recent issue (Dervojeda, et. all., 2014). The extent of cyber security does not merely restrict to verifying the data in IT industry yet also to different fields like cyberspace and so forth. Improving cyber security and ensuring that necessary data systems are vital to each country's security and financial prosperity.   Creating the Internet safer (and safeguarding Internet clients) has become to be essential to the improvement of new management just as a legislative strategy. The encounter against cybercrime needs an extensive and more secure practice (Gross, Canetti & Vashdi, 2017). The particular estimates alone cannot keep any crime; it is essential that law authorization offices are allowable to investigation and indict cybercrime efficiently. Nowadays numerous countries and administrations are compelling strict rules on cyber safeties to keep the loss of some vital data. Each should be equipped on this cyber security and save themselves from these increasing cybercrimes.   Cyber-security is both about the insecurity made by and through this new space and about the practices or procedures to make it (progressively) secure (Kumar, & Somani, 2018). It alludes to a lot of exercises and measures, both specialized and non-specialized, expected to ensure the bioelectrical condition and the information it contains and transports from all possible threats. This research aims to gather all the information and overview related to cyber-crime and provide the historical facts and perform reports on the analyzed data of different attacks reported everywhere in the last five years. Based on the analyzed information, we would like to provide all the countermeasures that organizations may undertake in order to ensure improved security that would , we would like to provide all the countermeasures that organizations may undertake in order to ensure improved security that would support in defending the organizations from being attacked by the hackers and provide a cyber-security to avoid all risks. support in defending the organizations from being attacked by the hackers and provide a cyber-security to avoid all risks.

2. Purpose

The paper provides information about cyber security and cyber terrorism. It covers various information about these topics in its subsections. Trends of cyber security and the role of social media in cyber security define in this paper. The paper provides some necessary information about cyber terrorism. The components of "cyber terrorism" and the consequences of this terrorism also explain in this paper. There are some examples of case studies those related to cyber security. The paper also provides some solutions regarding cyber security and cyber terrorism. It provides some techniques for preventing cyber terrorism. The future study and scope of cyber security define in it. Cyber security has become a major concern over the last 10 year in the IT world. In the present world, everybody is facing a lot of problems with cybercrime. As hackers are hacking major sensitive information from government and some enterprise organizations the individuals are very much worried as cyber security assault can bring about everything from wholesale fraud, to blackmail big companies. They are many varieties of cyber-crimes emerging where everyone needs to be aware of the scams and they are different measures and tools which can be used for avoiding the cyber-crimes. Every organization wants to secure their confidential data from getting hacked. Getting hacked is not just about losing the confidential data but losing

FUTURE DIRECTIONS FOR SEMANTIC WEB TECHNOLOGY

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Abstract
Numerous fields have shown interest in the semantic web and its technology. They are able to consistently and logically link and arrange data over the internet. Semantic web technologies, which include OWL, RDF schema, and rule and query languages like SPARQL, will aid in the problem-solving of diverse areas. The first part of this review paper examines the requirements and nature of the semantic web. All ten domains that are closely related to the semantic web and its technologies have been taken into consideration. We have divided the paper into three main contributions for easier comprehension. Initially, we examine the semantic web and the domains that contribute to its expansion. Second, we talk about every domain.

KEYWORDS
Semantic web, OWL,SPARQL,linked data,ontology

1.   Introduction

The Semantic Web means sharing data and facts rather than sharing the text of a page. The thought of a Semantic Web was given by Sir Tim Berners-Lee in 2001. The Semantic web helps build a technology stack to support a 'web of data' rather than a 'web of documents.' The final aim of the web of data is to pro- vide capacity to the computer to do more meaningful tasks and to develop systems that can support trusted interactions over the network. Semantic web technologies (SWTs) include different data interchange formats (e.g. Turtle, RDF/XML, N3, N- Triples), query languages (SPARQL, DL query), ontologies, and notations such as RDF Schema and Web Ontology Language (OWL), all of which are intended to bestow a formal description of entities and correspondences within a given knowledge domain. These technologies are helpful for achieving the over- all objective of the semantic web. The heart of the semantic web is the linked data because linked data provide large-scale data integration and reasoning on the data. Linked data become powerful by technologies such as SPARQL, RDF, OWL, and SKOS, but there are also many challenges for linked data which are described by various papers. Ontologies are the backbone for structuring linked data and play a major role in defining links within a dataset and across datasets to other linked data. They enable users to search a schematic model of all data within the applications. By using ontology we can combine deep domain knowledge and raw data and bridge datasets across domains. Ontologies are efforts to more precisely classify parts of the data and to permit communications between the data available in distinct formats. The universal standard for communicating ontologies and data on the Semantic Web is web ontology language. The database is not openly suitable in the area of the semantic web because it holds a dissimilar data model. Most database bench- marks are designed in the direction of a relational data model. The mathematical idea behind the relational data model is the set theory which is a part of the Cartesian product. The web ontology language data model, on the opposite hand, gives a lot of adaptability. The resource description framework (RDF) is based on the idea of graph theory. Furthermore, web ontology language is based on description logic; it includes description logic (DL) expressions and axioms or restriction. Knowledge graph is also an essential component for the semantic web. The term 'Knowledge Graph' was coined by Google in 2012 and is intended for any graph-based knowledge. There are many types of knowledge graph available such as DB , Freebase, Wiki data, YAGO and so on. Ultimately, comprehensive knowledge bases like DBPEDIA and WIKIDATA play an essential role in dealing with the problem of information overload. The thought of acquainting semantics to quest on the Web is not clear in an exclusive manner. Other factors like scalability, availability of content, visualization, ontology development and evolution, and multilingualism and stability of semantic web languages are the major challenges for the semantic web, which provides directions for the researcher. The two most ordinary behaviors of semantic web technologies are (1) to understand Web queries and Web resources annotated along with back- ground knowledge defined by ontologies and (2) to look into the organized huge datasets and knowledge bases

ETHICAL HACKING: SKILLS TO FIGHT CYBER SECURITY

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Abstract
 Ethical hacking education equips future information security professionals with the necessary skills to combat cyber security threats. This proactive approach, unlike most defensive technologies, is used by malicious hackers, making it a double-edged sword for businesses, schools, and individuals are all becoming reliant on the Internet and Internet of Things (IoT) devices.
Keyword: Malicious hackers, Ethical hackers, Firewalls, Vulnerabilities

1 Introduction

 The internet and its importance are expanding at an incredible rate. Schools, businesses, governments, and individuals are all becoming reliant on the Internet and Internet of Things (IoT) devices. IoT devices can include but are not limited to desktops, laptops, smart phones, smart watches, etc. With so many institutions relying on the Internet and devices connected to the Internet, their security from outside threats becomes the owner's highest priority. The rise of information technology and the Internet have brought cybercrime to the forefront of everyday life. Information technology has created a new, seemingly anonymous, avenue for criminals to operate and cause damage. Malicious users find new ways to penetrate IoT devices nearly every day, allowing many security measures to only be reactive in nature. Ethical hacking is one security measure that provides an exception to these reactive measures and is viewed as a proactive one. These hackers use the same skills and tools as malicious hackers; however, there are many strict guidelines they must follow, and a certification must be obtained to become a legally recognized ethical hacker. Therefore, it is important for instructors to correctly inform their students about the repercussions of malicious hacking to help encourage them to complete their program and become a certified ethical hacker.

Organizations, schools, governments, etc. have historically used a defensive approach to secure networks, systems, and data. This approach leveraged technologies such as firewalls, antivirus/antimalware software, network segmentation, and access control lists to defend against unauthorized access (Thomas et al., 2018). It is important to note that these technologies, for the most part, cannot stop an active breach into a system. Sometimes they can prevent a breach from happening but only if it is through a known vulnerability. Thus, the importance of ethical hacking becomes evident. No organization wants to fall victim to a data breach from a malicious hacker just to discover a vulnerability in their computer security. Ethical hackers discover these risks and vulnerabilities in a system or network from within a controlled environment, with no intention to cause damage to or steal data from the owners of the system/network. However, ethical hackers and their instruction raise important questions about their implications such as "Is teaching students how to hack worsening the problem of malicious hackers?" and "If a student uses the information provided to him by an institution to commit a crime, who is at fault?". Ethical hacking is performed by trained/certified individuals who carry out actions like that of malicious hackers in hopes of finding vulnerabilities in a system or network before a hacker has the chance to exploit it. Hartley defines ethical hacking as penetrating a system as a hacker but with benign intentions (Hartley et al., 2017). Not only must ethical hackers adhere to a strict code of ethics, but they must also be conscious of the law while performing their job. For an individual to become an ethical hacker they must be taught the strategies and methods of malicious hackers; therefore, teaching students these tactics has the potential to compound, rather than fix, the problem of the increasing number of malevolent hackers. Ultimately, it is the students' decision whether to use their newfound skills in an ethical or malicious way; however, it is important for instructors and instructing institutions to provide the students with not only the proper skills but a strong moral standing as well. The purpose of this paper is to analyze ethical hacking, its use in information security, and the implications that occur from teaching individuals ethical hacking. To do this, a brief history of hacking will be provided, and a basic understanding of what hacking must be reached. This paper will discuss the different classifications of hackers along with what side of legality they are placed. The actions of some are not always black and white in terms of the law. Then it will delve into ethical hacking itself. This will include the significance of ethical hacking, the code of ethics

A STUDY ON PROJECT MANAGEMENT IN SOFTWARE ENGINEERING

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Abstract
The software industry is crucial in developing countries due to its value addition and high value. However, poor project management, particularly in developing countries, is a significant issue. This study focuses on planning for project success. This study explores the role of planning in software projects, focusing on planning factors, planning performance, and project outcomes. Planning factors include human, management, and technical aspects. Project outcomes are evaluated based on overall success, qualitative benefits, financial benefits, time, and costs. The framework suggests that project characteristics influence planning factors and performance. Smaller projects have better scheduling, budget excess, and intangible benefits. However, significant differences are mainly related to human factors, with foreign companies showing better project manager effort and customer involvement.
Keywords
 SPM, Project Planning, Risk management, Project staffing, Scheduling

1. Introduction

In software industry, many techniques of general project management are applicable to software development. However, the software industry has also achieved a notorious reputation of poor performance in terms of schedule, cost, and quality assurance. Estimating, planning, and quality control processes are so bad that the majority of large system projects run late or exceed their budgets. Many are canceled without ever reaching completion (Jones, 1998). This failure of software is often referred to as the ―software crisis‖. This term refers to the fact that software projects are frequently delivered behind schedule, cost more than the original estimates, fail to meet user requirements, are unreliable, and virtually impossible to maintain (Chatzoglou and Macaulay, 1996). A study in the USA found that 31 percent of software projects were canceled before completion, and more than half the project's cost an average of 189 percent more than their original estimates (Whittaker, 1999). ―Software crisis‖ can be attributed to the poor application of design approaches, but also to inadequate project management due to lack of recognition and understanding of the real problems in software development (Ratcliff, 1987). Many previous studies have indicated the role of project management for project success. The results of Blackburn et al (1996) indicated that the methods employed to manage the project and the people involved in the cross-functional process of software development tend to be more important than the tools and technology. Although new technologies have been developed to facilitate software development process, programmer's knowledge and experience is still the key to better software development. Therefore, managing the programmers and related stakeholders in software development, is more important than the technology itself. In recent studies, Aladwani (2002) found the positive significant relationship between project planning and project success. Procaccino et al. (2002) also indicated the significant role of customer involvement and support from top management to the success of a project. The more customer involvement and top management support, the higher chance of project success.

A BETTER DIFFERENTIAL EVOLUTION ALGORITHM AND ITS USE FOR SOLVING OPTIMIZATION ISSUES

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Abstract

The differentiation evolution (DE) algorithm's mutation strategy choice has a significant impact on the algorithm's exploration capacity, convergence correctness, and convergence speed. An enhanced differential evolution technique using opposition-based learning and neighbourhood mutation operators, specifically, was used to enhance these results.This paper develops NBOLDE. In order to suggest a new neighbourhood strategy, the new assessment parameters and weight factors are added to the neighbourhood model in the NBOLDE. To replace large-scale global mutation with local neighbourhood mutation that has a high search efficiency, a new neighbourhood mutation approach based on DE/current-to-best/1, called DE/neighbour-to-neighbour/1, is designed. The initial population is then optimized using a generalized opposition-based learning technique to determine which of the current and reverse solutions is the better fit, approximating the global optimal solution that can modify the convergence direction, speed up convergence, increase stability, and prevent premature convergence. The suggested NBOLDE is then contrasted with four cutting-edge DE variations using 12 benchmark functions that have both low- and high-dimensions. The experiment's findings show that the suggested NBOLDE performs better when it comes to optimization and is able to solve difficult functions with large dimensions at a faster rate and with greater precision.

Keywords Opposition-based learning, Global optimization, Selecting optimal parameters

Introduction

Optimization problems in real life are becoming more and more complex, which show complex characteristics of nonlinearity, multiple constraints, high dimensions, discontinuities, and so on. It is difficult to solve these complex optimization problems by traditional optimization theories and methods. Therefore, it is necessary to seek efficient and robust new methods to solve complex optimization problems. In this context, various biological heuristic swarm intelligence algorithms have been proposed one after another, and new heuristic algorithms have continuously proposed, such as Whale Optimization Algorithm (WOA), Moth-Flame Optimization(MFO), Harris Hawk Optimization (HHO) (Heidari et al. 2019) and Slime Modulus Algorithm (SMA) (Li et al. 2020), and so on (Ren et al. 2021; Wang et al. 2019; Deng et al. 2020; Chen et al. 2020; Xu et al. 2019), which can effectively solve some practical complex problems. Then, various improved optimization methods of swarm intelligence algorithms have also been continuously proposed. These swarm intelligence algorithms and their improved optimization methods have been applied in many practical applications. For example, fruit fly optimization algorithm (FOA) is used for time series forecasting (Peng et al. 2020), particle swarm optimization (PSO) is applied to resource allocation (Deng et al. 2020), Backtracking Search Optimization Algorithm(BSA) solves the trade credit replenishment problem (Wang et al. 2020), Bayesian personalized ranking decline method effectively provides public services (Liu et al. 2020), chaotic multi-population whale optimizer enhances the support vector machine for medical diagnosis (Zhang and Jin 2020), and so on (Li et al. 2019; Xue et al. 2019; Liu et al. 2019, 2020; Wang et al. 2005; Chen et al. 2019; Zhao et al. 2020; Deb et al. 2020; Gao et al. 2020; Song et al. 2020).

Differential evolution algorithm

The DE algorithm uses the difference between individuals to guide this algorithm to search in the solution space. It mainly includes initialization population, mutation operation, crossover operation, selection operation, and so on. The main idea of the DE is to differentiate and scale between two different individual vectors in the same population, and add a third individual vector in this population to obtain a mutation individual vector, which is crossed with the parent individual vector with a certain probability to generate an attempted individual vector. Finally, the attempted individual vector and the parent individual vector are executed greedy selection, and the better individual vector is saved to the next generation.

APPLICATIONS AND CHALLENGES OF BIG DATA ANALYTICS

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Abstract

The term "big data analytics" describes data sets that are too large in number and create at a high pace of variation. Thus, the term "big data" refers to these data sets. They are challenging to manage with conventional techniques because of their expensive nature, imprecise algorithms, and numerous other issues. Numerous fields generate data, and the usage of the internet has led to a growth in it. There are three types of big data: semi-structured, unstructured, and structured. Several traits are known as the "V's" of big data. After then, start analyzing this massive amount of data. This is essential for exposing hidden patterns that could provide answers to a range of issues and produce incredible outcomes that benefit the companies. There are various kind of Tool selection is one of the major part as there is no single tool which can handle all things at once.

Keywords: big data, problems, applications, challenges, big data analytics.

Introduction

Big data term is nowadays used all over the world in every field though it is any forum or organization. Big data is nothing else but data which is in large volume that requires advance technologies to handle as existing traditional technologies cannot manage such enormous datasets, for extracting useful value information. This extraction of value products is the analysis of big data which we call as Big Data Analytics.1 The revolutionary step in the world of data was the introduction of relational datasets which could be stored in the form of table and which was easily processed whenever needed. Then analysis over the data was done which solved many issues and made life easier. Then came internet world and the big data era came into picture where the problem introduced. This excessive growth was in the beginning of 21st century. Due to excessive use of the World Wide Web we got large volume of data with high velocity and broad variety. Such datasets were difficult to handle and process by traditional techniques and so new data type was introduced known as big data which had all different technologies and concepts.2 We cannot imagine a world where data is not stored, for example a place where peoples detail otherwise any organization's details, any transactions, any documentation is directly lost after use. Obviously if this would have happened, the ability to produce useful information and to perform exhaustive analytics will be lost by the organization. Even there would be no new opportunities or any significant advantage to any organizations. Any small details of a person whether ranging from there name to the address is a very important aspect to organization which become the building block of it. Now due to the advancement in internet, there are vast details and information provided. Every second data is been created in this world and such enormous data is termed as big data. The need of storing this data is as well a big challenge and analyzing big data is very critical but an important process thus called big data analytics.3

Behavioral types of big data

The data is been Categorized into many types according to behavior:

Structured Data

The data stored in relational databases table in the format of row and column. They have fixed structures and these structures are defined by organizations by creating a model. The model allows to store, process as well as gives permission to operate the data. The model defines the characteristics of data including data type and some restriction on the data. Analysis and storing of structured data is very easy. Because of high cost, limited storage space and techniques used for processing,

FACE IDENTIFICATION USING PYTHON

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ABSTRACT
The world's rapidly growing population is accelerating the development of technologies, leading to the creation of a face apperception app using machine learning to detect people's faces, track terror activities, and capture unwanted faces. Face detection is a phase where identifying the faces from the images or video sources. It very well may be utilized for remote distinguishing proof administrations for security in regions.
Keywords – Machine Learning, Haar Cascade, Open CV, Database, Criminal Record

1. INTRODUCTION

Face apperception is the best biometric ever found as it sanctions on-spot identification. There is no physical interaction with the terminus-utilize. However, face detection and face match processes for verification/identification are expeditious. Anterior traditional methods were dependent on the image capturing and then sending it for verification. The process was very long as all the precedent records were checked first. The proposed system is made with machine learning and python that's why the system is so expeditious and precise that it can detect anyone's face expeditiously. Nowadays advancement of man-made brainpower is efficaciously engendering; they open up tremendous potential outcomes afore us. The investigation, gauging, and detection went to another level with the utilization of man-made reasoning advancements. As of tardy, an incredibly emboldening field of research is Computer vision. Face detection is a phase where identifying the faces from the images or video sources. It very well may be utilized for remote distinguishing proof administrations for security in regions, for example, banking, conveyance, law requisite, and electrical businesses. Despite immensely colossal varieties in visual upgrades because of evolving conditions, maturing, and interruptions like whiskers, glasses, and haircut changes, this capacity is astronomically puissant. This paper proposes a facial apperception and identification model with multi image capture utilizing Open CV.

II. LITERATURE REVIEW

Shervin Emami et al. [1] the author verbalizes the growing interest in computer vision of the past decennium. Fueled by the stable magnifying rate of computing power every 13 months, face detection and apperception has exceeded from an esoteric to a widespread area of research in computer vision and one of the better and more prosperous applications of image analysis and algorithm-predicated empathetic. Because of the essential nature of the quandary, computer revelation is not only a computer science area of research, but withal the object of neuron scientific and psychological studies, mainly because of the overall opinion that advances in computer image processing and understanding research will provide comprehensions into how our encephalon work and vice versa. Tejashree Dhawle el at. [2] This dissertation offers an ideal route for Finding and apperceiving the human face utilizing Open CV, and Python which is a component of in-depth edification. Included in this report is the method by which in-depth learning is a consequential part of the computer science field and can be acclimated to fine-tune the face by utilizing multiple Libraries in Open CV with Python. Will be in this report a proposed system that would avail in human revelation Face in authentic-time. This execution can be utilized in different places Platforms and many software's in machines and smart phones Application Jeevan Singh et al. [3] in this paper the author verbalizes that Face detection is a computer technique that determines the positions and sizes of human faces in arbitrary video and images. It detects expression and ignores anything like buildings, trees, and bodies. Human vision consciousness is currently a vivacious research area within the computer vision community. Human facial localization and identification is customarily the key step in applications like video monitoring, human-computer

ENHANCED DATA SECURITY OF COMMUNICATION SYSTEM USING COMBINED ENCRYPTION AND STEGANOGRAPHY

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Abstract—
Data security is crucial in daily life, as systems can be hacked, posing high risks to confidential files. This paper proposes a method for storing basic images, which are protected in composites using DWT wavelet transform. The encrypted image is hidden behind the encrypted image, and the system includes two algorithms for encoding and hiding, and returning and decoding the main image to its original state efficiently.

Keywords—encryption, discrete wavelet transform, steganography, modulated image, hidden image

1 Introduction

Images encryption strategies are broadly utilized to overcome the issue of safe transferring for both images and messages via electronic transfer media both images and messages via electronic transfer media by utilizing the classical cryptographic processes [1–3]. However, the main problem of this method is that it is limited use remains with the huge amounts of data or high-resolution images [4, 5]. The process of hiding the board image was completed after removing the most important part of the data in the embedded image. This data was saved because it is considered as a decryption key. The fundamental indication of this research paper is to stow away and encrypt the full image interior another one [6]. At first: images should have analyzed using wavelet transform formula, where the images go through levels of (DWT). This process produced four factors conditions, (ca), (ch), (cv), and (cd). Then comes the process of clearing enough space to include target image components on embedded image components. To make the appropriate images more secretly, exponential function math was used. Decryption was mainly based on returning the last discarding values to their original positions of images, then it takes the Inverse Discrete Wavelet Transform (IDWT) to produce un-secure data. The most objective of this strategy is to hide images with 2-D and 3-D on other images to produce a single encrypted image with tall effectiveness.

2 Literature review

Some authors show that a biometric verification system which usages two individual biometric structures collective by waterline inserting with secret PIN encryption to get a non-unique ID of each person [7–9]. The converted structures and models trek over unconfident the Internet or intranet of the communication system in the client-server situation. In addition, the researchers suggested a method that composite of encryption and information hiding the use of a few characteristics of Deoxyribonucleic Acid (DNA) sequences [10–12]. The suggested system contains two parts. The first part has the confidential information encoded by using a DNA and Amino Acids-Based Show reasonable cryptograph. the second part contains the encoded information steganography assistant which secreted into some location of DNA classification. Also, the authors suggested an LSB & DCT-based steganography process for saving the information [13–17]. All the information bits are implanted by modifying the slightest noteworthy bit low frequency bits of Discrete Cosine Transform (DCT) factors which include the image segments [11, 18, 19]. In [20–22], they suggest improved protection for the data. By using encryption and steganography. The information is encrypted and hidden behind an image then transferred to the cloud afterward. The image can be downloaded whenever it seems appropriate and the data can be decoded to recover the original file. In [23], They used the RSA encryption algorithm and image steganography for data concealment, as well as the LSB approach. The Advanced Encryption Standard (AES) algorithm was adjusted and used to encode the secret message. The encrypted message was protected using this technique. In [24–27], A technique used on the advanced LSB (least significant bit) and RSA algorithm was discussed. It is less chance of an attacker being enabled to use steganalysis to recover data when matching data to an image. In [28], They suggest a new form of steganography based on gray m level modulation using image transformation, hidden key, and cryptography for true color images. Both the private key and the secret

EXAMINING THE RARITY OF CLASSES USING BIG DATA

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Abstract
In the field of machine learning, a class imbalance occurs when there is a statistically significant difference in the number of instances (majority) between the two classes. Class imbalance can cause datasets to be biased toward the majority (negative) class in Machine Learning algorithms. This can have detrimental effects if false negatives are penalized more heavily than false positives. We investigate class rarity in big data through two case studies in our paper, each using a unique combination of three learners (logistic regression, random forest, and gradient-boosted trees) and three performance metrics (area under the precision-recall curve, geometric mean, and area under the receiver operating characteristic curve). Our trials produced class rarity, an exceptionally high degree of class imbalance.

 Keywords: Big data, Class imbalance, Machine learning, Medicare fraud, POSTSlowloris, Class rarity & under sampling.

Introduction
When called upon to define big data, researchers and practitioners in the field of data science frequently refer to the six V's: volume, variety, velocity, variability, value, and veracity [1]. Volume, most certainly the best-known property of big data, is associated with the profusion of data produced by an organization. Variety covers the handling of structured, unstructured, and semi-structured data. Velocity takes into account how quickly data is manufactured, issued, and dealt with. Variability refers to the fluctuations in data. Value is often regarded as a critical attribute because it is required for effective decision-making. Veracity is associated with the fidelity of data. A definition of big data related to a minimum number of dataset instances has not been established in the literature. For example, in [2] this minimum was identified as 100,000 instances, but other works use 1,000,000 instances [3, 4]. The increasing reliance on big data applications is pushing the development of efficient knowledge-extraction methods for this type of data.

Any dataset containing majority and minority classes, e.g., normal transactions and fraudulent transactions for a large bank over the course of a day, can be viewed as class- imbalanced. Various degrees of class imbalance exist, ranging from slightly imbalanced to rarity. Class rarity in a dataset is defined by comparatively inconsequential numbers of positive instances [5], e.g., the occurrence of 10 fraudulent transactions out of 1,000,000 total transactions generated daily for a bank. Binary classification is usually associated with class imbalance since many multi-class classification problems can be managed by breaking down the data into multiple binary classification tasks. The minority (positive) class, which comprises a smaller part of the dataset, is usually the class of interest in real-world problems [2], as opposed to the majority (negative) class, which comprises the larger part of the dataset. Although class imbalance affects both big and non-big data, the adverse effects are usually more perceptible in the former, due to the existence of extreme degrees of class imbalance within big data [6] as a result of voluminous over- representation of the negative (majority) class within datasets. Machine Learning (ML) algorithms are usually better classifiers than traditional statistical techniques [7–9], but these algorithms cannot properly differentiate between majority and minority classes if the dataset is plagued by class rarity. The inability to sufficiently distinguish majority from minority classes is analogous to searching for the proverbial needle in a haystack and could result in the classifier labeling almost all instances as the majority (negative) class. Performance metric values based on such poor analysis would be deceptively high. When the occurrence of a false negative incurs a higher cost than a false positive, a classifier's bias towards the majority class may lead to adverse con- sequences [10].

A COMPARATIVE ANALYSIS OF PROTOCOLS ON ROUTING MOBILE NETWORK USING FTP TRAFFIC

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Abstract: A Mobile Ad hoc Network (MANET) is a kind of wireless ad-hoc network, and is a self configuring network of mobile routers (and associated hosts) connected by wireless links – the union of which forms an arbitrary topology. There are various routing protocols available for MANETs. The most popular ones are DSDV and AODV. This paper examines two routing protocols for mobile ad hoc networks– the Destination Sequenced Distance Vector (DSDV), the table- driven protocol and the Ad hoc On-Demand Distance Vector routing (AODV), an On –Demand protocol and evaluates both protocols based on packet delivery fraction and average delay while varying number of sources and pause time. The comparison has been done under the CBR, FTP payload. The tools used for the simulation are NS2 which is the main simulator, NAM (Network Animator) and Trace graph which is used for preparing the graphs from the trace files. The results presented in this project work clearly indicate that the different protocols behave differently under different environments. The results also illustrate the important characteristics of different protocols based on their performance and thus suggest some improvements in the respective protocols.

I.   Introduction

A Mobile Ad hoc Network (MANET) is a kind of wireless ad-hoc network, and is a self-configuring network of mobile routers (and associated hosts) connected by wireless links – the union of which forms an arbitrary topology. The routers are free to move randomly and organize themselves arbitrarily; thus, the network's wireless topology may change rapidly and unpredictably. Such a network may operate in a standalone fashion, or may be connected to the larger Internet.The transport layer protocols are responsible for hooking up the programs that are communicating with each other, whereas the underlying IP is simply responsible for getting the packets from machine to machine. It is necessary to understand the characteristics and performance of different data and traffic agents that take the responsibility to transport data in the network to find the suitability of each type in a network. The objective of this project is to evaluate and compare the performance of different traffic patterns used by the above mentioned transport layer protocols over various ad-hoc routing protocols in terms of different metrics.

Protocols Under Consideration:
Destination-Sequences Distance Vector (DSDV) Routing Protocol

The destination sequenced distance-vector routing protocol (DSDV) is one of the first protocols proposed for ad hoc wireless networks. It is an enhanced version of the distributed Bellman-Ford algorithm where each node maintains a table that contains the shortest distance and the first node on the shortest path to every other node in the network. It incorporates table updates with increasing sequence number tags to prevent loops, to counter the count-to-infinity problem, and for faster convergence.As it is a table-driven routing protocol, routes to all destinations are readily available at every node at all times. The tables are exchanged between neighbors at regular intervals to keep an up-to-date view of the network topology. The tables are also forwarded if a node observes a significant change in local topology. The table updates are of two types: incremental updates and full dumps. An incremental update takes a single network data packet unit (NDPU), while a full dump may take multiple NDPUs. Incremental updates are used when a node does not observe significant changes in

A REVIEW PAPER ON COGNITIVE RADIO NETWORKS

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Abstract: It is a smart radio used as a communication technique which is capable of detecting vacant communication channels in selected spectrum and assign these free channels to the users. Spectrum assigned to a particular user may not be used at a particular time or location which leads to spectrum holes or white spaces. This leads to inappropriate exploitation of spectrum. One solution for spectrum management is dynamic spectrum access (DSA). This helps in optimizing the spectrum and helps in minimizing the interference to different users. Main elements of CRN namely spectrum sensing, spectrum sharing and spectrum mobility are discussed in detail along with related issues..

Keywords - CR, CRN, RF, white spaces, dynamic spectrum access (DSA), opportunistic spectrum access (OSA), spectrum sensing, spectrum sharing, spectrum mobility.

I. INTRODUCTION

A cognitive radio (CR) is one type of radio that can dynamically program and configure to detect vacant wireless channels to users. This helps in preventing interference and crowding of users. Radio is capable of automatically detecting free channels in the spectrum environment and change its transmissions receptions parameters. Parameters such as operating frequency, transmission power, modulation order etc. This process can be referred to as dynamic spectrum management. CR's performance is monitored continuously by itself. If the user is making use of licenced spectrum then user will be primary user or user be secondary. Part of the spectrum given to any user is not utilized each and every time, these unutilized parts of spectrum forms spectrum holes also called as white spaces. White spaces can be defined parts of spectrum bands is not been used at that particular time and location. All the actions taking place in cognitive radio system can be represented using cognitive cycle which is shown in figure 1.

A) COGNITIVE CYCLE

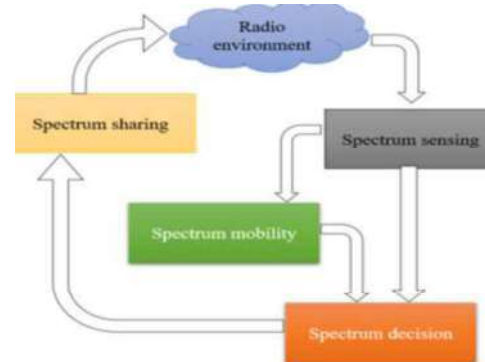Cognitive cycle helps knowing how radios act in a radio environment.

Figure 1: Cognitive cycle in CRN

Cognitive cycle consisting of following processes

Spectrum Sensing (SS): Spectrum sensing is the most important function performed by radio. It starts its process by initially examining the allocated frequency bands to users in order to determine the spectrum holes or white spaces. After determination of white spaces CR changes its parameter and assigns the vacant spaces to cognitive or secondary user to transmit and receive data.

Spectrum management: Spectrum management makes sure that best appropriate available frequency band is captured which satisfies user and Quality of service. Spectrum analysis (SA) and Spectrum Decision (SD) are its two functions. SA provides characteristics of white spaces. SD is responsible in choosing best available frequency band based on the decision made by SA. Therefore, spectrum management

ESTIMATION OF STATISTICS ACCUMULATION FOR SMART GRID COMMUNICATIONS

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Abstract: The smart grid is a product of the advances in computer and communication technology and power electronics that creates a more resilient, reliable and one that supports a two-way flow of electricity and information. They are different techniques of aggregating data in a smart grid communications. What is yet to be extensively explored is the concept of smart grid application in Nigeria's power sector. The smart grid can exchange data about current electricity status, pricing data and control commands in real-time. Due to these specific characteristics, the process of electricity's generation, transmission and distribution in the smart grid environment can be managed efficiently and reliably. However, smart grid technology may not be right for all power networks due to requirement for substantial resources. The usage of neural networks was employed for the detection, classification and location of faults on transmission lines. The method employed made usage of the phase voltages and phase currents (scaled with respect to their pre-fault values) as inputs to the neural networks. To simulate the various faults model and to obtain the training data set, MATLAB R2015a was used along with the Sim Power Systems toolbox in Simulink. It can be seen that the mean square error in fault detection achieved by the end of the training process was 9.43e-5 and that the number of validation check fails were zero by the end of the training process. A smart grid is an electricity grid equipped with advanced communication, automation, and information technology system (IT) which enables real-time bidirectional monitoring and control of electricity and information between sources of power and consumer appliances..

Introduction

Theworld‟selectricitysystemsfaceanumberofchallenges,includingageinginfrastructure,continued growth in demand, the integration of increasing numbers of variable renewable energy sources and electric vehicles, and the need to improve the security of supply and reduce CO2 emissions. Advancement in computing technology has led to the improvement of the performance and security of the power grid. Smart grid technology has been receiving a lot of attention from both industry and academia over the last few years. By providing bidirectional communication channels, the smart grid can exchange data about current electricity status, pricing data and control commands in real-time. Due to these specific characteristics, the process of electricity‟sgeneration,transmissionanddistributioninthesmartgridenvironmentcanbemanagedefficiently and reliably. Consequently, the smart grid technology can reduce power consumption, lower energy costs, and bring much convenience to our work and daily life. Data aggregation usually involves the fusion of data from multiple intermediate nodes and transmission to the base station (sink)[9]. It attempts to collect the most critical data from the nodes and make it available to the base station in an energy efficient manner. A data aggregation schemeis energy efficient fit maximizes the functionality of the network. However, the design of efficient data aggregation algorithms is an inherently challenging task[10].

The aim of this research is to critically analyze the current data aggregation schemes for Smart Grid Communications. The work in tends to identify the barriers to adoption of smart grid technologies in Nigeria. The Objectives of the Study are:
- Identify the barriers to adoption of smart grid technologies in Nigeria.

LEAKAGE POWER RECOVERY METHODOLOGIES IN VLSI DESIGN

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Abstract - This paper reviews different techniques and concepts related to recovery of Leakage power in lower nanometer technologies. As the technology scale decreases, leakage power is putting same impact when compared with total power dissipation. Exponential growth rate of leakage is due to the trends like scaling of thickness of gate oxide, channel length, dopants profiles which are combined with transistors in a chip. Every VLSI design needs to be corrected during physical implantation stages to avoid design rule constraints violations. Engineering Change Order (ECO) phase involves such corrections like introducing spare cells in the layout. But in stand-by mode, these spare or ECO cells lead to a large sub-threshold leakage power. One of the techniques uses state depended leakage power table by assigning optimal standby to each spare cell's inputs to mitigate leakage power and its effects. Leakage recovery and optimization of the design is possible up to some extent.

Key Words: Engineering Change Order (ECO), State dependent leakage power, Total negative slack (TNS), Subthreshold leakage power.

1.   INTRODUCTION

The major performance parameter in the design modules of Wireless communication equipment, networking modules is minimization of power. On the other side higher performance, good integration, dynamic power dissipations are some of the parameters which drives scaling of CMOS devices. As the technology shrinks the leakage current or leakage power is dramatically increasing in comparison with dynamic power dissipation. The main fact behind increment in static power dissipation is Leakage power which involves many contributors towards it, gates oxides tunneling effect of leakage, bands to bands tunneling (BTBT) effect of leakage and subthreshold effect of leakage [1]. The differences of devices in electrical and geometry parameters like variation in gate width and in its length dramatically affect the subthreshold leakage current [2]. Certain leakage elements include Drains Induces Barriers Lowering (DIBL) and Gates Induce Drain Leakages (GIDL) etc., [3]. Most significant sources of leakage for 65 nm and below scaled CMOS devices are: leakages at gate site, subthreshold leakages and leakage due to BTBT at reversed biased junction. Reduction of threshold value of voltages leads to increment in subthreshold current which is allowed to retain transistor in ON state with the help of dropping voltage. Due to the scaling

of thickness of gate oxide, the current density of the gate leakage is increasing, resulting in rising tunneling current. The magnitude value of every leakage factor depends on the technologies involved for the operation. Self-Controlled voltage levels (SVL) techniques can be used to minimize effect of leakage [4].
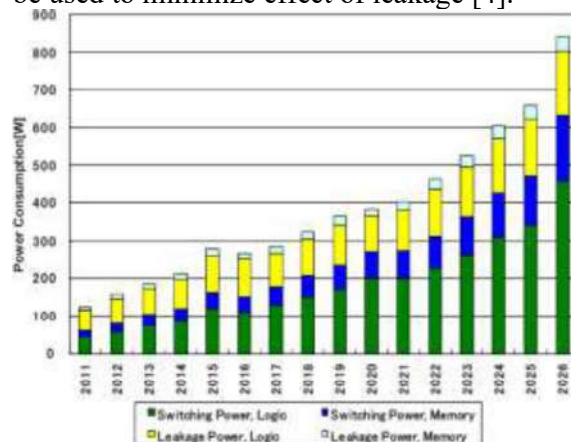

Fig -1: Power Consumption Trends (from ITRS) [6]

Usage of the dielectric gate having higher K value, however helps to minimize the risk of

OPPORTUNITIES IN 5G TECHNOLOGY BASED ON NETWORK DENSIFICATION

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Abstract: The process of increasing the density of nodes in a wireless network is known as Network densification This article examines the challenges facing network densification, in terms of interference, energy and mobility. Moreover, some of the key technologies envisaged as enablers for next generation network densification (i.e., cloud-radio access and user-centric mechanisms, advanced inter-cell interference cancellation techniques, device-to-device communications, caching, and separation of control and user plane) are discussed. Network densification is an essential mechanism expected to enable next generation 5G networks to meet the 1000-fold increase in capacity. The aim of densification is to improve the network's capacity, coverage, and quality of service, by reducing interference and increasing the signal-to-noise ratio (SNR).

Keywords-Network densification, SNR, Heterogeneous networks, Energy efficiency.

I.   INTRODUCTION

Technological developments have led to a number of changes in the way mobile and wireless communication systems are being used. Smart gadgets are not only being used for images, voice and video transmission but also for important services such as e-banking, e-learning and e- health. These advances in the field of wireless communications are expected to flood traffic volume, which is anticipated to increase a thousand-fold over the next decade. Also, the augmentation of IoT will also contribute to the expanding traffic volume. Wireless industry foresees this trend to continue for several years to come.

Growth of wireless system capacity can be attributed to three main factors: increase in the number of wireless infrastructure nodes, increased use of radio spectrum, and

improvement in link efficiency. Consider the equation based on the capacity of an additive white Gaussian noise (AWGN) channel, the throughput of a user in a cellular system is upper-bounded by

$$\frac{R}{n} < C = \frac{mW)\log(1+S)\text{bps}}{I+N} \quad (1.1)$$

where W denotes the signal bandwidth of base station, n (load factor) denotes the number of users sharing the same base station, m (spatial multiplexing factor) denotes the number of spatial streams between a base station and user device(s), and S denotes the desired signal power, while I and N denotes the receiver interference and noise power, respectively. By employing additional spectrum signal bandwidth can be increased, which leads to a linear increase in data capacity. Cell splitting can be used to decrease the load factor n ($\geq$ 1) which involves deploying a larger number of base stations, and ensuring that user traffic is distributed evenly among all the base stations. Spatial multiplexing factor m can be increased using a larger

number of antennas at the base station and user devices Network densification is an essential mechanism expected to enable next generation 5G networks to meet the highly anticipated 1000-fold increase in capacity. Network densification is a combination of spatial densification(which increases the ratio m/n) and spectral aggregation (which increases W). Spatial densification is realized by increasing density of base station in a geographic area and by increasing number of antennas per node while ensuring uniform distribution of users among all base stations. Spectral aggregation refers to using larger amounts of electromagnetic spectrum, spanning from 500 MHz into the millimeter wave bands (30–300 GHz). Network densification includes densification over space and frequency

REVIEW PAPER ON LOW COST WIRELESS SENSOR NETWORK FOR GRAIN STORAGE MONITORING SYSTEM

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Abstract: A Developing country like India which is among the most important agricultural manufacturer within the globe has about 179.9 million hectares of its land under cultivation. About 70% of the rural population relies on cultivation for their livelihoods, since it is their sole source of income. The total food grain production in India is projected to increase 2% by the year2023 with about 303 million tons being produced each year which is a lot compared to other counties. A major problem stems from the fact that most of these food grains are mass-produced, which causes them to be wasted if they have been damaged by rains, floods, variations of temperature and humidity, attacks of rodents, insects. Agriculture industry faces different losses both before and during harvest of grains due to lack of technology usage. In fact the greatest and considerable amount of food is wasted during storage of grains. Hence, there is a need to improve the storage facilities of grains to maintain its quality and quantity efficiently in order to reduce food as well as financial loss. An efficient storage system can ensure the grain's quality by controlling and monitoring environment related factors, such as temperature, light, humidity, pestsandhygiene. The technique will measure the level of grains inside silos through efficient level sensors and monitor the environment in silos through environmental sensors and then recorded parameters will be sent periodically to the main computing device and will be displayed automatically on the display. In this paper we propose a smart solution for efficient monitoring of grain storage in order to reduce food wastage.

Keywords: Grain Storage, Wireless Sensor, Monitoring System

Introduction
Recent research interests in studying food wastage have taken priority in various countries for improving food security and the sustainability of food systems. The problem of food wastage is approached in two main perspectives, namely that due to environmental conditions and the other associated with consumption factors. Food wastage takes place throughout various stages of the food supply chain, right from farm production, during processing, packing, transportation, at wholesale market, retailers, and consumption. Hence, different measurements and lack of standards in data collection make it difficult to estimate and compare the food wastage among various countries. While it is difficult to arrive at an accurate estimate, reports indicate that food wastage globally amounts to about one-third of the food produced. It is estimated that about US$1 trillions lost globally towards food wastage. In many low-income and developing countries, poor storage conditions and lack of appropriate storage facilities contribute considerably towards food wastage. In developing countries like China, high food wastage takes place in farm households where more than50 percent of grain is stored, and studies indicate this is about the same level as the food wastage in developed countries. Although globally the agriculture industry faces different losses both before and during harvest of grains, the greatest and considerable wastage occurs during storage. For a sustainable development of agriculture with reduced financial loss, there is a need to improve the storage facilities of grains to maintain its quality and quantity efficiently.
A good storage system using information technologies scan ensure ether grain's quality by controlling and monitoring impending factors, like temperature, light, humidity, pests and hygiene. Hence, in this paper we focus on developing a smart solution as an intervention for food wastage, in particular for efficient monitoring of grain storage. Traditional storage structures for grains were mainly adopted as protection from pests for a very short period and hence were not constructed of good quality. Recent

DESIGN OF CONTROLLER FOR VEHICLES WITH ELECTRIC MOTORS

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Abstract: This study presents the design of a proportional and integral based controller for battery output voltage regulation. This battery powers a vehicle that is powered by an electric motor. According to what has been said, in the absence of any control mechanism, the output voltage is uncontrollably high and will exhibit a significant error signal deviation. This will lower the battery's output current, which will lower the battery's power output and, ultimately, lower the vehicle's ability to derive power and torque from an electric motor. Thus, it is imperative to maintain the battery's output voltage, which can be done with an appropriate feedback control system.
Keywords: DC permanent magnet motor   Electric drive PID (proportional-integral) controller

1.   INTRODUCTION

The traditional methods available in literature depicts that the rotational speed of motors can be popularly controlled by either controlling voltage or frequency or both by controlling V/f ratio. But, now days, derive based application concept is becoming more popular for supervising the speed of rotation of an electrical machine and therefore, any electrical machine can be precisely controlled by implementing the driving system with machine. All the researches have been more or less focused towards the application of environmental friendly renewable energy sources. These renewable energy sources can be used as primary energy source for deriving the prime mover. Transportation from one place to another place requires a lagre amount of energy that must be produced mainly from the different fossil fuels combustion for deriving the different vehicles. Electric vehicle are becoming more popular now a days due to the rapid depletion of fossil fuels, emission of enormous hazardous gases and continuous increasing fuel cost. The vehicles require energy for operating them and so, any renewable energy source can be used as primary input energy source to derive the prime mover first and then to derive the vehicle finally [1]. Derive systems have control systems in it that helps to adjust the required output from the electric vehicle. So, these derives can easily controlled the vehicle motion by adjusting the vehicle output through the optimization of control parameters and this is the main advantage of developing derive based vehicle. The simple definition for electric vehicles is that the system which controls the output characteristics of any electrical machine is known as electrical drive. A Russian B. S. Akobi was the first who presented the electric derive for the world first time in 1838 before many years of industrial revolution that happens in 1870. In his initial testing, he developed a storage battery operated DC electric motor to propel a boat. Presently, electric drives are being used widely in almost all types of large medium and even small scale industrial applications.

Electric derives are the assembly of one or more electric motors with control panels, the control panels get the signal through feedback and control the rotation of shaft of the motor. Basically electric drives works as prime movers for diesel engines, petrol engines, gas turbines, steam turbines, hydraulic and electric motors. The use of advance control methods develops smoother, reliable, secure and fast control actions of

these derives now days. So, the controlling techniques used with derive system should be more accurate and easy to acceptable. Along with industrial applications derives are also being used for domestic applications. Some commonly used domestic applications for these derive system are factories, transportation systems, textile mills, fans, pumps, motors, robots etc.

In this paper, a controller is designed for an electric vehicle. This electric vehicle is operated with the help of permanent magnet DC motor. A controller circuit is required in the system; this controller circuit generates commands through which input is produced for permanent magnet DC motor so that output characteristics of this DC motor (output power, shaft speed and torque on shaft) can be adjusted as per the requirement. A popular and fundamental controller that has been implemented in any system

REVIEW ON HYBRID ELECTRIC VEHICLES

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Abstract:- The presented paper discusses the diffusion of Hybrid electric technology in vehicles. The hybrid engine in vehicles has the potential to reduce fossil fuel use, decrease pollution, and allow renewable energy sources for transportation. Conventional vehicles use gasoline or diesel to power an internal combustion engine. Hybrid vehicles also use an internal combustion engine and can be fueled like normal cars but have an electric motor and battery, and can be partially or wholly powered by electricity. Hybrid cars can be configured to obtain different objectives, such as improved fuel economy, increased power, or additional auxiliary power for electronic devices and power tools. Many technologies like regenerative braking, electric motor drive, automatic start or shutoff are being used in hybrid cars to make them as good as conventional vehicles.

INTRODUCION

In today's world, we face the problem of dwindling fuel resources for vehicles. There is no doubt that the emission of carbon-dioxide from an automobile exhaust is a concern for the increasing rate of global warming. One of the optimistic solutions for such problems is the hybridization of the vehicle. HYBRID ELECTRIC VEHICLE is a combination of a conventional internal combustion engine and an electric propulsion system. It implies that HEV can be driven on I.C. engine as well as on electric power. HEV produces less emissions compared to a similar-sized gasoline car as the gasoline engine of the HEV can be geared to run at maximum efficiency. The significance of electric power train is that it runs with lesser power loss, hence improving the overall fuel economy. Hybridization of vehicles can reduce CO_2 emission and also the fuel costs. At present, hybrid electric vehicles are widely available in commercial vehicles, military vehicles and passenger cars.

BASICS OF HEV'S

1)   Hybridization

A hybrid vehicle is a vehicle with multiple energy sources which could be separately or simultaneously

operated to propel the vehicle. Many hybridization configurations such as fuel cell, gas turbine, solar, hydraulic, pneumatic, ethanol, electric and many more were proposed over the years. Among these, the hybrid electric vehicles, integrating two technically and commercially proven and well established technologies of electric motors and I.C. engine, allowing drawing upon their individual benefits have been widely accepted by the technologies and users across the world.

2)   Hybrid Electric Vehicle (HEV)

This is the most commonly adapted hybrid vehicle. It combines the propulsion system of an electric motor and an
I.C. engine. The power supply to the electric motor comes from the onboard batteries. In a HEV, the I.C. engine combines with an electric motor which leads to a more optimal use of the engine. Driving in city traffic involves frequent starts and stops of the vehicle. During idling, the engine consumes more fuel without producing useful work thus contributing to higher fuel consumption, less efficiency and unnecessary emission from exhaust. The HEV solves the problem by switching to power transmission through the motor and shutting off the engine. This way no fuel will be consumed during idling with no exhaust emission. Another major advantage of HEV is that when

REVIEW ON PROBLEMS DURING HYDRO-THERMAL SCHEDULING

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Abstract

Optimal scheduling of power plant generation is the determination of the generation for every generating unit such that the total system generation cost is minimum while satisfying the system constraints. Hydro thermal coordination is an accomplished nonlinear scheduling challenge. This particular paper exhibits a process of research of numerous studies that have been come out of the closet in most recent years on hydro thermal scheduling difficulties. Even it is seen that, the operation concerning both the hydro as well as thermal plants is much more complicated and is of much more significance within a modern electrical power system. The purpose of the hydrothermal scheduling issue is to enhance the electrical power generation as well as diminished the expense of electric power. This particular paper confides in significant summary of a hydro thermal scheduling system. The document exhibits a review of assorted techniques as well as analytical strategies applied to hydrothermal scheduling difficulties. All the presumptions prepared and also a brief explanation regarding the solution techniques is actually introduced within the paper. The paper offers convenient important information as well as resources for future year's scientific studies for the research workers those curious about the challenge or to accomplish excessive research in this particular area. The objective of the hydrothermal scheduling problem is to determine the water releases from each reservoir of the hydro system at each stage such that the operation cost is minimized along the planning period.

Keywords

  Hydro-thermal, Optimization, Coordination.

Introduction

The streamlined utilization of hydro energy sources plays a worthwhile role within the economical operation of an electrical system where the hydroelectric plants represent a significant component of put in capacity. Persistence of day-to- day optimal hydroelectric generation scheduling is definitely a vital task in water resource management. Most convenient hydro power scheduling is actually a nonlinear programming problem. Non-linearity is because of the generating characteristic concerning hydro plant, whose results are typically a non-linear function of water release as well as net hydraulic head [1]. Over past few decades, many of us experiences energy crisis. So, it is crucial to make use of energy in an effective manner. In order to avail electricity conveniently, cost needs to be as less as possible and this particular presents a requisite to build up scheduling methods that accommodate generation diversity as well as line circulation restrictions and simultaneously may establish accurate scheduling outcomes.

When, we explore engineering field, electrical power produced is much less in comparison to electrical power requirements within our country. So the primary purpose of operation a power system is to come up with and transmit power to meet up with the system load demand, losses at the very least fuel cost and least pollution of the environment.

Therefore, a mixture of Hydro-thermal scheduling is obligatory. Basically the incorporated procedure of the hydrothermal system is categorized straight into two different parts, long-term and short-term. The planning stage is actually of one year for the long- term problem as well as short-term hydrothermal

A REVIEW ON OPTIMAL PLACEMENT METHODS OF DISTRIBUTION GENERATION SOURCES

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Abstract – Distributed Generation (DG) sources have attracted serious attention due to their potential solution for some issues, like the deregulation in power system, increasing the power consumption and the shortage of transmission capacities. The optimal placement of DG is necessary for maximizing the DG potential benefits in power system such as maintaining and/or improving reliability and stability. There are several research studies to determine the optimal DG location by their imposed constraints and objectives. However, the systematic principle for this issue is still an unsolved problem. This paper is reviewed some of the most popular DG placement methods, including 2/3 Rule, Analytical Methods, Optimal Power Flow and Evolutionary Computational Methods (Genetic Algorithm, Fuzzy Systems and Tabu Search). The related applications and advantages of each technique are expressed briefly. This paper provides helpful information and resources for the future studies in this area.

Keywords – Distributed Generation (DG); Optimal Location; 2/3 Rule; Analytical Methods; Optimal Power Flow; Evolutionary Computational Methods

I. INTRODUCTION

In recent years, Distributed Generation (DG) has been one of the most attractive research areas in the field of power generation. This ever-increasing attention can be related to several important reasons such as DG great potentials and advantages, increasing of electrical demands, technical and economical constraints in construction of new power plants and new transmission lines.

The DG advantages can be divided into technical, economical and environmental benefits. Technical advantages are included wide ranges of benefit such as efficiency, grid reinforcement, power loss reduction, reliability, eliminating or deferring the upgrades of power system, improving load factors and voltage profile and thus increased power quality.

The economical advantages are entailed the reducing of transmission and distribution operating cost, to save the fossil fuel and decreasing in electricity price. Environmental advantages are covered the reductions in emission of green house gases and also sound pollutions [1-7].

One of the important part of DG research study is related to its proper siting at strategic points of power systems which allows energy companies to reduce investments in power system development such as decreasing additional control equipment and the reinforcement of transmission and distribution lines. Also, it can effectively cut the operational costs by increasing the reliability of supply and quality of marketable energy and to reduce power and energy losses [2].

Several techniques have been proposed in determining the optimal location of DG [2-20]. The major objective of DG placement techniques is to minimize the losses of power systems. However, other objectives like improving the voltage profile, reliability, maximizing DG capacity, cost minimization and etc have also been considered in different studies.

A simple rule was presented in [3] to install DG on a radial feeder with uniformly distributed load in approximately 2/3 capacity of the incoming generation at approximately 2/3 of distance to the feeder. Some researchers [4-6]

DG PLACEMENT IN DISTRIBUTION SYSTEMS USINGANALYTICAL TECHNIQUES

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Abstract - *The distributed generation to power distribution lines has become a trend in the world. The reasons behind the increasing use of distributed generation include the high cost of energy, environmental concerns, and the latest advancements in DG technology. Renewable DG sources are preferable to place near load center inject power in the system, hence support the system voltage, minimizing losses, and improve reliability. Location selection is an essential aspect of planning. A Selection method for DG placement with minimization of power loss objective is implemented in this research work. An Analytical technique was adopted here for DG placement with Voltage sensitivity index along with Voltage profile improvement indicator (VPII). A ranking created on voltage sensitivity index and VPII has been obtained for the best placement of DGs. Distribution load flow is implemented for loss calculation. Results and performance of the system are evaluated on33-bus test system.*

Keywords - *Minimization of power loss, DG, voltage sensitivity index, R/X ratio, and 33-bus test system.*

INTRODUCTION

The encouraging impact and efficient performance of small size Distributed generation paid a lot of interest in recent times. The utilization of DG is one of the practicable alternatives in the existing distribution network, which provides various benefits to customers, service utility, and society[1]. All the technical advantages such as; power quality of system improved, voltage profile improved, reliability improved with DG integration, and problem from congestion is greatly relieved with significant losses reduction.

The distribution losses are greatly increased due to poorvoltage regulation and high line resistance. In most cases, theminimization of line losses is done by network reconfiguration as it is most economical reported by [2]; however, the complex control circuitry is required for network reconfiguration. The capacitor placement is also one of the promising solutions in high distribution networks [3]-[4] but having a limited impact on low voltage distribution. The electrical utilities are also paying more attention to power system protection, coordination, and dynamic stability [5] due to the integration of new Distributed generation technology. The incremental voltage sensitivity is presented

APPLICATION OF SEMICONDUCTOR DEVICES FOR THE IMPROVEMENT OF POWER SYSTEM STABILITY: ITS CHALLENGES

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ABSTRACT

In the last two decades, power demand has increased substantially while the expansion of power generation and transmission has been severely limited due to limited resources and environmental restrictions. As a consequence, some transmission lines are heavily loaded and the system stability becomes a power transfer-limiting factor. Flexible AC transmission systems (FACTS) controllers have been mainly used for solving various power system steady state control problems. Flexible AC transmission systems or FACTS are devices which allow the flexible and dynamic control of power systems. Enhancement of system stability using FACTS controllers has been investigated. This paper is aimed towards the benefits of utilizing FACTS devices with the purpose of improving the operation of an electrical power system. Performance comparison of different FACTS controllers has been discussed. In addition, some of the utility experience and semiconductor technology development have been reviewed and summarized. Applications of FACTS to power system studies have also been discussed.

Keywords - AC, FACTS, IPFC, PSS, SVC, STATCOM, SSSC, TCSC, TCPS, UPFC.

1. INTRODUCTION

The FACTS controllers offer a great opportunity to regulate the transmission of alternating current (AC), increasing or diminishing the power flow in specific lines and responding almost instantaneously to the stability problems. The potential of this technology is based on the possibility of controlling the route of the power flow and the ability of connecting networks that are not adequately interconnected, giving the possibility of trading energy between distant agents.

Flexible Alternating Current Transmission System (FACTS) is a static equipment used for the AC transmission of electrical energy. It is meant to enhance controllability and increase power transfer capability. It is generally a power electronics based device. The FACTS devices can be divided in three groups, dependent on their switching technology: mechanically switched (such as phase shifting transformers), thyristor switched or fast switched, using IGBTs. While some types of FACTS, such as the phase shifting transformer (PST) and the static VAR compensator (SVC) are already well known and used in power systems, new developments in power electronics and control have extended the application range of FACTS. Furthermore, intermittent

renewable energy sources and increasing international power flows provide new applications for FACTS. The additional flexibility and controllability of FACTS allow to mitigate the problems associated with the unreliable of supply issues of renewable. SVCs and STATCOM devices are well suited to provide ancillary services (such as voltage control) to the grid and fault rid through capabilities which standard wind farms cannot provide Furthermore, FACTS reduce oscillations in the grid, which is especially interesting when dealing with the stochastic behavior of renewable.

2. CONTROL OF POWER SYSTEMS

APPLICATION OF NANOTECHNOLOGY IN ELECTRICAL POWER ENGINEERING

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ABSTRACT

Nanotechnology is one of the fastest growing fields in research and technology. The main interest of nanotechnology is not electrical power engineering but there were a lot of possible applications to improve electrical, mechanical, thermal or chemical properties of electric power equipment. Often the economic aspect is pointed out, but also a higher efficiency or a reduction of losses predicts this new technology a successful appearance in power engineering.

In this paper the state of the art in nanotechnology, the possibilities and applications in electric power engineering were investigated. On the one hand new materials for conductors and on the other hand new insulants and coatings for insulators were taken into account. The aim for high voltage insulation systems were to extend the lifetime, to optimize the life cycle costs, to reduce the maintenance expenses, to decrease the size or weight and to increase the efficiency.

As an example of a practical application of nanotechnology the results of a test series with nano-coated porcelain insulators were presented. The nano-coating was applied on the ceramic surface and the long term stability was tested under a thermal and humid cycling procedure in a climate chamber and under natural conditions. As objective criterion for the long term stability the contact angle was observed by optical measurements in defined time intervals. The evaluations of the first test results look very successful, the contact angles of the coated insulators were constantly higher for more than 30 degrees over the whole test period.

NANOTECHNOLOGY IN ELECTRICAL POWER ENGINEERING

In wide areas of research and applied science nanotechnology is already present and the immediate connection can clearly be assumed. Just to name two applications medics and biomedical engineers develop nanoparticles for tumor markers, physicists and electronic engineers use nanotechnology for semiconductors to develop the super computer. From this point of view it sounds like a contradiction nanotechnology and power engineering, but what does nanotechnology have to do in electrical engineering? Power engineering where Megawattof Power and thousands of Volts have the formative influence on the daily business, where does a technology of miniaturization of elements find its place in between? There were several prospects for application in power engineering, let me list some examples:

- Improvement of metallic conductors (reduction of losses)
- Improvements of insulators (raising of electrical insulation, mechanical stability, thermal load behaviour, chemical resistance)
- Miniaturizing of design, reduction of used material, higher reliability
- Improvement of electromagnetic compatibility (EMV)
- Long-term improvement of efficiency and elongation of life time period

Al of these ideas can not be put into reality within days or months, it will take a middle-term to long-term period from the idea to research work, over first prototypes and to industrial production and the application by the consumers.
Some researchers and groups were investigating

A REVIEW ON OPTIMALMICROGRIDS MANAGEMENT BY THERMAL ENERGY MODDELING

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Abstract: Microgrids have become increasingly popular in recent years due to technological improvements, growing recognition of their benefits, and diminishing costs. By clustering distributed energy resources, microgrids can effectively integrate renewable energy resources in distribution networks and satisfy end-user demands, thus playing a critical role in transforming the existing power grid to a future smart grid. There are many existing research and review works on microgrids. However, the thermal energy modelling in optimal microgrid management is seldom discussed in the current literature. To address this research gap, this paper presents a detailed review on the thermal energy modelling application on the optimal energy management for microgrids. This review firstly presents microgrid characteristics. Afterwards, the existing thermal energy modeling utilized in microgrids will be discussed, including the application of a combined cooling, heating and power (CCHP) and thermal comfort model to form virtual energy storage systems. Current trial programs of thermal energy modelling for microgrid energy management are analyzed and some challenges and future research directions are discussed at the end. This paper serves as a comprehensive review to the most up-to-date thermal energy modelling applications on microgrid energy management.

Keywords: combined cooling; heating and power; microgrids energy management; networked microgrids; renewable energy resources; thermal comfort model

Introduction

With the emergence of global fossil fuel shortages and environmental issues, renewable energy sources such as wind energy and solar energy have been greatly developing [1,2]. Presently, several researchers have examined power and gas network coordination [3]. Many options are being studied for grid-scale storage. For example, power to gas (PtG) is a technology that could be useful in the short to medium term as a component of a comprehensive grid-scale storage solution in support of a power grid to accommodate intermittent renewable energy resources [4–7]. At the same time, microgrids have attracted wide attention as an integrated technology including renewable energy and other dis- tributed power sources [8,9]. The microgrid has flexible operating characteristics and can be connected to the grid and work in islanded mode. It can simultaneously meet the electrical and thermal energy needs of local users [10] and improve the power supply reliability of the distributed power generation system. Further, microgrids can realize the integrated operation of distributed power supply and the load, thereby reducing the pollution discharge of the system, and have become an important part of the smart grid [11]. Therefore, how to effectively use energy storage components and reasonably cooperate with renewable energy power generation to ensure the efficiency of renewable energy utilization has become a research hotspot in microgrids in recent years [12,13].

At present, research in this area is mainly focused on microgrids, and is generally focused on the optimal configuration of power storage equipment, such as batteries and super capacitors [14]. An optimal joint-dispatch scheme of energy and reserve is proposed in [15] for combined cooling, heating and power (CCHP)-based microgrids. The authors of [16] propose a novel reconfigurable microgrid architecture comprising photovoltaic, wind, micro-hydro, and fuel cell based renewable energy sources. Transient and extended power backup are provided with ultra-capacitor (UC) and battery storage, respectively. The hybrid energy storage in this model uses batteries and

RESILIENCE OF A FUZZY LOGIC CONTROLLER FOR AN UNMANNED AUTONOMOUS UNDERWATER VEHICLE

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Abstract— **The model has six degrees of freedom for the underwater vehicle. The primary factors influencing the performance of spatial manoeuvres are the underwater vehicle's dynamic characteristics, including its stability and controllability. The underwater vehicle's control surfaces, which may move in both vertical and horizontal directions (Pitch, Yaw, Roll, Pitch-rate, Yaw-rate, etc.), are located in the back and are used to steer the vehicle to follow a predetermined path based on logic until the target is reached. Due to limitations such as the larger density of water and the resistance motion being hundreds of times greater than that of air, the underwater vehicle response is slower than in an air scenario.This work presents the design of a rule-based fuzzy logic controller for Yaw control, which governs an underwater vehicle's rudder movement. Using the input and output behavior, a plant model is extracted, with the assumption that it is either first-order or second-order linearly time invariant. Since the plant models produced by the aforementioned method are rather rough, 50% options are provided for the second order plant's damping () and natural frequency (αn), and the first order plant's gain and time constant are similarly varied. The findings of the performance evaluation of the fuzzy logic controller under the various plant settings mentioned above have been studied and reported.**

Keywords-Fuzzy Logic, Robustness, Underwater Vechiles, Autonomous Vechiles.

INTRODUCTION

It is common knowledge that one of the key disciplines in engineering and technology is control systems theory. It is a known fact that when applying control theory to real-world systems, the analysis and design of control systems is a crucial and helpful component. We are aware that a variety of techniques are available for system analysis and design in order to enhance reaction and behavior. However, if the mathematical model of the system is known, these accessible techniques can be employed more readily and effectively.The application of fuzzy set theory to industrial processes, which are difficult to control using conventional methods due to a lack of quantitative data regarding input-output relations, has made fuzzy control one of the most active and productive research areas in the last few years [1–5]. The underwater vehicles travel at moderate speeds in a high density medium, making them slow reaction vehicles.For an underwater vehicle, the main goal of the control system is to produce the right control signal in order to achieve system stability. Apart from maintaining stability, the system needs to respond quickly and be able to minimize errors to acceptable levels. This means that the systems whose performance has to be improved must have an appropriate controller. Because conventional controllers only offer resilience over a limited range and require exact knowledge of the vehicle's entire dynamics for design purposes, they are not suitable for such tasks.Since the vehicle's hydrodynamic properties are known only after it is designed, extensive and costly vehicle testing is required in order to construct a traditional controller. Many complicated systems are competently operated by human operators, which is attributed to their ability to make decisions based on imprecise qualitative information about the system.

The underwater vehicle is a self propelled, self-controlled projectile,whichcanbelaunchedeitherfromairorfrom ships. The control surfaces are situated at the rear

PV-T COLLECTOR FOR SOLAR DRYER WITH AMORPHOUS SOLAR MODULE

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Abstract—**In most cases, solar thermal collectors only produce heat from sunshine. The dryer system will, however, also get electricity if photovoltaic solar panels are utilized as collectors, in addition to heat. Examining the advancement of PV-T collectors and their application to sun drying are the current goals. Additionally, this work uses an amorphous type photovoltaic-thermal (PV-T) collector to construct and test a small-scale solar dryer. While electrical energy is used to power air-circulating devices, the heat that is produced is directly used as a drying medium. The 40 Wp amorphous solar panel that makes up the solar collector is coated in double glass at the top, and it is insulated at the bottom and on both sides to reduce heat loss. The article to be dried is placed in a chamber and heated air from the collector is sent there. It is discovered that while the collector is in its fixed position, the outlet air temperature ranges between 35 and 50 oC during the day with 300 to 1000 W/m2 of solar energy. The PV panel's electric power production fluctuates between 4 and 25 Watt at the same time.**

Keywords—*solardryer, PV-T, solarmodule, solarcollector*

INTRODUCTION

For many different types of agricultural goods, drying is one of the most important post-harvest procedures. The production and quality of a product would be impacted by an inadequate drying procedure. In many parts of Indonesia, solar drying is still done the old-fashioned way. There should be an attempt at a better solution in this case. There are primarily two methods for harvesting solar energy: utilizing solar thermal systems to collect heat energy and photovoltaic (PV) systems to create electricity. Each of the two technologies is unique and has benefits and drawbacks. PV systems typically only generate electricity from a tiny portion of solar radiation. In commercial modules, the percentage of solar energy that falls into the modules that is transformed into electricity is only approximately 17% [1]. The cells absorb the leftover amount, raising the temperature of the cells in the process. However, as the module and cell temperatures rise, the efficiency falls, resulting in a reduction in the amount of electricity generated. Systems with solar thermal collectors are capable of producing energy in the form of heat with greater efficiency; nevertheless, their cost is often higher than that of PV modules with equivalent area.

The combinationof electricity generation and generation of thermal energy in one single collector so-called Hybridphotovoltaic-thermal(PV-T)collectorsison way to increase the amount of harvested energy from solar radiation. This has the advantage that, in the most optimisticcase, thePVmodulegetscooledbythe

AN ANALYSIS OF THE UTILITY-SCALE PERFORMANCE OF CRYSTALLINE AND THIN-FILM PHOTOVOLTAIC TECHNOLOGIES WEST INDIAN SUN RESOURCE-RICH AREA FOR PHOTOVOLTAIC PLANTS

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Abstract-The photovoltaic sector is still looking for ways to cut down on the losses that come with poor site conditions, poor system design, and poor system execution. In order to compare their relative performance characteristics in real-world outdoor conditions, this paper examines the characteristics and behavior of fundamental parameters such as voltage, current, and power for crystalline and thin-film technologies under various real-world winter and summer conditions. It also compares these results to an ideal system installed at latitude 23.15347 and longitude 72.669309. Drawing on the outcomes of the field measurement, we apply a practical analysis to understand our observations. According to the research, the power output of a polycrystalline solar PV system is affected by 4 to 6% less in the winter than a thin film system. Polycrystalline Si modules were found to exhibit a Performance Ratio (PR) of 32% lower than Thin Film Technology and 28% lower than a perfect crystalline module. For typical utility-scale projects in India, the causes of this loss include Non Standard Degradation, PID impact, Snail trail, Micro-crack, etc. Since diffuse radiation is more abundant in the winter and less prevalent in the summer, thin film solar PV produces 5% more energy than an ideal crystalline system. This difference in energy creation has a significant effect on the system's yearly power output.

Keywords:Field Experience; Losses; Performance; SolarPV; Thin-film;Utility–scalesolarPV.

I.   INTRODUCTION
There is an immediate need for renewable energy due to rising energy needs and environmental concerns. Solar energy is now the renewable energy source with the largest annual energy potential worldwide[1–5]. When compared to other renewable energy technologies like wind (23%), biogas (12%), and solar thermal (11%) throughout the period of 1990-2017, solar photovoltaic (PV) technology had the greatest average annual growth rate, at 37% [6].The photovoltaic effect is the process of harnessing solar energy to create electricity using photovoltaic cells. Two primary classes can be distinguished among the most widely used PV panel technologies: crystalline technologies and (which comprises category III-V semiconductors, ribbon silicon, polycrystalline (Poly C-Si), monocrystalline (Mono C-Si), and second-generation thin-film technologies (amorphous thin-film silicon, cadmium telluride (CdTe), and CIGS) [8–9]. Up until now, crystalline photovoltaic technology has dominated and been favored; nevertheless, thin film technology, like CIGS, is becoming more and more prevalent [1,8].

There aren't many studies in the southern hemisphere that compare the financial performance of different PV technology types using measured data, especially in areas with strong solar radiation. As a result, the research presented in this paper attempts to examine how several commercial PV panel types perform in a place with high solar irradiation under various weather circumstances. The performance of three different PV panel types—monocrystalline, polycrystalline, and thin-film—from a commercial test facility is compared across a variety of technical indicators in order to meet the stated goal. In addition, the project intends to look into how weather-related fluctuations in solar radiation and ambient temperature affect thin-film technology's technical performance in comparison to crystalline technologies[1-2].

ANALYSIS OF CRYSTALLINE SOLAR CELL IN ROOFTOP SOLAR PV SYSTEMS

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Abstract—**The simulated performance of a 5 kW rooftop solar PV system using crystalline solar cells is examined in this article. A 15% efficient glass-covered crystalline solar module with a temperature coefficient of power of -0.47%/°C is selected for this investigation. The National Renewable Energy Laboratory's PV Watts tool is used to simulate a PV system that is tilted at an angle that is close to latitude (NREL). The 5 kW PV system produces 7658 kWh of electricity annually with a capacity factor of 17.5%, according to the results. An additional estimate of the energy cost worth of the produced output is around Rs. 34457. This work contributes to our understanding of the performance of crystalline solar cells in the Indian city of Coimbatore.**

Keywords—
Solarenergy,Solarphotovoltaicsystem,rooftopcrsytallinesolar cells,PVWattSimulation.

INTRODUCTION

The simulated performance of 5 kW is being examined in this article. Using solar energy on a small- to large-scale business basis is becoming more and more common in India. Solar energy's benefits are to blame for this [1]. But there are a few issues with solar energy as well. These include fluctuations in energy production brought on by variations in solar irradiation levels and module behavior based on materials used in manufacturing [2]. For a specific site with an appropriate PV capacity that is constructed in accordance with the load requirements, a simulated performance study is necessary to comprehend the process of effectively converting available solar energy resource into PV power. Solar energy has broader uses, such as water pumping, public lighting, residential use, grid connectivity, and more [3-5]. The projected potential energy availability from a planned photovoltaic facility is determined by either survey-based field tests or simulation studies. Since each PV material has unique features, each

module built of that material behaves differently, resulting in variations in temperature coefficient and efficiency. In his research, Attila Vass et al. (2014) noted the significance of evaluating the energy production of small-scale photovoltaic systems [6]. Therefore, it is imperative to examine the PV systems' simulated performance. Analyzing the performance of crystalline silicon solar modules in Coimbatore weather is the aim of this article. With the PV Watt simulation tool, a 5 kW PV array is simulated.

Thepaperisstructuredasfollows:Section-I:Abriefintroduction about solar PV, problem statement and objectiveofthepaperisgiven.Section-II:Anextensiveliteraturestudy

TECHNOLOGY-ECONOMIC ANALYSIS OF UP-AND-COMING SOLAR PV MODULES FOR UTILITY-SCALE PV INSTALLATION

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Abstract—In order to prepare for potential employment and application in large-scale solar energy generation systems, this article provides a techno-economic analysis of many newly developed solar photovoltaic (PV) technologies in modules. This analysis took into account heterojunction, half-cell, and bifacial technologies. Four significant factors that are often taken into account when a PV technology is installed on a PV farm served as the foundation for this investigation. These variables include installation cost, performance ratio, energy generation, and degradation. The System Advisor Model (SAM) software from the National Renewable Energy Laboratory (NREL) was used for the simulation and analysis.The simulation findings indicated that bifacial photovoltaic technology is a strong contender for similar environmental conditions and locations with a high likelihood of light reflection. This is because the bifacial PV module can also generate power from reflected light on the back of the solar panel, contributing to its high efficiency. However, as the heterojunction is the least expensive in the comparison, it can be used if the cost of installation is the most important consideration.

Keywords—solarPV,bifacialPV,half-cellPV,heterojunctionPV,SAM,Renewableenergy
.

INTRODUCTION

Carbon emissions and climate change brought on by the usage of fossil fuels to generate energy have highlighted the need for energy to be produced from renewable sources. Solar energy is the most accessible renewable energy source since it is easily accessible everywhere on Earth. Furthermore, while in use, solar energy systems create relatively little pollution and are highly scalable [1]. For this reason, solar energy systems are advantageous for energy production in both household and utility settings.The global photovoltaic sector has grown at an average pace of roughly 35% during the last eight to ten years. The geometric growth rate can be attributed to the decrease in PV module costs [2]. As of 2020, the total amount of PV deployed to date indicates a about 723GWAC PV capacity [2]. As illustrated in Fig. 1, this capacity is split between the major players and the rest of the world.
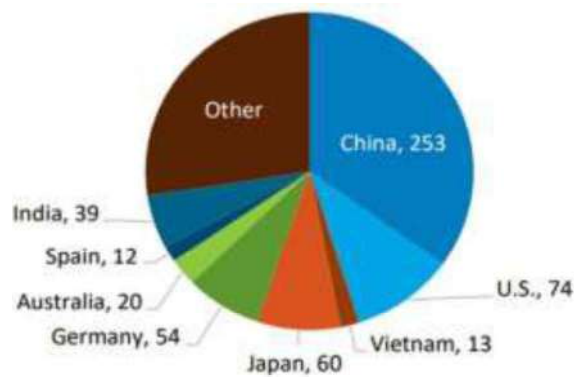

Fig.1.ThecumulativeglobalPVdevelopment2020.[2]

The technology known as photovoltaic (PV) is showing itself to be an inherent remedy for the unceasing need for energy. This makes a PV technology's energy delivery capacity an important parameter. Through varying degrees of research and development, photovoltaic technology is continuously improving to improve energy generation, decrease degradation rate, lessen the effects of adverse conditions, and reduce shading.

Current industry leader crystalline unifacial silicon technology may be replaced by emerging innovations. In order to properly use the right PV technology for a utility scale solar PV installation, it is therefore required to examine the current and newly developed technologies in terms of energy production, cost of installation, rate of deterioration, and efficiency.Various solar PV methods have been described in different literatures [3]–[9] based on significant solar module properties. To the best of the

RESEARCH ON ARMORED VEHICLES' ELECTRICAL SYSTEM FOR FALSE ALARM

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Abstract—The main sources of false alarms in the ArmoredVechiles Electrical System (BIT) are transient and intermittent problems. Establishing a false alarm probability model for the four-state system and comparing it to the two-state model demonstrates how successfully transitory and intermittent faults may be identified in order to lower the false alarm rate of the Bit-Body Interrupted System.
Keywords-
ElectricalSystem;FalseAlarmAate;BIT

I.   INTRODUCTION

Intelligent built-in test (BIT) technology, which has been applied to weapons and aerospace systems, is a significant way to enhance the system's or piece of equipment's diagnostic and testing capabilities. It can lower test maintenance costs, increase efficiency, and simplify the testing apparatus. The false alarm rate in BIT applications is too high, which hinders the technology's advancement and leads to inefficient maintenance procedures[1]. As a result, a great deal of research has been done on false alarm reduction technology. For example, reference [2] proposed the intelligent BIT false alarm reduction method, which is based on time-environmental stress measurement device-Support Vector Machine-Hidden Markov Model, and applied it to a specific helicopter's heading gesture system. Reference [3] proposed test false alarm filtering technology, which is based on Bayesian decision-making and applied to an airborne power system.

While the reference [4] established the three-state model of the BIT system using the Markov model, demonstrating that the three-state model of the BIT system can successfully decrease false alarms and improve fault detection rate, these approaches genuinely employ clever algorithms to reduce false alarms.

The paper first analyzes the producing factors of falsealarminarmoredvehicleelectricalsystem,theBITsystemisdividedintofourstates,whichisnormal,transient,intermittentandfault,analyzingtheeffectoftransientfaultsand intermittent fault on the BIT false alarms rate based onthe mathematical model of false alarm, compared with two-statemodelofBITfalsealarmprobability.TheresultprovesthatidentifingtransientandintermittentfaultscaneffectivelyreducethefalsealarmrateofBITsystem.

II.   FALSEALARMANALYSISOFELECTRICALSYSTEM

Theso-calledfalsealarms(FalseAlarmisabbreviatedtoFA) is that the BIT or other fault detection circuit indicatesthatthereisthefaultsituation,butthefaultdoesnotexistinfact[5].Itcanbebroadlydividedintotwocategories:thefirstcategoryistheso-called"fakereport",thatisBITor monitoring system indicates that there is fault, but actuallyanymodelofthesystemwithoutfailure,themilitaryofthe U.S. called Class Ċ type of false alarm (no trouble reportfailure); the second category is the so-called "fault report",the failure of system A occur, but BIT has instructed thesystem B is failure, the military of the U.S. called the ClassI type of false alarm (detection A fault but B have been instructed to failure). The problem of false alarm has beenexistence since the use of test technology. In the design ofnew equipment, as the problems of secondary effects ofhydraulic system in combat and the efficiency of powertransmission, the new armored equipments using electricdrive,increasingagreatdealoftheloadthat

SMART HEALTH MONITORING OF INDUSTRIAL STANDARD MOTORS USING INTERNET OF THINGS

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Abstract: The Industry 4.0 vision offers suggestions on how businesses might lessen the difficulties. Using a predictive strategy to create a smart industry using the Internet of Things is advantageous in an industrial setting. Automating machine maintenance tasks contributes to the predictive approach's ability to provide important business assets with sustainability, capacity, safety, performance, and customer experience. Additionally, it increases reproducibility, introduces data analytics, eliminates human bias, and improves precision and accuracy of data collecting. As a result, asset risk-based inspection and maintenance schedules will be informed by better information about the state of the assets. Predictive and preventive maintenance can extend the life of equipment, avert unforeseen maintenance tasks, and minimize unplanned downtime. In this task, we possess a device that may be effortlessly connected to the motor units, eliminating the need for any wiring. The sensor measures important parameters precisely and at a set interval of time by monitoring signals from the motor. In our instance, the data is a fruit that is uploaded to the cloud. After that, the data is analyzed to provide insightful results. After that, the server notifies the users about important machine data that may be utilized to take corrective action.
Keywords: Adafruit Failure Analytics Industrial Automation MQTT Predictive Maintenance Real-time Monitoring

1.   INTRODUCTION

In industries, system down time can be detrimental; surprise power outrages can create severe issues. It often requires costly repairs that increases overall operating expenses. The tangible cost of down time go way beyond the salaries of employees who sit idle while waiting for equipment to get backup and running. If damage to equipment occurs, the costs to repair or replace it need to be factored in as well, along with any specialized technical support. The Smart sensor device can help eliminate unplanned equipment downtime with predictive analytics, and measuring data, such as vibration, temperature and other environmental factors. Software monitors any changes in parameters of a machine's operation and automatically trigger an alert for a user or service technician to repair or replace parts prior to failure or unplanned downtime. Using smart sensor app user can check the status of their motors at any time with their smart phone. User can also receive clear recommendations on how to optimize maintenance and save costs. A Vanson Bourne survey of 450UK, US and French IT decision makers in field service and service management has estimated that the average cost of downtime is $260,000 per hour. Research [1]-[3] reveals the loss of industrialists due to unplanned downtime of machines. Bourassa et al in [4] reveals the equipment failures and their contribution to industrial incidents and accidents in the manufacturing industry.

2.   LITERATURESURVEY

There are some products and papers out in the market with the same tag line as we have proposed. But, the real time monitoring and inclusion of the cloud based analytics makes our proposal stand better and in this section, we present a quick summary of the existing products. To make the literature survey crisp, only few papers have been cited.

In this [5] a fever alarm arm band (FAA) is used to monitor the temperature of the patient. When the high temperature is detected, it raises sound as an alert. In this paper [6], sensor network technology measures the running status of well fuel equipment and data are sent automatically to control center. From there data are analyzed which ensures the safety of oil pump of each well. Thus it helps to predicts the fault of equipment thereby saving money and time.

There are many other research papers which deals with the automatic street lighting, agriculture based

CONTROLLING THE SOLAR PV INTEGRATED HYBRID MULTILEVEL INVERTER THROUGH A NOVEL APPROACH

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Abstract :Energy production is aided by the component of renewable energy systems like wind power generation (WPG) and solar photovoltaic (PV). Growths in power electronics technology have been linked to advancements in solar power generation, and solar photovoltaic sources have the potential to become one of the major suppliers of the future electricity. A high voltage progress converter is needed for components grid associating with a DC-AC inverter in solar PV systems with lower voltage ratings. Sunlight irradiation and time of day have an impact on the solar energy obtained from the solar panel. Using the MPPT algorithm, the boost DC/DC converter maintains the constant output voltage generated by the solar panel and is operated in accordance with the specifications. The DC source voltage obtained from PV panels is converted into a 13-level output voltage using a 1-T cascade 13-level inverter. It provides reduced overall harmonic distortion along with higher-quality sinusoidal output voltage and current waveforms. This study presents the design of the suggested model and uses MATLAB/SIMULINK tools to verify the results through simulation.
Keywords: Boost converter, Cascaded 13-level inverter   PID controller SMC controller Solar PV cell

1.   INTRODUCTION

Nowadays, the utilization of renewable energy is more advantageous in both economically and environmentally [1-2]. Amongst several categories of renewable resources for energy like solar and wind energy have become very common and challenging owed to its modern technology. Currently, solar PV sources are used in various advantages for example free from pollution. So, the demand of solar electric energy has grown-up continuously over the last 20 years by 20-25% per annum [3]. The photovoltaic cell inverter is used to change DC power/voltage into AC power/voltage acquired from PV modules to be fed into the load or load may be DC or AC drives [3]. Therefore, improvement in current and voltage output waveforms and performance of the traditional inverter decreases its corresponding harmonic content created by switching action of the inverter [6]. In latest years, multilevel cascade inverters have developed new attractive features for scientists and constructors due to their benefits compare to traditional 3-level pulse width-modulated (PWM) inverters. These types of inverters proposal improved output voltage and current waveforms, lower electromagnetic interference (EMI), lesser alter size lower total harmonic distortion (THD) [7]. The most important working topologies in multilevel inverter (MLI) are cascade H-bridge (CHB), diode- clamped (NPC) and flying-capacitor (FC) inverter. All three converter topologies have the potential for application in medium and high voltages. Multilevel inverters contain selection of power electronic semiconductor devices and capacitor voltage sources, the output voltage of which generate through stepped voltage waveforms. By growing the numeral of stages in the inverter, the output voltages have more stages producing a staircase waveform which has a reduced harmonic distortion. But, a great number of stages raise

the controller complexity and presents voltage discrepancy problems. The FC topology is equivalent to the NPC with difference that the clamping diodes are exchanged by flying capacitors and CHBs inverters are classified by way of series connection of two or more 1-Φ bridge inverters. High switching frequency and fundamental switching frequency PWM methods are used to operate the cascaded multilevel inverters because it has higher efficiency and lower switching loss. In the CHB MLI, each level needs a separate DC source and for each DC source a PV cell or battery is to be coupled. As compare to other two, CHB MLI needs the minimum numeral of components and requires the prospective for utility interface applications as of its competences for applying modulation and soft

STUDY ON EFFECTIVENESS OF RURAL HOUSING SCHEMES IN ODISHA STATE

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Abstract
Living in a rural area denotes both a higher degree of social transformation and individual financial advancement. To enhance prospects for the rural populace, various strategies are being evaluated, including greater participation in rural housing initiatives, decentralised planning, more robust land reform implementation, and easier funding accessibility. Odisha State's Rural Housing Projects are designed to provide affordable housing for residents living in the state's rural districts. The initiatives are designed to satisfy the housing needs of a wide range of social groupings, including middle-class organisations, lower-class groups, and the less fortunate segments of the economy. The Odisha government has created several housing initiatives, including the Rajiv Awas Yojana, the Indiramma Weaker Section Housing Programme, and the 2BHK Housing Scheme, to provide durable, high-quality housing for the rural population. These schemes offer financial aid, subsidies, technical assistance, and construction assistance to eligible recipients. Providing rural residents with access to basic utilities like electricity, water, and sanitary facilities is another priority of the projects. The rural housing developments in Odisha State have improved the living conditions of rural residents while also reducing poverty. We have used a qualitative assessment to depict the existing situation. The statistical analysis is determined using the SPSS tool.

Keywords – Land reforms, rural population, decentralised planning, and the Indiramma Weaker Section Housing Programme

Introduction
According to the 2011 census, Odisha 's rural population is 213.95 lakh, or 61.12% of the state's 350.04 lakh total population. Programs like MGNREGS, Watershed Housing, and Self-Help Groups are managed by the state's Rural Research division.Since most people live in rural areas, it is important to evaluate a successful rural Housing strategy that will improve several indicators of land reform and make it possible for them to be used in other parts of society (Dar,2020). Governments around the world are paying increasingly close attention to rural Housing. Rural Housing is especially relevant in India for two very significant reasons. Most of the population still lives in villages, and progress is challenging if rural areas lag behind urban ones. Second, a major impediment to the growth of the economy would be the socioeconomic disadvantages of the rural sector. A portion of the labour force that is now employed in agriculture must move to non-agricultural jobs. Another growth indicator is literacy rates, which are lower in rural than urban regions. 44% in rural areas and 73% in urban areas. Rural communities have a higher percentage of impoverished individuals than metropolitan ones do. Among the estimated 210 million impoverished people in the nation, 42 million live in urban areas and 168 million do so in rural ones. 30% of the 108 million rural houses, or those who work in agriculture, are inhabited. With less than one hectare of land and 18% with less than two hectares, 58% of families in the communities are marginal farmers. The huge disparities between rural and urban regions in some of the most important socioeconomic Housing indicators are highlighted by these numbers, which urge a determined effort to close the gap. The emphasis on rural Housing is also a reaction to the many difficulties that rural regions encounter, many of which are associated with a lack of basic services and technical improvements. Rural communities lack access to even the most necessities, like clean drinking water, primary healthcare, and transportation. The rural population also experiences poverty, ignorance, and illiteracy. They have not been able to completely benefit from

The Effectiveness of Mutual Funds on A Global and International Level

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Abstract
This study looks at the risk-adjusted returns for five foreign mutual fund portfolios during three time periods (1985–1994, 1985–1989, and 1990–1994) using Jensen's Alpha, Treynor's Index, and Sharpe's Index. A portfolio of mutual funds that exclusively invest in U.S. companies and the U.S. market as represented by the Vanguard Index 500 mutual fund used as the benchmarks for comparison. The findings indicate that between 1985 and 1994, the U.S. market and the U.S. mutual fund portfolio as measured by Treynor's and Sharpe's indexes underperformed the portfolios of foreign mutual funds. The Pacific Rim fund portfolio beat both benchmark portfolios between 1985 and 1989, while the international fund portfolio beat the domestic fund portfolio and the U.S. market. Between 1990 and 1994, returns fell short of both the stock market and domestic mutual funds.

INTRODUCTION

The individual investor with limited capital, once constrained in achieving full diversification benefits, can now create mutual fund portfolios similar to portfolios of investors who purchase fixed income securities and equities directly. It is possible to structure a portfolio of mutual funds that invest in a diverse array of securities traded within the U. S. and abroad. One can choose among 1,500 or more equity funds in addition to bond funds. For international diversification benefits, alternatives include funds that invest in securities traded in countries outside the U. S., funds that buy U. S. securities and foreign securities, funds that invest in developing countries (emerging country funds), funds with holdings in specific countries (e.g., Korea or Japan), or funds that invest in specific continents (e.g., Europe or Asia).

A considerable body of literature on the financial performance of mutual funds has accumulated beginning with the study by Friend, Brown, Herman, and Vickers (1962). Within the past few years, the research has been extended to examine the behavior of international funds. The international funds have been compared to various market indexes. The results and conclusions of these studies tend to corroborate those concerning mutual funds that invest in U. S. securities only: international funds generally do not perform better than the U. S. indexes, and they do not outperform world indexes.

The work in international funds to date [specifically that of Droms and Walker (1994), Cumby and Glen (1990), and Eun, Kolodny, and Resnick (1991)] compared the risk-adjusted performance of international funds against market indexes such as the Standard and Poor's 500 and the Morgan Stanley World Index. The sample sizes ranged from 15 funds in the Cumby and Glen study to 30 funds in the Droms and Walker study. Previous studies, however, have not compared the returns of international mutual funds to another benchmark relevant to individual investors, that of U. S. mutual funds that invest solely in U. S. securities.

OBJECTIVE

Investors can choose to purchase shares in various domestic funds or further diversify their holdings by investing a portion of their portfolios in international and/or global mutual funds. The financial success of an internationally versified mutual fund portfolio depends partly on the ability of the total portfolio to generate risk-adjusted returns equal to or greater than the domestic stock market. Success is also determined by the ability of the international funds within the portfolio to match or outperform market benchmarks. Additionally, advantageous diversification into international and global funds depends on

A STUDY ON FINANCIAL INCLUSION - ROLE OF INDIAN BANKS IN IMPLEMENTING A SCALABLE AND SUSTAINABLE FINANCIAL INCLUSION STRATEGY

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ABSTRACT
The financial inclusion plan of Indian banks nationwide is outlined in this article. The impoverished and vulnerable groups must have access to safe, simple, and affordable credit as well as other financial services in order to spur economic growth and development and reduce income inequality and poverty. The goal of financial inclusion is to provide banking and financial services to large segments of the underprivileged and low-income population in a transparent, equitable, and cost-effective manner. However, adding bank branches in underbanked areas to provide formal financial services across the nation is no longer considered to constitute the entirety of financial inclusion. Reaching the majority of the financially eligible population is the primary goal of all these activities.

Keywords: Financial Inclusion, Program, govt. initiatives, RBI.

INTRODUCTION
Around 2.5 billion working-age adults globally have no access to the types of formal financial services delivered by regulated financial institutions. The banking facilities are for the public good; the availability of banking and payment services to the entire population without discrimination is the prime objective of financial inclusion public policy.
The various factors that hamper the process of financial inclusion include socio-cultural, economic issues, etc. For instance, it includes lack of awareness and illiteracy among the different group of peoples and the lack of avenues for investment such as poor bank penetration unwillingness of banks to do financial inclusion or high cost involved in financial inclusion seem tobe some likely reasons for financial exclusion.

Financial inclusion widens the base of the financial system by inculcating a culture of savingsamong large segment of rural population and helps in the process of economic development. In rural areas, the Gini's coefficient rose to 0.28 in 2011-12 from 0.26 in 2004-05 and duringthe same period to an all-time high of 0.37 from 0.35 in urban areas.

STATEMENT OF THE PROBLEM

To achieve greater financial inclusion, financial services should reach the poor of socially excluded group's mostly the banks and other financial institutions have played a vital role in filling up this gap. This study helps us to know the financial inclusion position, awareness level, towards nofrills account and saving and credit behavior of the low income groups.

OBJECTIVES OF THE STUDY

- To give an overview of Inclusive Approach to banking and inclusive growth in India.
- To know the extent of financial exclusion in India.
- To highlight the various Policy Initiatives taken by Reserve Bank of India in promoting financial inclusion.
- To analyze the current status of financial inclusion in Indian economy.

HIGH-SPEED TRAIN COPPER CONTACT WIRE PROPERTIES INVESTIGATION

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Abstract: Number of experiments of carbon strip rubbing against copper contact wire on friction and wear properties is performed on high-speed friction and wear tester with electric current. The results show that the friction coefficient is generally maintained between 0.24 and 0.37. In the absence of electric current, the coefficient of friction is higher than that in the presence of electric current. The wear rate of carbon strip materials is generally not more than 0.014g/km. In particular, the wear rate under the electric current of 240 A is 14 times more than that in the absence of electric current. By observing the scar of worn surface with optical microscope, it can be found that there are obvious slip scars and arc erosive pits.

Keywords: Erosion, wear, high-speed, friction

1. INTRODUCTION

The pantograph-catenary system is composed of collector strip, supporting pantograph, contact wire, droppers, supporting rods, carrier and suspension in electrified railway, as shown in the Fig. (**1**).The driving power of the electric railway locomotive has been up to 8000~10000kW [1-3], which is transmitted to the running train through a collector strip rubbing against a contact wire. The service life of pantograph/catenary system mainly depends on the wear life of the pantograph strip and contact wire materials. Increasing wear service life of the collector strips is a main concern to operators and investigators. From the viewpoint of friction, the wear service life depends on wear mechanisms occurring in the process of electrical sliding friction. In the literature, several wear mechanisms such as abrasive wear, adhesive wear, arc erosion and oxidation wear were reported in electrical sliding frictional process [4-6]. The effect of electric current on the wear mechanism was emphasized in an action of Joule heat and arc discharge heat [7, 8]. Especially, several investigators reported that wear of contact strip materials is related to interface debris generated on contact surfaces [5, 9-11]. With increase in high-speed train, the wear of the collector strip and contact wire materials becomes severer and severer in a pantograph strip rubbing against a contact wire. In order to reveal the effects, influence of electric current and normal force on tribology properties of carbon strip rubbing against copper contact wire is used to investigate damage mechanism of contact materials for pantograph-catenary system.

2. EXPERIMENT DETAILS

The tester has been introduced in the previous texts [3, 12,13]. At present, a ring-on-block tester was developed for the present test purpose. The schematic of test ring and collector strip/copper contact wire couple is shown in Fig. (**2**).The rotational disc is driven by a variable-frequency motor of 58 kW. The sliding velocity of the rotational disc with respect to the collector strip varies from 0-400 km/h. And the collector strip frame can oscillate at a frequency of 0.3-3Hz in the vertical direction. The collector strip frame is driven by a servo motor to provide a steady normal force between the collector strip and the contact wire. And the normal force varies from 10 to 300 N. In the tests, the normal force Fn is set to 30, 90 and 150N. The electric current intensity I of 0, 180, 200, 220 and 240 A are chosen. The sliding velocity v is set to 160 km/h and the sliding

distance of each test is set to 200 km. Before each test, the carbon strips are polished with 1000 and 1200 abrasive papers and are cleaned with alcohol. Its surface roughness is about Ra=1.6 μm. The contact wire surface is abraded with 1600 abrasive paper to obtain a good contact surface. Run-in between the carbon strip

THREE AXIS PORTABLE MILLING MACHINE- AN ANALYSIS

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Abstract:

 This paper is written based on the design and production process of milling machines on the workshop, this machine can be easily moved to the place where the work pieces need to be produced. The 3-axis portable milling machine is compact and easy to move, but still quite rigid. The parameters calculated during the design are: the fast chain, the tool feed chain and the kinematic diagram of the whole milling machine. After successful production, the 3-axis mobile milling machine has been widely used in addition to actual production.

Keywords: Milling machine; Portable; Cutting Process; 3-axis.

I.   Introduction

Milling machines are often used for machining planes, complex shaped surfaces, keyways, cutting off, machining round faces, key shafts, threads, gears. Milling is one of the most widely used and most productive metal cutting methods.

The cutting tools used on milling machines include cylindrical end mills, end mills, disc mills, end mills, profile mills.

According to technological capabilities, milling machines are divided into 2 groups:

Universal milling machine: Vertical milling machine, horizontal milling machine, bed milling machine, copy milling machine, milling machine with rotary table

Specialized milling machine: Tooth milling machine, thread milling machine, keyway milling machine, key shaft milling machine.

However, milling machine is designed to be in factory or manufacturing factory. So they have huge weight and size, up to tons. The parts to be manufactured will be mounted on the machine table.
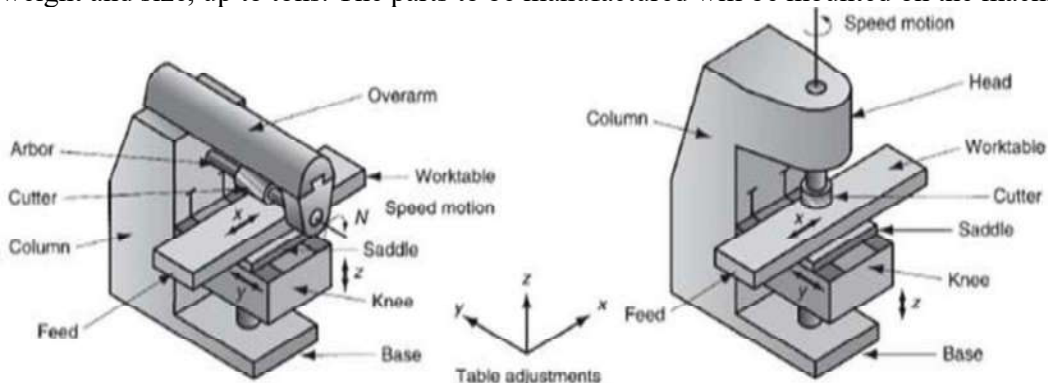

Figure 1: Common types of milling machines

In fact, there are many machine parts that are large in size, or have been attached to structures that cannot be disassembled. When we need to mill them, how do we do?

A milling machine with compact size, light weight, and portability would be an optimal choice.

There have been many research papers on portable milling machines, for example a research on milling machines made from micro to macro parts.

In conducting this study, we researched the aforementioned studies and scoured several websites [4,5] to get an overview of the problem we will be designing. That helps to optimize the design and manufacturing process of our products.

In this paper, we present results of research, design and manufacture of a 3-axis portable milling machine used to manufacture work pieces at the construction site with outstanding productivity and quality. At the same time, the machine is fully automatic, reducing labor, time and processing costs.

II.   Theoretical basis for design

MILLING PROCESS SURFACE ROUGHNESS PROPERTIES USING TAGUCHI METHOD

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Abstract
The aim of this work is to investigate the effect of feed parameters such as cutting speed (V), feed rate (f), fluid type (FT) and nano particle concentration (NC) on surface roughness during hard milling. The effect and interaction effect of each parameter were investigated using the Taguchi method and analysis of variance (ANOVA). Research results show that the efficiency and machinability of the cutting process of carbide blades are significantly improved by the use of nano-cutting oil, which indicates that the lubrication and cooling efficiency are improved due to the presence of nano particles. Moreover, the feed rate has the greatest influence, and the interaction effects between V*f, V*NC and FT*NC lead to large effects on the surface roughness. In addition, to achieve minimum surface roughness, suitable parameters are V=110 m/min, f=26 mm/min, emulsion base oil and NC=0.5%.

Keywords: Milling, Taguchi method, ANOVA, nano particle, surface roughness.

Introduction
In the field of metal cutting, surface quality is a very important parameter that determines the quality and performance of mechanical parts. Along with the industry development, the increasing requirements for machined surface quality along with productivity are posing new challenges in the finishing process, especially steels after heat treatment. The traditional solution to cut these steels is grinding. Grinding process brings out very high dimensional accuracy and surface quality; however, this method has the main disadvantage of low productivity [1]. Besides, the use of coolant leads to environmental pollution or the cost of handling the used solutions is very expensive [2].Therefore, hard machining technology has been developed to solve this problem [3]. It is now much easier to use cutting tools with geometrically defined cutting edges such as hard turning, hard milling, and so on to directly cut heat-treated materials [4]. Thanks to the support of the development of materials technology and machine tools, hard turning or hard milling can be performed with cutting tools with very high strength, hardness and very good heat and abrasion resistance combined with high rigidity CNC machine tools from small machine shops to large factories [1].In hard machining technology, hard milling has attracted great attention of researchers and manufacturers in the mold manufacturing field. This is an area that has been growing very rapidly in recent years. The finish milling of the mold cavity has replaced or supported the grinding and Electrical discharge machining (EDM), which has contributed to a significant improvement in productivity while ensuring accuracy and good surface quality [3]. In hard milling, the cutting process is not continuous, so the use of flood condition is easy to cause thermal shock, adversely affecting the life of the cutting tool. However, the enormous heat generated by the cutting zone accelerates tool wear [5].Therefore, it is necessary to have suitable lubricating and cooling technology to improve the efficiency of the hard milling process. In recent years, Minimal quantity lubrication (MQL) technology has been researched and developed for application to machining processes [6,7]. This method uses a minimum amount of cutting oil directly sprayed into the cutting area in the form of high-pressure mist, thus achieving high lubrication efficiency [8]. Many studies have demonstrated the effectiveness of MQL in improving cutting efficiency and machined surface quality, reducing cutting forces and tool wear. However, when applying this technology to hard machining

ROBOT FOR PIPE INSPECTION AND EXPLORATION –THE MODEL AND SIMULATION

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Abstract:
In this paper, the authors present a robot for pipe inspection and exploration, which has in its structure a module for the maintenance of a constant pressure force between the robot's wheels and the inside diameter of the pipe. The paper starts with a short introduction about necessity of the presented solution followed by design aspects and finalizing with the test of the developed compliant module.

Key words: robot, active structure, adaptation

Introduction

The authors are developing a robot with adaptable active structure that can navigate inaccessible industrial pipes in order to check their condition and locate leakages. Different designs (Figure 1) are presented in the specialist literature. Some of the prototypes used for inspection of pipes with a large range of diameters have different types of springs in the structure to achieve contact between the wheel (caterpillar) and the pipe wall [4] [6] [10].
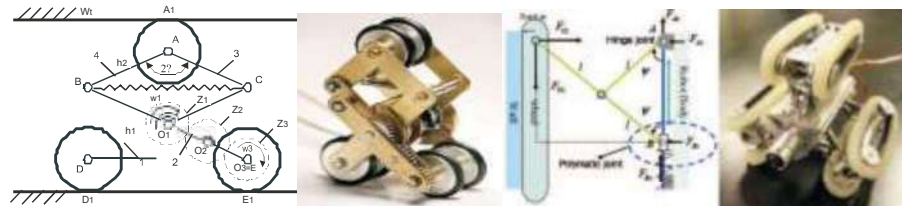

Fig.1.Different designs of in-pipe mini robots

If robots have structure adaptable to pipe diameters, to calculate the necessary force generated by spring the worst condition was taken in consideration, namely for the maximum diameter a priori fixed. Because of the existent springs, pressure on the pipe wall increases proportionally with the decreasing inner diameter of the pipe, influencing the speed of the robot. For the mini robot presented in the paper, we replace the spring with a DC motor and a force controller, so that the pressure on the inside wall of the pipe will be constant. The scheme from Figure 2a presents the robot structural scheme and the variation of the reduced torque to the motor shaft depending on the theta angle (Θ) (Figure 2b) [1].
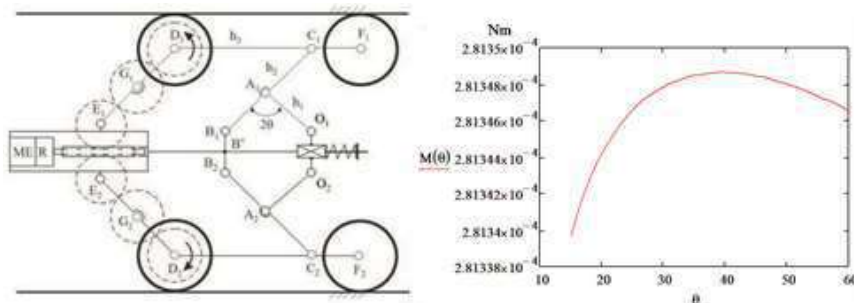

Fig.2.Kinematicstructureandreducedtorquetothemotorshaft

Proposed structure of an in-pipe robot

The proposed mechanical structure (Figure 3) is modular, composed of two main modules; one active

SIMULATIONS APPROACH OF THE SLIDER-CRANK MECHANISM

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ABSTRACT:
The purpose of this study is to simulate of the slider-crank mechanism. This mechanism is found in: compressor, feeder, pump, injector, water mill, crusher, etc. Besides, the crank-slide linkage is central to diesel, on steam engine or gasoline internal combustion engines, which play an indispensable role in modern living. This system consists of the following components: crank support, crank, connection rod and slider. First component is the crank support, which is always a fixed body. Second component is the crank which a rotation motion. Third component is the connection rod. Shortly, the connection rod is generally abbreviated con-rod. The con-rod body transforms reciprocating motion to rotational motion. Fourth components are the slider. The slider has always a translation motion. Finally, it is also shown that the mechanism is adequate and the softwarealgorithm developed simulates the functioning.

KEYWORDS: Slider-crank, Con-rod, Slider, Mechanism, System

INTRODUCTION

The slider-crank mechanism is otherwise a typical mechanical linkage that changes rotary motion into linear motion or vice versa. This mechanism is widely used in various mechanical applications. Mechanical applications are found in: internal combustion engines, pumps, presses, compressors, robotics, toy, etc. [1].

Any slider-crank mechanism is made of four main components: a crank, a connecting rod, a slider and obviously a crank support, as shown in figure 1.

Figure1: Components → Slider-crank mechanism

The roles of the components belonging to the slider-crank system are [2]:
- The crank is a rotating shaft that is driven by an electric motor or a heat engine.
- The connecting rod is a simple linear link (a bar) that connects the crank to the slider.
- The slider is a solid sliding element whose role is to move back and forth along a straight line.

STUDY OF MATERIAL PROPERTIES OF ENERGY ABSORBING AUTOMOBILE COMPONENTS

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Abstract: In this work, the simulation analysis of automobile energy-absorbing components was carried out using FEM. The numerical simulations were carried out using the software LS-DYNA. Automobileenergy-absorbing components usually were made of a metal thin walled tube. In the paper, several types of materialproperties were studied and compared. Results show that the material properties have influence to automobile energy -absorbing componentscrashworthiness.
Keywords: Absorbing components, FEM, material properties, strain rate, yield strength

INTRODUCTION

In cities traffic jam, automotive accident often occurs to low-speed and behind or angle collisions. No attention is paid to the low speed crashed for no personnel injury [1].Therefore, it is quite necessary to study the technical problems of the car involved in low velocity impact.

In low velocity impact accident, the automobile energy- absorbingcomponentisexpectedtobecollapsedwithabsorbing crash energy prior to other body parts so that thedamageofthemaincabinframeisminimizedandpassengers maybesaved[2].

The automobile energy-absorbing component equipped atthe front end of car (see Fig. **1**), is one of the most importantautomotive parts for crashenergyabsorption.

In the present work, the automobile energy-absorbing component (a kind of thin walled metal tube) at low-velocity impact was studied [3, 4], and material properties onautomobile energy -absorbing components crashworthiness were proposed.

FINITE ELEMENTMODEL
ModelBuilding

In case of front allow-speed collision, the automobile energy-absorbing component absorbs impact energy and reduces the peak load of the impact mainly by the plastic deformation [5,6]. The automobile energy-absorbing component comprises a front longitudinal beam, a bumper beam, a crash-box and front and rear flange. The

crash-box

MINI BELT GRINDING MACHINE- DESIGN ANALYSIS

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Abstract:
This article presents the results of the design and production process of the mini belt grinder, this machine can be easily moved to the place where the work pieces are needed. The mini belt grinder is small and easy to move, but still quite rigid. The parameters calculated during the design process include: the speed chain of this mill and the entire kinematic diagram. After successful production, the mini belt grinder was widely used in addition to actual production. It is often used as an industrial finishing process.

Keywords: Production, Design, Belt grinding machine; Cutting Process; Kinematic.

I.   Introduction

Belt grinding is an abrasive machining process used on metals and other materials. It is typically used as a finishing process in industry. A belt, coated in abrasive material, is run over the surface to be processed in order to remove material or produce the desired finish [1].
Belt grinding is a versatile process suitable for all kinds of different applications. There are three different applications of the belt grinding technology.
☐   Finishing: surface roughness, removal of micro burrs, cosmetic finishes, polishing.
☐   Deburring: radiusing, burr removal, edge breaking.
☐   Stock removal: high stock removal, cleaning (e.g. of corrosion), eliminating mill or tool marks, dimensioning.
Wide belt grinding is a familiar process in industry as well as home applications. There are several basic methods for belt grinding
☐   Stroke belt
☐   Platen belt
☐   Wide belt
☐   Back stand
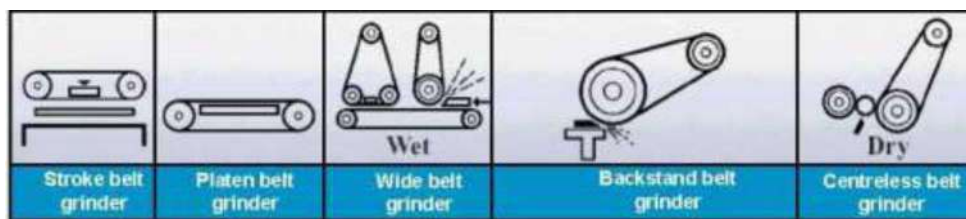☐   Centerless
☐   Portable

Figure 1: Basic methods for belt grinding

In general there are three basic elements of the belt-grinding machine: work rest support, grinding head and a regulating head. These components differ for all the methods but in general the workpiece is pressed between the grinding head and the rest support. The objective of the regulating head is to coordinate the belt pressure.
There have been many research papers on belt grinding machine, for example a research on design and fabrication of abrasive belt grinding [3]. An article written on design and fabrication of mini belt grinder machine [4]. An article written on design of mini abrasive vertical belt grinding machine [5].

Design Optimization of Bevel Gears Manufacturing

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Abstract— Exhaustive research supports new methods for designing and manufacturing bevel gears that are stronger and more cost-effective than ever before. Bevel gears were developed more than 70 years ago and are important gears that are still produced all over the world. There is widespread use of bevel gearing in industry and there are many special problems associated with this type of gearing. An overview of recent advances in the research on bevel gear design optimisation and manufacturing optimisation is provided in this research study. Section II deals with design optimisation and Section III deals with manufacturing optimisation of bevel gears.

Keywords—Hypoid gears; Spiral bevel gears; meta-heuristics; electrochemical honing

I.   INTRODUCTION

Bevel and hypoid gears are commonly used in transmissions and drivelines for a wide range of industrial sectors. Although each sector has different requirements, there is an overall trend towards higher durability and lower noise, with development cost and time being two other factors that are very important to consider. With the bar being raised on the performance requirements of geared products, developing a high-efficiency design/development process has become increasingly challenging. The design of bevel and hypoid gears

is – unlike cylindrical gears – entirely dependent on the manufacturing process and thus so are their NVH and strength characteristics. This means that the design of hypoid and bevel gear tooth flanks, via the manufacturing machine settings, needs to be considered again within the context of the full system.

Spiral bevel gears have very complicated tooth flank form and mesh perpendicularly, it was very difficult to grasp a meshing condition. In the history of bevel gears, aspects from design to production control have been exclusively entrusted to the empirical method provided by cutting machine manufacturers (Gleason Corporation and Klingenberg GmbH) and are supported by intuition and experience of skilled engineers and operators[10]. To grow out of the empirical method implemented so far and to develop bevel gears that can secure high durability and reliability, equipment manufacturing companies developed the technology ranging from tooth flank form measurement of large bevel gears to tooth contact analysis that calculates a meshing condition.

II.   DESIGN OPTIMISATION OF BEVEL GEARS

The design of any gearing system is a difficult, multifaceted and highly complicated process. When the system includes bevel gearing, the process is further complicated by the complex nature of the bevel gears themselves. In most cases, the design is based on an evaluation of the ratio required for the gear set, the overall envelope geometry, and the calculation of bending and contact stresses for the gear set to determine its load capacity. There are, however, a great many other parameters which must be addressed if the resultant gear system is to be truly optimum.

This section covers the developments in design optimization of bevel gears.

A.   Kinematic Design and Analysis of Planetary Bevel-Gear Trains

One of the most common methods in analyzing speed ratios of planetary gear trains has been the tabulation method. For complex mechanisms where many gear trains are coupled together, this method becomes inconvenient. With bevel gears in the gear train, it fails to apply. Some textbooks also use formulas which apply only to gears with parallel axes of rotation. This fact is often not stated in machine design texts. These methods can become incorrectly used in the design and analysis of planetary bevel gear trains with nonparallel axes of rotation. With the use of computers and graphics, a convenient and reliable method can be derived. Freudenstein and Yang have derived the early graphical method for analyzing gear trains. C. P. Day, et al developed an algorithm [2] to extend the graphical method for analyzing coupled planetary bevel gear trains. A matrix formulation is used to include speeds of all gears rotating about their respective axes. Such formulation will aid designers and analysts in determining correct speed ratios of all gears in a planetary gear train system.

B.   Dynamic analysis of a gear pair

A single degree of freedom non -linear model is used for the dynamic analysis of a gear pair by H.Nevzat Özgüven, et al.[3] Two methods are suggested and a computer program is developed for calculating the dynamic mesh and tooth forces, dynamic factors based on stresses, and dynamic transmission error from measured or calculated loaded static transmission errors. The analysis includes the effects of variable mesh stiffness and mesh damping, gear errors (pitch, profile and

A New Developmental Design for Parts of Pressure Die Casting

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Abstract— **In pressure die casting process, dimensioned parts are produced accurately by forcing molten metal under pressure into split metal dies. Later this is opened to allow the casing to be ejected. The objective of this paper is to model aluminum castings and to compare with customer model. The Die Design for "E6 UPPER BODY" is also developed. The necessary modifications are made to rectify the problems identified in the previous design. Ejector pin positions are changed to eliminate the post-casting operations. The component orientation is changed in the assembled die housing so that the forces acting on the side cores are minimized. In this paper, a new design is proposed by modifying the conventional design of spring-supported side-cores.**

Keywords—Ejector pin, Air Vent, Hot-tearing

INTRODUCTION

Aluminium diecasting is a process where molten aluminium alloy is injected into a casting die under high pressure and at a controlled temperature. The mold had two sections, the" cover" half and the "ejector" half. The die may also have additional moveable segments called slides or pulls, which are used to create features such as undercuts or holes which are parallel to the parting line (Fig. No: 1.1)

Aluminium diecasting dies are run in cold chamber diecasting machines. These machines are operated at the required temperatures and pressures to produce a quality part to net-shape or near net-shape specifications. Aluminium diecasting can be readily machined, anodized, painted or powder coated. Some of the more typical application for aluminium die castings are: enclosures for the electronics industry, hand and power tools, hardware, applications, pump parts, plumbing parts, parts for the automotive industries, sports and leisure, home appliances, and communications.
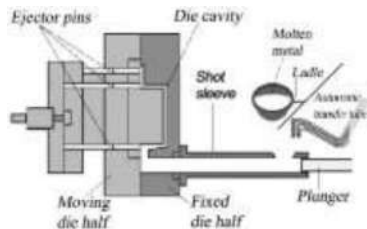

Fig 1.1: COLD CHAMBER

CHARACTERISTICS OF MOLTEN ALUMINIUM

Molten aluminium alloys are extremely reactive and combine readily with other metals, with gases, and sometimes with refractories. Molten aluminium dissolves iron from crucibles. Therefore, aluminum is usually melted and handled in refractory (most often, silicon carbide) containers. High-alumina brick bonded with phosphoric acid is ordinarily used for furnace linings. The surface tension of molten aluminium is high and when augmented by the formation of film of oxide, surface tension is so great that it causes difficulty in casing thin sections. Alloy additions reduce surface tension, but broaden the solidification range, which is likely to cause shrinkage problems. The surface tension of molten aluminium is great enough to keep a charge of fines floating on top of the molten bath. Compositions that are high in alloy content, such as the high-silicon die casting alloys are susceptible to precipitation of the alloying elements, thus forming sludge. Thereafter of sludge formation increases as the temperature of the molten bath decreases.

Aluminium alloys solidify with a maximum of nearly 10% volume contraction, which must be considered in the design of the gating system for a casting. Molten aluminum weighs only 145 to 150 lb per cubic foot, whereas solid aluminum weighs 160 to 165 lb per cubic foot.

II. LITERATURE REVIEW

High Pressure Die Casting (HPDC) is an important process for manufacturing high volume and low cost components. Examples from the automotive industry include automatic transmission housings, piston heads and gearbox components. The geometric complexity of the dies leads to strongly three-dimensional fluid flow with significant free surface fragmentation. Crucial to forming homogeneous cast components with minimal entrapped voids is the order in which the various parts of the die fill and the positioning of the gas exists. This determined by the design of the gating system and the geometry of the die.

- Ejector pin marks are on jigging surface, so that this surface needs post-casting processes.
- The previous design in injection point is offset, so that the length of feeding system is increased.
- The locking forces needed on the side cores are more.
- The conventional design of spring-supported to side-cores is modified, because while die is mounting and dismounting from the machine, the projected screws may chance to touches the tie bars.

Acrylic based Experimental Analysis of Abrasive Water Jet Pocket Milling

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Abstract— **For difficult-to-machining materials abrasive water jet machining (AWJM) process is used for machining. AWJM can also be used for various machining operations like drilling, cutting, turning, milling, etc. Experimental investigations in the Abrasive Water Jet Pocket Milling (AWJPM) in different materials like aluminium, glass, titanium, alloy steels, etc. are done by many researchers. They have tried to understand the effect of input parameters like water jet pressure, standoff distance, traverse rate, abrasive mass flow rate, jet impact angle, step-over distance, abrasive mesh size, machining time, etc. on the output parameters such as depth of cut, undercut, material removal rate (MRR), surface roughness (Ra), kerf geometry, etc. The objective of this work is to conduct experimental investigation in AWJPM in an acrylic material. The input parameters such as standoff distance, step-over size, traverse speed and abrasive flow rate are used study their effect on depth of cut and MRR. The L9 orthogonal array is used for conducting experimentation. ANOVA analysis is used to determine the important parameters in AWJPM. It is also observed that standoff distance is most significant in achieving higher depth of cut and material removal rate. The formation of undercut is also demonstrated in this paper.**

Keywords— *MRR, Abrasive Water Jet, Abrasive Water Jet Pocket Milling, Garnet Abrasive, Acrylic, Orthogonal array, ANOVA.*

I. INTRODUCTION

AWJM is commonly employed in industries for machining difficult-to-machine materials like glass, ceramics, composites, etc. (Fig. 1). In AWJM, a small stream of fine abrasive particles is mixed with water and accelerated at high velocities through an orifice of pressures normally in excess of 130 MPa (Fig. 2) [1]. Material removal occurs due to erosion caused by the impact of abrasive particles on the work surface. The motion of the cutting head in AWJM is controlled by a CNC controller through a CAD model [2]. No heat affected zone, low machining force on the work surface and ability to machine wide range of materials have increase the use of AWJM over other machining processes. AWJM can be used in a variety of applications such as drilling, polishing, turning, paint removal, cleaning, milling, etc.
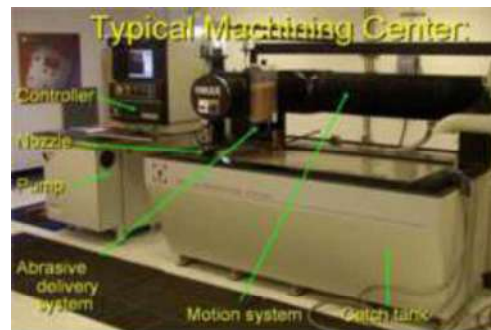

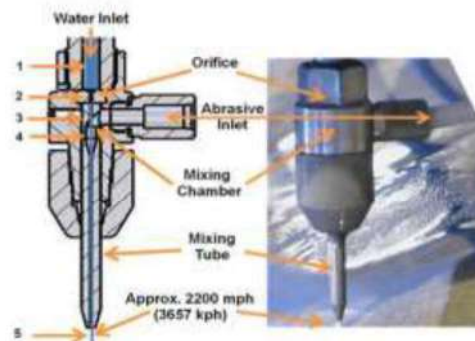**Fig 1**: Typical AWJM center (www.omax.com)

Fig 2: Schematic of the nozzle arrangement in AWJM (www.wardjet.com)

II. ABRASIVE WATER JET MILLING (AWJ MILLING)

AWJ milling uses a traditional AWJM system with high pressure water (typically upto 200 MPa) along with abrasive particles (usually garnet) to cut edges, slots, holes, pocket milling, etc. If the depth of cut is controlled during the milling process, then it is known as pocket milling. The process parameters in AWJPM are broadly classified into six categories namely (i) Hydraulic parameters: pump pressure, orifice diameter and water flow rate (ii) Mixing chamber and acceleration parameters: focus nozzle diameter and focus nozzle length (iii) Cutting parameters: traverse rate, stand-off distance and impact angle (iv) Abrasive parameters: abrasive flow rate, abrasive particles diameter, abrasive particle shape, abrasive and particle hardness (v) Work piece parameters: composition, material and hardness (vi) Milling parameters: nozzle path, number of passes and step-over size (Fig. 3). In abrasive water jet pocket milling (AWJPM), the water jet doesn't allow to pass all the way through the workpiece.

Research article

Experiential meaning as meaning making choice in article writing: A casestudy of female and male writers

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A R T I C L E I N F O

A B S T R A C T

Keywords:
Experiential meaning
Meaning-making choice
Research article
Writing

The selection of meaning in written communication holds significant importance, particularly in contexts where indirect contact is involved, necessitating specific strategies to achieve desired outcomes. This case study delves into how female and male writers employ their choice of meaning-making, specifically through experiential meaning, in the introduction sections of articles published in JEELL. The research examines articles authored by five female and five male writers, all with professional backgrounds in English teaching. Results indicate that both genders tend to utilize material processes to represent their real-world experiences, albeit with differences in technique. Male writers, for example, demonstrate a preference for verbal processes, particularly in citing or synthesizing sources. Moreover, the study suggests that male writers exhibit a wider range of mental processes compared to their female   counterparts.

A Review Paper of Models in Teaching of English as a Foreign Language

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Abstract: Reading skill is a text-oriented cognitive capability applied when interacting with the written text. It is an essential skill that affects language learning and even academic achievement. Despite research on language learning has focused and contributed to the expansion of English language reading research, EFL students and even teachers are often unaware of the reader-oriented strategies used in learning and teaching reading. Existence of this gap, however, does not justify the idea of having a sole model for reading across various genres and types of assignments as it seems unrealistic. Therefore, highlighting the key models in the area, this article critically reviews the previous studies conducted on reading strategies and reading comprehension skill and proposes a framework for exploring reading strategies in teaching and learning of English as a Foreign Language. This review may have some theoretical implications for the learners, instructors and researchers in learning, teaching, and conducting research on reading strategies.

Keywords: English Language, language learning, model, reading strategies.

Optimization method of flexible response capability of power system with limited cost constraint

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Abstract

The flexible response capability of power system varies greatly under different conditions, so the optimization method of flexible response capability of power system is designed based on the theory of finite cost constraint. The bidding function with the monthly quotation as the core is obtained, and the demand response inhibition factor is calculated by combining the single inhibition rate; Under the influence of the length waveform, the one-dimensional feature recognition vector is obtained, the feature point Credibility under different conditions is obtained, the objective function is designed with the minimum operating cost, and the power emergency demand response model is established based on the concept of limited cost constraint; The optimization algorithm of flexible response capability of power system is designed, and the optimization method of response capability is obtained. The experimental results show that the optimization method has a good effect on the flexible response capability of power system in different time periods.

Keywords: Limited cost constraint; power system simulation; responsiveness; optimization algorithm.

1. Introduction

In the context of the modern energy crisis, China is facing the situation of power shortage all the time, so using renewable energy to connect to the power grid has become an acceptable solution. The demand of users for power varies periodically in time. For example, within a day, the period of maximum power consumption is from 18:00 to 22:00, and the period of minimum power consumption is from 2:00to4:00inthemorning.Theperiodofresidential electricity consumption and renewable energy supply is not always within the same time period, so it is necessarytoprovidereliabledemandresponsestrategiesfornewtechnologiesofsmartgridthroughartificialmeans,soas to solve the problem of uneven resources on the user side. According to the response mechanism of the energy system, document [1] contributes a basic model based on cost and benefit allocation to the trading entity through

The comprehensive energy transaction architecture, and completes the process of economic cost allocation under the condition of power demand response, thus obtaining a reasonable response mechanism optimization method. Document [2] completed the power demand response management between the power company and the household power network under the algorithm of the multi-layer game model, fed back the optimal amount of electricity to the household users at each time, and obtained the equilibrium unique solution in the model, but the cost control effect was poor. Document [3] designed a user response characteristic analysis method based on automatic encoder and improved fuzzy mean clustering algorithm, established data extraction models under different power consumption modes, and completed the actual management of power grid data. Document [4] proposes a source load storage coordination optimization model with flexible electro thermal load response threshold with the goal of maximizing new energy consumption and minimizing system operation cost.

A Novel approach to Resolve Transportation Problem

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Abstract

Transportation problem one of the subclass of L PP. In this article , we describe a brief text assessment of transportation problem with mathematical models in balanced and unbalanced cases.Finding an initial basic feasible solution is the prime condition to obtain an optimal solution forthe transportation problems. In this paper, a new approach is present to find an initial basic feasible solution for the transportation problems. We solve this method by taking numerical example.

Keywords

Transportation Problem, Transportation Cost, Initial Basic Feasible Solution, Optimal Solution, Destination.

1. Introduction

Transportation problem is famous in operation research for its wide application in real life. This is a special kind of the network optimization problems in which goods are transported from a set of sources to a set of destinations subject to the supply and demand of the source and destination, respectively, such that the total cost of transportation is minimized. The basic transportation problem was originally developed by Hitchcock in 1941 [1]. Efficient methods for finding solution were developed, primarily by Dantzig in 1951 [2] and then by Charnes, Cooper and Henderson in 1953 [3]. Basically, the solution procedure for the transportation problem consists of the following phases:

- Phase 1: Mathematical formulation of the transportation problem.
- Phase 2: Finding an initial basic feasible solution.
- Phase 3: Optimize the initial basic feasible solution which is obtained in Phase 2.

In this paper, Phase 2 has been focused in order to obtain a better initial basic feasible solution for the transportation problems. This problem has been studied since long and is well known by Abdur Rashid *et al*. [4], Aminur Rahman Khan *et al*. [5]-[8], Hamdy A. T. [9], Kasana & Kumar [10], Kirca and Satir [11], M. Sharif Uddin *et al*. [12], Mathirajan, M. and Meenakshi [13], Md. Amirul Islam *et al*. [14] [15], Md. Ashraful Babu *et al*.

BEHAVIOR OF HIGH-PERFORMANCE F. R. C. COMPOSITE BEAMS IN FLEXURE

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In this study, the experimental investigation on the flexural test of bagasse ash blended high performance concrete (HPC) and influence of steel fibre (STF) and polypropylene fibre (PPF) are carried out. The flexural test was done for beam size of 150 mm x 200mm x 1800mm with two point loading system. The concrete was considered for M60 grade (P series) as recommended by P.C.Aitcin. The blend mix included both free STF (Q series) and PPF (R series), and furthermore the hybridization of STF and PPF (S series) at a total volume fraction of 1.0% by volume of concrete with 10% bagasse ash as a substitution of cement. Structural behavior of eleven bagasse ash blended high performance concrete beams reinforced with steel, polypropylene and hybrid fibres were examined. The behavior of each beam was assessed with respect to initial crack, ultimate load, ultimate deflection, flexural strength, ductility and toughness. The inclusion of fibres increased the failure load and ensured the ductile behavior of the beams. The results demonstrated that adding hybrid fibres enhanced the mechanical properties as well as the structural behavior of beams

Keywords: ash, high strength concrete, steel fibres, polypropylene fibres

1. Introduction

Materials with enhanced properties, specifically, strength, workability, toughness, ductility and durability are called as high-performance materials. In perspective of the performance criteria, an endeavor was made with Bagasse Ash (BA), a dynamic pozzolan due to its surface region with significant measure of silica and consideration of fibres[1,2]. Porosity of the concrete can be reduced by inclusion of bagasse ash in concrete, whereas it acts as micro filler in concrete [3]. At the point when fibres are added to the concrete, it turns out to be more ductile and upgrades the control against crack growth in longitudinal direction. Hybrid fibre-reinforced concretes, which are reinforced with two or more different types of carefully, selected fibres to provide superior properties [4].The workability of high performance fibre reinforced concrete composites decreases with increase in the fibre content. Addition of polypropylene fibres in concreteshows better workability than the steel fibres. Inclusion of 10% bagasse ash enhances the workability and strength properties of concrete, which acts as micro filler and increases the density of cement paste. The fibres are more effective in high performance concrete, due to the effective bond between the fibres and matrix of concrete. The hybrid fibre has an influential effect on the strength properties of high performance concrete. It demonstrates the better ductile performance compared to the plain concrete [5]. As cracks happen at different stages and sizes in concrete,the utilization of different fibres with different lengths is an effective method to solve this issue

[6]. In a well structured composite system, there is a beneficial interaction among the fibres, which brings about a superior performance of the hybrid system than that of the mono fibre composite. The main purpose of the combination of different types of fibres is to control cracks at different zones of the cementitious material, at various size levels and during different loading stages [7].The investigations on the behavior of light weight concrete beams with and without steel fibresreveals that the addition of about 30kg/m³ of hooked end steel fibre leads to an increase of about 20% of ultimate load, and ductility increases to about 65% [8].Incorporation of steel and polypropylene fibres enhanced the mechanical properties of high strength concrete. The addition of 1% steel fibre significantly enhances the splitting tensile strength and flexural strength of concrete. The hybrid mix contained 0.85% steel and 0.15% polypropylene fibre demonstrated better outcomes among hybridization.The final collapse load takes longer than plain concrete beams when steel and polypropylene fibres were included. In the meantime, more fibre content in concrete diminishes the deflection rate of total deflection [9].Fuse of steel fibres up to 1.5% volume fraction in high performance concrete results in significant improvement on indirect tensile strength [10].

The experimental work carried out in this study is on the behavior of reinforced beam under flexure. Based on the experimental results on eleven beam specimens, comparison of control beam specimen and 10% bagasse ash blended beam specimen (P series), steel (Q series) and polypropylene reinforced beam specimens(R series) and hybrid fibre reinforced concrete beam

Design of Superelevation of Highway Curves: An Overview and Distribution Methods

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Abstract

Superelevation is the banking of highway horizontal curves to assist the driver by counteracting the lateral acceleration produced by tracking the curve. Superelevation is expressed as a decimal, representing the ratio of the pavement slope to width, and ranging from 0.04 to 0.12. Proper superelevation allows a vehicle to safely turn at high speeds and will make riders comfortable. Centrifugal force is the outward pull on a vehicle traversing a horizontal curve.

As a vehicle traverses a horizontal curve, centrifugal force is counter-balanced by the vehicle weight component due to roadway superelevation and by the side friction between tires and surfacing. Excessive centrifugal force may cause considerable lateral movement of the turning vehicle and it may become very hard to stay inside the driving lane. Superelevation and side friction are the two factors that help stabilize a turning vehicle. Inadequate superelevation can cause vehicles to skid as they travel through a curve, resulting in a run-off-road crash. Trucks and other large vehicles with high centers of mass are more likely to roll over at curves with inadequate superelevation. There are practical limits to the rate of superelevation. High rates create steering problems for drivers traveling at lower speeds, particularly during ice or snow conditions. This paper presents an overview of the concept of highway superelevation, and AASHTO distribution methods that utilize both side friction and superelevation in the design of the highway horizontal alignments.

Keywords: Cant,, banking of highway curves, horizontal alignments, circular curves, spiral curves

Environment and Health Impact of Solid Waste Management in Developing Countries: A Review

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 Abstract

The subject of Solid Waste Management has attained global attention over recent years. This issue is observed to be more prominent in developing countries than in developed countries due to inadequate funds and resources. Solid waste generation, segregation practices, storage facilities, collection frequencies and disposal methods are evidenced to be unsustainable in developing countries. Uncontrolled dumping and open burning are common scenarios in these countries. Open dumping and burning of waste pose serious environmental and health risks. They have led to severe forms of air, water and soil pollution. Municipal Solid Waste pollution increases the mortality as well as morbidity of diseases. Thus, the present study reviews the environmental consequences and subsequent health jeopardies due to improper and inefficient Solid *Waste Management.* The study focuses more on environmental sustainability of Solid Waste Management than economic and social sustainability. Hence, a paradigm shift towards green and clean Solid Waste Management is vital as it safeguards the ecosystem while preserving a green economy and social equity amongst present and future generations.

Keywords: solidwaste; wastemanagement; environment; humanhealth

 Introduction

Municipal solid waste management (MSWM) is a prime issue worldwide.1 MSWM is associated with challenges of increasing generation rates, poor disposal methods and environmental consequences.2 These challenges are, however, more prominent in developing countries due to inadequate funds, obsolete technology and lack of institutional setups.3 There are various aspects of MSWM ranging from goals, practices, strategies, control, regulation and monitoring of the production, financial aspects to environmental impact assessment of policies and sustainable alternatives.4 These aspects should be integrated holistically to mitigate challenges arising from MSW, its management and processing treatments.

Sustainable development encompasses sustainable MSWM practices with reduced environmental emissions.5 Sustainable MSWM has been one of the chief environmental agendas in the 21st Century.6 It has become a precondition for mitigating global ecological challenges. The MSWM is said to improve the quality of the environment, which is a prerequisite for per capita well-being.7 In many countries, the development of waste plans and policies aiming at controlled dumping, improving disposal methods and

Feasibility study of using recycled fresh concrete waste as coarse aggregatesin concrete

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a b s t r a c t

In Hong Kong, a large amount of fresh concrete waste (FCW) is generated from ready mix concrete plants every day. Up to now, these wastes are usually delivered to landfills for disposal. The landfill areas in Hong Kong will be saturated in 6–8 years, as a result there is a need to develop a new technique for uti- lizing the FCW. In this study, FCW was crushed into coarse aggregate, and then it was used to replace nat- ural coarse granite at percentages of 0%, 15%, 30% and 50%, in producing new concrete mixes. The concrete were produced with water/cement ratios of 0.35 and 0.50. The effect of using the normal mixing approach and the two-stage mixing approach on the properties of concrete was also compared. The results indicated that the density, strength and static modulus of elasticity of new concrete were decreased with an increase in FCW content. Due to the lower density and higher water absorption of FCW, the water absorption, chloride ion permeability and dry shrinkage of the new concrete was increased with the increase in FCW content. Moreover, the two-stage mixing approach (TSMA) only improved the strength of the FCW concrete when the concrete was prepared with a lower water-to- cement of 0.35. The results demonstrated that the FCW can be used to replace natural aggregates for the production of non-structural concrete.

1. Introduction

In ready mixed concrete batching plants, fresh concrete waste (FCW) is generated by several processes; including from reclaiming of over-ordered concrete and cleaning of mixing equipment. It is known that about 8–10 tons fresh concrete waste can be produced every day from a concrete batching plant with a daily output of 1000 m^3 of concrete. As a result, about 3000 tons of FCW would be produced from one batching plant each year. The plant without a reclaiming system will produce even more waste.

As Hong Kong is subject to insufficient landfill space for waste disposal [1], recycling and reusing the FCW from concrete batching plants should be actively explored.

In the past two decades, research on the reuse and recycling of construction and demolition waste has been conducted extensively in many countries [2–9]. Furthermore, the construction industry of Hong Kong has acquired a lot of experience in reusing and recycling construction and demolition waste for new concrete and concrete blocks production [10–13]. However, very little information is available on the reuse the FCW.

So far, the only reported study on FCW was carried out by Correia et al. who conducted a factorial design experiment to

recycle FCW, as a replacement of natural fine aggregates, in new concrete, [14]. It was found that the fresh concrete workability worsened with the increase of FCW content, but the specified 28- day compressive strength (32–44 MPa) could still be achieved at with a replacement contents of <30 wt.% [14].

As regards the effect of mixing methods on the properties of recycled aggregate concrete, Otsuki et al. [15] suggested that a double mixing method was able to enhance the compressive strength of the concrete prepared with coarse recycled concrete aggregate (RCA) by improving the interfacial transition zone be- tween the RCA and the cement paste. Poon and Chan [16] found that the adverse effects (i.e. strength reduction) due to the use of fine recycled aggregates could be minimized by the deployment of the double mixing method, which can be easily implemented in pre-cast concrete production. Tam and Tam [17] reported that the additions of silica fume and the use of the two-stage mixing ap- proach can fill up the weak areas in the RA which helps to develop a stronger interfacial layer around the recycled aggregates, and hence a higher strength of the concrete.

This paper focuses on studying the feasibility of using FCW in the new concrete. The fresh concrete wastes were crushed to the particle sizes of coarse aggregates normally used for ready mixed concrete. The workability, compressive strength, tensile splitting strength, static modulus of elasticity, chloride ion penetrability and drying shrinkage of the new concrete were determined.

Impacts of Solid Waste Management Practices on Environment and Public Health: A Case Study Wadajir District in Benadir Region of Somalia

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A B S T R A C T

With urbanization being experienced in the word, there is significant rise in the amount of solid waste generated at the households' leading to insatiable consequence to the human health and the environment. There is now an acknowledgement on the impacts of poor solid waste management (SWM) practices on the natural and human environment. This work aimed to study the environmental and public health impacts of solid waste management taking a case study of Wadajir district specifically in the Benadir region of Somalia, investigating the sources, types and impacts of solid waste management practices, examine and assess the disposal options and their impacts on public health and the environment. The study collected data from a systematic random sample of 30 households selected from the study area using questionnaires. The research used both qualitative and quantitative methods for data analysis using SPSS version 25 on which various analytical operations were performed, including generation of percentages and descriptive statistics. It was found that the environment in the study area has been highly polluted with solid wastes from poor households handling practices. The solid waste generated in the household consisted of organic food materials (68.6%), plastics (28.6%) and polythene bags (2.9%). These resulted in health problems such as diseases (cholera, dysentery, typhoid, malaria and dengue fever) and environmental degradation. Burning and dumpsite were selected as the preferred methods of disposal because they are easy to use, convenient and cheap. With regard to waste collection, private firms and youth groups have been helping the community, collecting waste at least one and twice a week at an affordable fee. The study results support the test hypothesis that household waste type influences waste management practices. The study concluded that households and commercial organizations should have storage receptacles; demarcate land for use as dumpsites while engaging community participation in promoting waste management. The study recommended policies and by-laws relating to waste collection and disposal in the region, reducing waste management through waste management value chain and establishment of properly constructed landfill site at a suitable location in Benadir region.

K e y w o r d s -Solid waste management, Public health, Environment, Dumpsite, Incineration

Introduction Solid waste management and disposal has been a worldwide concern which most countries are battling with and trying to find best solutions of dealing with (Alkaateb and Yakubu, 2013; Laner et al., 2012). Waste is defined as unwanted remains, residues discarded and material or by products which are no longer required by the initial user. These materials are by-products of human activities such as process of preparation, manufacture, packing, repacking, unpacking, construction, renovation of structures and mining operations. Almost any substance that is discarded is designated as waste (Hoornweg et al., 2012). Rapidly growing populations, rapid economic growth and rise in community

Railway Transition Curves: A Review of the State-of-the-Art and Future Research

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Abstract:

Transition curves are a useful tool for lateral alignment of railway segments. Their design is important to ensure safe and comfortable travel for passengers and cargo. Well-designed transition curves can lead to reduced wear of tracks and vehicles, which is beneficial from a maintenance point of view. Extensive studies have been performed through decades to find transition curves that can replace existing railway segments for the purpose of enhancing certain properties. Those studies seek to form curves that satisfy desired evaluation criteria, which are often connected to geometric continuity between the curve segments, and vehicle dynamics, to secure a smooth ride.

This research topic is still ongoing and active at present. Recent results and findings are in line with the developments on the topic of vehicle dynamics and within the railway industry. For this reason, it is appropriate to collect and discuss the latest work, since there are no up-to-date detailed literature reviews available. This paper explores the present state-of-the-art of railway transition curves, and identifies some of the research challenges and future research opportunities in the field.

Keywords: Horizontal alignment; lateral change of acceleration (LCA); railway; state-of- the-art; transition curves

1. Introduction

Most railways are described in terms of piece-wise curves. The two main types of segments, namely, straight lines and circular arcs, are connected together via transition curves. The utilization of suitable transition curves is crucial in the processes of constructing new and refurbishing existing railways. This is, in particular, important to facilitate safe and comfortable train travel, and to reduce the need for maintenance [1,2].

The main purpose of a transition curve is to enable a smooth transition between straight and curved railway segments by preventing sudden jumps in lateral forces [3], which could be the case if two main segments were coupled directly together. The advent of high speed trains and the development in heavy haul railways have triggered new requirements for transition curves. One such requirement, identified in [4], is lateral change of acceleration (LCA). The LCA function combines curve properties and vehicle parameters, to give an evaluation criterion that includes both geometry and vehicle dynamics constraints, since both are important when analysing transition curves.

Exploring new transition curves for horizontal railway alignment with more favourable properties than the classical ones is an active area of research which is highly relevant and progressing. Although the main goal of replacing one or more railway segments in both new and existing tracks is coherent in most of the research, the methods and evaluation criteria differ. Some examples of contrasts include the cover of the new curve (replacing one [5] or several [6] original segments), the applied model (simple [5] or advanced [7] vehicle model) and the principles for evaluation (lateral forces [8],

Removal of Pb (II) Ions from Aqueous Solution and Industrial Wastewater using Activated Carbon Prepared from Flax Straw

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Abstract This study aimed to prepare AC from flax straw and investigate its potential for the removal of Pb (II) ions from aqueous solution and real industrial wastewater. AC was prepared by chemical activation method using H3 PO4 as activating agent. The effects of initial Pb (II) ion concentration, adsorbent dose, contact time and pH on the removal efficiency were studied by using aqueous solution prepared from Lead nitrate (Pb $(NO_3)_2$) on a batch mode. Response surface methodology was used in order to carry out experimental runs. The collected wastewater sample was characterized before and after treatment according to APHA methods. Activated carbon was characterized and results showed that the flax straw AC had 8.04% of moisture, 6.04% of ash, 18.615% of volatile matter, 79.421% of fixed carbon, 459.807 mg/g of iodine number and surface area of 489.455 m2 /g. Physico-chemical characteristics showed that raw wastewater had a concentration of 3.95 mg/L Pb (II), 158.52 mg/L BOD5, 2482 mg/L COD, and 652.667 mg/L TSS. The highest removal efficiencies of Pb (II) metal ion which was achieved from aqueous solution and paint wastewater were found to be 95.16% and 78.73%, respectively. The experimental data are fitted with pseudo-second order model and adsorption of Pb (II) on flax straw AC fits the model of Langmuir very well. The results of the study suggested that flax straw AC can be used as an adsorbent for the removal of Pb (II) ion from industrial wastewaters.

Keywords: Flax straw • Removal Pb (II) • Activated carbon • Optimum conditions

Introduction

Currently there is a rapid population growth and there is also a growing trend of industrial sector development. Continued population growth and rapid industrialization are found to be the cause of wastewater discharge into the environment, affecting the environment, human health and the life of future generations. The liquid waste discharged from industries contains heavy metals like Pb, Cd, Cr, Cu, Ni and Zn toxic to living organisms [1]. Among these toxic metals; Lead is a potent poison and is harmful in even very small amount to humans and other living organisms because of its known toxicity [2]. Therefore, industries have to use treatment technologies in order to remove this toxic metal from wastewater. A number of advanced technologies like precipitation, ion exchange, coagulation and electro dialysis can be used to remove heavy metals from industrial effluent [3]. But; it is difficult to use some of these advanced technologies in all level of developing countries for industries to deal with heavy toxic industrial wastewater. In addition to this, these modern technologies have numerous drawbacks such as incomplete metal ion removal, high energy and reagent costs, and toxic sludge [4]. Therefore, the use of various adsorbents like activated carbon is of great interest due to environmental concerns. Adsorption technique using activated carbon look to be more attractive due to its simplicity, ease of use, high efficiency, and being economical in the removal of heavy metals from wastewater [5-7]. Despite the fact that activated carbon has numerous applications in various industries, the main

Seismic Performance Assessment ofMultiblock Tower Structures as Gravity Energy Storage Systems

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ABSTRACT

This paper presents the main findings of a seismic performance assessment for muti-block tower structures designed to store renewable energy. To perform our assessment, we deployed in tandem physical and numerical models that were developed using appropriate scaling for Newtonian systems that interact via frictional contact. The approach is novel, breaking away from continuum structures where Cauchy scaling and continuum mechanics are used to model such systems. We show that our discontinuous approach is predictive and consistent. We demonstrate predictiveness by showing that the numerical models can reproduce with high fidelity the physical models deployed across two different scales. Consistency is demonstrated by showing that our models can be seamlessly compared across scales and without regard for whether the model is physical or numerical. The integrated theoretical-numerical-experimental approach provides a robust framework to study multiblock tower structures and the results of our seismic performance assessments are promising. These findings may open the door for new analysis tools in structural mechanics, particularly those applied to gravity energy storage systems.

1 INTRODUCTION

The world population is expected to reach 10 billion by 2050, necessitating a corresponding increase of 200%in energy output (UN 2019). At the same time, the US and other nations have goals to reduce CO_2 levels by 80%by 2050 (Markolf et al. 2020). To achieve these massive goals, green energies, such as solar and wind, are being aggressively pursued to increase the amount of energy available without the negative impact of CO_2 production. The intermittent nature of solar and wind power production, peaks in demand, as well as the need for resilient infrastructure have created the need for large scale energy storage (Loveless 2012). As of 2019, the US produced
4×10^9 MWh of electricity with only 431 MWh of energy storage available; a seven order of magnitude gap (EIA 2020; Zablocki 2019). It is estimated that the US will require 266 GW of storage for the electric grid by 2030, up from 176.5 GW in 2017 (IEA 2017). This number is expected to increase to 942 GW by 2040, requiring an investment in energy storage of $620 billion over the next two decades (Henze 2018).

Today, electricity storage is dominated by pumped storage hydropower (PSH), furnishing 95% of the large-scale storage (EERE 2021). One of the appeals of PSH is simplicity: the idea of using gravity to store energy in an uphillwater reservoir when energy is produced and then release it to a downstream reservoir, converting potential energy into kinetic energy in the process. On the other hand, PSH is limited by topography: there are only so many places on earth where upstream-downstream reservoir systems can be built. There is clearly a need to find alternative energy storage systems that share the simplicity of PSH but avoid its limitations. One potentially revolutionary gravity-driven system is being introduced by Energy Vault (EV), Inc. Figure 1 shows EV's energy storage concept, which has been recently proposed and is currently being demonstrated in Switzerland. The proposed idea is to deploy relatively tall prototype (height, l^P 160 m) multiblock tower structures (MTS) that are connected to renewable energy sources (e.g., solar, wind), and then use discrete blocks to store energy in the form of potential energy by lifting the blocks to accrue energy, just like in PSH. Thousands of blocks can be stacked up, as shown in Figure 1b, each block storing packets of energy that can then be consumed when needed.

The simplicity and promise of the MTS is remarkable, allowing up to 35 MWh of storage per tower anywherein the world. The blocks are manufactured using a soil-cement mixture plus other materials from construc- tion/demolition debris and have a prescribed weight. From a structural mechanics perspective, the novel MTS concept introduces interesting questions that need to be explored: How can we model such discontinuous structures both physically and numerically? What are the governing scaling laws that can be used to appropriately design and deploy physical models across different scales? Particularly relevant is the structural seismic performance ofMTS. In this paper, we take a first step at answering these questions by presenting the results of a year-long campaign to assess the seismic performance of MTS. We deployed numerical and physical models in tandem, all against the backdrop of newly-derived scaling laws to achieve not only accurate modeling but also consistency. Here, we define consistency as the ability to compare physical and virtual models across scales and material prop-erties.. At the same time, proper scaling for frictional, multiblock, gravity-driven systems was necessary in order to design experiments that are representative of the prototype, useful for validation, and can be consistentlycompared.

Solid waste generation prediction model framework using socioeconomic and demographic factors with real-time MSW collection data

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Abstract

This article proposes a framework for developing predictive models of end-of-life product flows, highlighting the importance of conducting thorough analyses before developing waste management and end-of-life product flow strategies. The framework emphasizes the importance of recognizing the nature and quality of the available data and finding a balance between model development time and detail requirements. It is designed to adapt to source material heterogeneity and address varying data availability scenarios, such as the presence or absence of radio frequency identification chips. A case study for the city of Gatineau is presented, showcasing the framework's application through agent-based simulation models in a geographic information systems environment. The study focuses on creating models of municipal solid waste generation based on socioeconomic and demographic factors and collection data to accurately predict the quantity and quality of waste streams, enabling municipalities to assess the environmental impact of their waste management strategies.

Keywords

Municipal solid waste, agent-based simulation models, waste prediction, GIS environment, household behaviours, end-of-life product flows, socioeconomic and demographic factors

Introduction

In the context of a circular economy, waste management is gaining new importance regarding resources to be exploited sustainably. Collectively Canadian households send 10 million tonnes of waste annually to landfills, or about 460 kg per person per year (Statistique Canada, 2019). Although landfilling has long been the only way to dispose of residual materials, municipalities now face a challenge in adhering to the 3R-RD hierarchy through their solid waste management system, that is, Reduce, Reuse, Recycle, Reclaim and, if not possible, Dispose of these materials.

The amount and composition of solid waste generated must be known in order to operate, plan and optimize a solid waste management system more efficiently. The heterogeneity in quantity and quality of the material flows generated complicates its treatment and hinders its recovery (Sharma et al., 2019). Furthermore, many factors, such as demographics, incomes and individual behaviours, affect municipal solid waste (MSW) generation (Ceylan, 2020). Several recent studies have argued that a management system analysis should include both environmental as well as financial and social elements (Weng and Fujiwara, 2011), thereby fully adhering to sustainability objectives.

Solid Waste Management (SWM) and Its Effect on Environment & Human Health

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Abstract: Solidwastehasbecomeatenaciousissueworldwide.Ithasbeenincreasingexponentiallydueto urbanizationandtheincreaseinthepopulation.Sincethetwentieth-centurytechnologicalrevolution,therehavebeensignificantchangesinthecompositionofsolidwaste.Itp osessignificantchallengesforwastemanagementsystemsworldwide.Wastemanagementistheprocess ofhandlingwasterightfromitscreationtoitsfinaldisposal,includingtransport,collection,treatment,and monitoring.Thepresentsolidwastemanagement(SWM)systemisaffectedbyunfavorableinstitutional, economic,technical,legislative,andoperationalconstraints.Poorwastemanagementisaffectingecosyst emsandhumanhealth,damagingourfinitenaturalresources,impedinghumaneconomicprogress,andh armingpeople'squalityoflife.Now,researchersareconcernedabouttheenvironment'sdegradation,adec lineinqualityoflife,andrisksrelatedtowastemanagementgrowasthevolumeofsolidwaste.So,theyarefo cusingonsustainablewastemanagementpracticeswhichwillbecrucialforcreatingacleanerandhealthie renvironmentforfuturegenerations.Thischapterfocusesontheconceptofsolidwaste,itstypes,manage ment,anditseffectonthehealthofhumansandtheenvironment.

Keywords: solid waste; waste management; environment; human health

1. Introduction

Anysubstanceormaterialthatisnolongerwantedorneededanddiscardedisreferredtoaswaste.Wast eisoriginatedfromhousehold,industrial,andagriculturalactivities.Itmaycontainthingslikepackingmat erials,leftoverfood,chemicals,sewage,anddangeroussubstances.Itcanexistasasolid,liquid,orgas.Solid wastereferstoanydiscardedmaterialsthatarenotliquidorgas.Itincludessemi-solidorsolidhouseholdwaste,commercialwaste,sanitarywaste,constructionwaste,demolitionwaste,in stitutionalwaste,industrialwaste,marketandcateringwaste,andagriculturalwaste.Solidwastecanbefur thercategorizedintoorganicwasteandinorganicwaste(Arafatetal.2015).Organicwasteincludestextiles, plastics,paper,wood,andfoodwasteswhileinorganicwastesincludemetalsandglass.

Wasteisaverypreciousresourcethatiskeptinthewrongplaces(Wuetal.2022).Wasteisaninescapable by-productofhumanculturalanddevelopmentalactivity.Wastegenerationisdependentontheresident infrastructure,andlifestyle.Ithasbeenrecognizedthatanarea'sgarbagecreationisrelatedtotheaverageinc omeofitsresidents.Ithasalsobeenfoundthatmorewastegeneratesinhigh-incomecommunities.Thegenerationofgarbageandincomelevelaretypicallypositivelycorrelated.Thea mountofwasteproducedisdirectlycorrelatedwithresourceuse.

Agricultural Improvement and Land-Use Change in India: Scenario Analysis of Trade-Offs Between UN Sustainable Development Goals (SDGs)

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Abstract

India has the second largest population in the world and is characterized by a broad diversity in climate, topography, flora, fauna, land-use, and socioeconomic conditions. To help ensure food security in the future, agricultural systems will have to respond to global change drivers such as population growth, changing dietary habits, and climate change. However, alterations of how food is produced in the future may conflict with other UN Sustainable Development Goals (SDGs), such as the protection of land resources and climate change mitigation. It is crucial for decision-makers to understand potential trade-offs between these goals to find a balance of human needs and environmental impacts. In this paper, we analyze pathways of agricultural productivity, land-use, and land-cover changes in India until 2030 and their impacts on terrestrial biodiversity and carbon storage. The results show that in order to meet future food production demands, agricultural lands are likely to expand and existing farmlands need to be intensified. However, both processes will result in biodiversity losses. At the same time, the projections reveal carbon stock increases due to intensification processes and decreases due to conversions of natural land into agriculture. On balance, we find that carbon stocks increase with the scenarios of future agricultural productivity as modeled here. In conclusion, we regard further agricultural intensification as a crucial element to help ensure food security and to slow down the expansion of cropland and pasture. At the same time, policies are required to implement this intensification in a way that minimizes biodiversity losses.

1. Introduction

By area, India is the world's seventh largest country along with a population of about 1.3 billion people in 2015 (FAO, 2017a; UN-Pop, 2017). India is characterized by an immense diversity in climate, topography, flora, fauna, land-use, and socioeconomic conditions (FAO, 2017b). During the past 140 years, India has experienced remarkable land-use and land-cover changes (LULCC) including deforestation, cropland changes, and urban expansion (Roy et al., 2015; Tian et al., 2014). Over half of the territory is used as cropland, making India one of the largest producing countries of agricultural commodities worldwide (FAO, 2017a Teluguntla et al., 2015). In 2016, the agricultural sector comprised 23% of the total economy, as measured by the Gross Domestic Product (GDP) and employed around 59% of the country's total labor force (FAO, 2017b). Two-thirds of the Indian population lives in rural areas (World Bank, 2016) and, with a relatively high poverty rate, is home to one of the largest populations (175.7 million) living below the World Bank's poverty line of $1.90 a day (World Bank, 2018).

India has experienced notable increases in agricultural productivity over the last decades (Chand & Parappurathu, 2012; Pingali, 2012; FAO, 2011). Nevertheless, there are still significant yield gaps for many crops across the countryside (Sharma, 2016; Brahmanand et al., 2013). The existence of yield gaps can be explained by many confounding factors, such as the prevalence of subsistence farming and poor access to chemical inputs, improved technology, and management techniques (Bhattacharyya et al., 2015; George, 2014; ICAR, 2015). India's food production needs to be increased substantially in the coming decades due to an expected population growth up to more than 1.6 billion in 2050 (UN-Pop, 2017) along with changing dietary preferences like a higher demand for animal-sourced products

Data Encryption: A Public Key Approach

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Abstract

These days, a wide range of diversified applications, such as e-payments in secure commerce and payment apps that safeguard passwords to offer security for communications and transactions, are available. One essential tool for safeguarding sensitive data is encryption. Encryption is used for privacy purposes in order to prevent disclosure or confidentiality during communications. In order to generate a signature key that is added to encrypted data prior to transmission and decryption operations, we used our proposed method—which is based on the Euler's Totient theorem—to generate a set of numbers that encrypt the data stream. At the receiving site, the signature can then be verified.

Keywords:

Random prime, Private Key, Public Key and Euler's Totient

1. INTRODUCTION

Overview of Public Key Cryptography:
 Information security is a field of research which aims at defending information from malicious attackers as still allow legal users to manipulate data to all comers. It uses two keys, one is called Private Key and another one is called a Public key. The public key encrypt the message and sent to the recipient for decryption of the message using the private key.
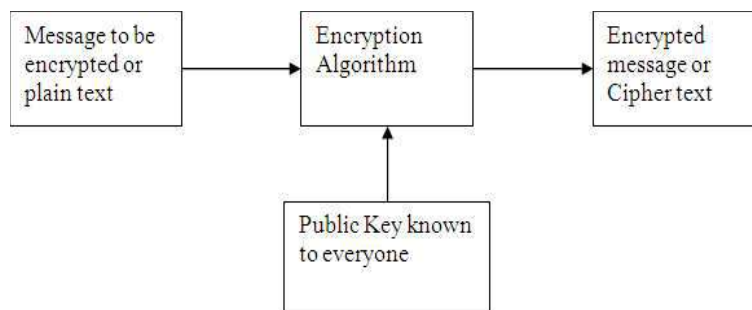

Fig.1: The encryption process

A Study of Online Shopping System Modeling using UML Diagrams

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Abstract

In the realm of software development, before creating or accessing a system, it is crucial to have a clear understanding of how to access it, especially in the context of modeling online business systems. Modeling systems using UML diagrams can simplify customer access and aid system makers in creating efficient systems. The paper also discusses business models and common e-business models in practice.

Keywords

UML, Use case, Activity diagram, class diagram

1. Introduction

In the days of today they are increasingly developing new models of e-business in order to advance and business growth of enterprise. Understanding the new business models and their designing are important research issues that are not so well studied so far. Of course every manager and entrepreneur has an intuitive sense of how his business works, the logic that creates value, in other words the company's business model. But although this business model affects all important decisions of the enterprise, in many cases, managers and entrepreneurs are not able to communicate in a clear and simple way. And how can you decide on a particular issue or change it, if it is not clearly understood by the parties involved? For this reason it would be useful to think of different software tools that will enable business people to understand what's their business model and the essential elements of which it is composed [1]. What in fact is a business model it has various opinions and definitions. Next we present some of them. As explained by Petrovic in [2], a business model describes the logic of a "business system" for creating value, lying behind current processes. According to Rappa [3], a business model predicts how a company earns money by specifying where it is positioned in the value chain. His taxonomy consists of the nine forms of e-business models, which classifies companies in the midst of the nature of their proposal to their values or way of generating revenue (e.g. advertising, subscription or services model). Perhaps best known scheme of classification and definition of e-business models is that of Timmers [4]. According to him, a business model is an architecture for product, service and flow of information, a description of the different actors of the business and their roles, as well as a description of the potential benefits of these actors and finally a description of revenue sources

2. MODELING OF AN ELECTRONIC SYSTEM FOR ONLINE BUSINESS

Modeling a system can be made in different ways, depending on the nature of the system that is created. This paper will try to make modeling for online system using UML diagrams, which are standard diagrams accepted around the world for modeling different systems (software). Starting from the simplest diagram which is Use Case diagram to the most complex, we will make graphical representation of all the diagrams in terms of accessing online systems.

A. Use case diagram

Use case diagrams commonly referred to as behavioral diagrams that describe a set of actions (use Cases) that some systems can or should do in cooperation with one or more external users of the system (actors). Each use case must provide an observable result and valuable for actors or other stakeholders of the system. Use case diagram consists of 4 items: Actor – in the use case diagram is an entity that performs a role in a given system. This can be a person, organization or an external system. A use case- is a feature or an action within the system. System- used to define the field of use case and drawn in the form of a rectangle. This is an optional but useful element when dealing with

A new Technique on the Size of an E-commerce Business Model using Function Points Metric

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Abstract

In today's software development process many unique and complex new software is being developed. To assess the size of the software requires a unique and specialized approach. So complex software like E-Commerce also required a new focused size estimation technique. ECSSIZE: E-Commerce System Size technique is a new method for estimating the size of complex software, such as E-Commerce, using Function Points (FP) metric, which is increasingly used in the software industry.

Keywords:

ECSSIZE (E-Commerce System Size), UBFP (User Based Function Points), E-Commerce (Electronic Commerce).

INTRODUCTION

Software Engineering is an experimental and logical technique for developing any software project. Size estimation of the software product is one of the concepts of Software Engineering. Line of Code (LOC), Constructive Cost Model (COCOMO), Agile (Story Points) and Function Points (FP) are the leading techniques for estimating the size of the software. From the size, we can easily calculate the cost and price of the software product.

Function Points :

Function Point method is independent of the language, tools, or methodologies used for implementation; i.e., they do not take into consideration of programming languages, database management systems, processing hardware, any other database technology or any platform. Function points can be expectable from requirement specifications or design specifications, thus creating it possible to guess development effort in premature phases of development. Function points are directly linked to the statement of requirements; any alter of requirements can simply be followed by a re-estimate. Function points are

 founded on the system user's external opinion of the system; non-technical users of the software system have a greater understanding of what function points are computing.
Limitations of Function Point [1-4] :
a) The correctness in function point calculation is very difficult for modern software like E-Commerce system. As on International Function Point Users Group (IFPUG) study, defects per function point are 4.5.

b) Complex algorithms and heavy calculations that are part of a transaction's processing logic are not separately considered as part of the functional sizing.

c) Functionality enabled/disabled through 'application configuration' type of work does not fetch additional size.

d) FP only considers interactions between the (external) user and the application. Interactions between various internal parts of the application are not considered by the FP model.

e) Repositioning of User Interface (UI) elements without adding/deleting/modifying any of them is not included in the sizing process.

Emotion Recognition Using Aspect-Based Gated Convolutional Networks

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Abstract

As aspect-based sentiment analysis (ABSA) seeks to anticipate the sentiment polarities of the specified features or entities in text, it can yield more detailed information aspects or entities in text. We summarize previous approaches into two subtasks: aspect-category sentiment analysis (ACSA) and aspect-term sentiment analysis (ATSA). Most previous approaches employ long short-term memory and attention mechanisms to predict the sentiment polarity of the concerned targets, which are often complicated and need more training time. We propose a model based on convolutional neural networks and gating mechanisms, which is more accurate and efficient. First, the novel Gated Tanh-ReLU Units can selectively output the sentiment features according to the given aspect or entity. The architecture is much simpler than attention layer used in the existing models. Second, the computations of our model could be easily parallelized during training, because convolutional layers do not have time dependency as in LSTM layers, and gating units also work independently. The experiments on SemEval datasets demonstrate the efficiency and effectiveness of our models. These mechanisms are frequently complex and require additional training time.

1 Introduction

Opinion mining and sentiment analysis (Pang and Lee, 2008) on user-generated reviews can provide valuable information for providers and consumers. Instead of predicting the overall sen-

timent polarity, fine-grained aspect based sentiment analysis (ABSA) (Liu and Zhang, 2012) is proposed to better understand reviews than traditional sentiment analysis. Specifically, we are interested in the sentiment polarity of aspect categories or target entities in the text. Sometimes, it is coupled with aspect term extractions (Xue et al., 2017). A number of models have been developed for ABSA, but there are two different subtasks, namely aspect-category sentiment analysis (ACSA) and aspect-term sentiment analysis (ATSA). The goal of ACSA is to predict the sentiment polarity with regard to the given aspect, which is one of a few predefined categories. On the other hand, the goal of ATSA is to identify the sentiment polarity concerning the target entities that appear in the text instead, which could be a multi-word phrase or a single word. The number of distinct words contributing to aspect terms could be more than a thousand. For example, in the sentence "*Average to good Thai food, but terrible delivery.*", ATSA would ask the sentiment polarity towards the entity *Thai food*; while ACSA would ask the sentiment polarity toward the aspect *service*, even though the word *service* does not appear in the sentence.

Many existing models use LSTM layers (Hochreiter and Schmidhuber, 1997) to distill sentiment information from embedding vectors, and apply attention mechanisms (Bahdanau et al., 2014) to enforce models to focus on the text spans related to the given aspect/entity. Such models include Attention-based LSTM with Aspect Embedding (ATAE-LSTM) (Wang et al., 2016b) for ACSA; Target-Dependent Sentiment Classification (TD-LSTM) (Tang et al., 2016a), Gated Neural Networks (Zhang et al., 2016) and Recurrent Attention Memory Network (RAM) (Chen et al., 2017) for ATSA. Attention mechanisms has been successfully used in many

Use of supervised machine learning algorithm in Diabetic retinopathy classification

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Abstract

Artificial intelligence provides unparalleled analytic accuracy, transmission capacity, risks stratification, and work flow optimization. Diabetic retinopathy is an important cause o of preventable blindness worldwide ,and artificial intelligence technology provides precocious diagnosis ,monitoring ,and guide treatment. High-quality exams are fundamental in supervised artificial intelligence algorithms.

In this article ,ETDRS ,NHS, ICDR, SDGS diabetic retinopathy grading ,and manual annotation are described and compared in publicly available data sets. The various DR labeling systems generates fundamental problem for AI datasets.

Keywords: Diabetic retinopathy classifications, Artificial intelligence, Datasets

Background

Computersexecutingautomatedfunctionswerefirstdescribed in 1950, with the first publication in 1943.Since then, Artificial Intelligence capacity has evolvedinto deep learning and neural networks, technologiesthat could simulate interconnected neurons and provide output softer multiple information layers[1,2].

Automated technology provides unprecedented diagnostic accuracy, screening capacity, risk stratification, and workflow optimization with accuracy equivalent to healthcare professionals [3] and more cost-effective dis-easesscreening[4].

In Machine Learning, supervised learning is the most applied method in disease screening and classification algorithms, corroborating the importance of data labeling quality[5,6].

Diabetic retinopathy (DR) is the leading cause of preventable blindness in working-age adults worldwide[7, 8], responsible for more than 24,000 annual cases ofblindness [9] and the main focus in Ophthalmological AIscreening algorithms [10]. There is an increased blind-ness risk in patients with chronic diabetes mellitus, especially those with poor clinical control[11].

Telemedicine and automated screening programs coulddiagnose, monitor, and guide treatment. Precocious diag-nosisandtherapycouldavoidseverevisionlossin90%of cases, but only 60% of diabetic patients have recommended yearly examinations[12].

There are many Diabetic Retinopathy classificationsapplied in distinct countries and screening programs ,with the International Council of Ophthalmology Diabetic Retinopathy(ICDR) classification as the most applied in open-access ophthalmological datasets[13].

Methods and applications of Soft Computing

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Abstract: People in this highly integrated age require a tool that may be used to address issues that are emerging in several industries. Soft computing is an emerging computing paradigm that will become more prevalent in the next years. The flexibility to model the problem within specified limitations is provided by soft computing. It is beneficial to identify rapid fixes for issues that crop up across multiple disciplines. There are a lot of ambiguous and imprecise things in life. Based on traditional set theory, probability theory has long been a useful tool for mathematicians to cope with such uncertainties. A membership function is defined as a function that characterizes the membership grades of entries within a fuzzy set. A sophisticated network of neurons is called a neural network. The intricate arrangement of neurons makes up a neural network. Processing and storing of the information are the responsibility of neurons. The firing rule constitutes a fundamental idea in artificial neural network theory. The neuron's activation in response to a certain input pattern is determined by a firing rule.

Keywords: ANN, Fuzzy Logic, SRMP

Introduction

The real-life environmental problems are very complex and highly dependent on several process configurations, different influent characteristics, and various operational conditions. For a sustainable control of environmental-related problems, the proposed systems must be continuously monitored and properly controlled due to possible instabilities in circumstance conditions. Although statistical models may be able to establish a relationship between the input and the output variables without detailing the causes and effects in the formation of pollutants, they are not capable of capturing the inherent nonlinear nature of the environmental problems. For this reason, the complicated inter-relationships among a number of system factors in the process may be explicated through a number of attempts in developing representative and powerful prediction models allowing the investigation of the key variables in greater detail.

At this point, soft computing-based control of real-time process variables may provide several potential advantages, such as protection of the system from possible risks associated with significant fluctuations in influent characteristics, optimization of the process at a reasonable cost, providing a rapid evaluation and estimation of pollutant loads and emissions on energetic basis, and also development of a continuous early-warning strategy without requiring a complex formulation and laborious parameter estimation procedures (Yetilmezsoy et al. 2011a, b, 2015). The principal soft computing technologies can be categorized as fuzzy algorithms, neural networks, supporting vector machines, evolutionary communication, machine learning, and probabilistic reasoning (Jang and Topal 2014). McCulloch and Pitts (1943) introduced an initial model of an artificial neural network (ANN), which was recognized as the first study of artificial intelligence. It has been widely accepted as an approach, which acts like a "black- box" model derived from a simplified concept of the human brain, for prediction, control systems, classification, optimization, and decision-making in various fields (Antwi et al. 2017).

In 1965, fuzzy logic (FL) theory was proposed by Zadeh (1965) as a new soft computing methodology in order to address uncertainty and subjectivity (i.e., human experience and intuition)

APPLICATION OF IDMA IN WIRELESS COMUNICATION

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Abstract: - **This paper provides a review on the IDMA (Interleave Division Multiple Access) technology in wireless communication system based on Interleaver. In this paper, IDMA technique is proposed in AWGN channel. IDMA is a multi- user scheme in which chip Interleavers are the only means of user separation. The IDMA performance in terms of bit error rate, error rate is discussed. Here comparison with different sources is done on the basis of error rate and various different parameters.**

Keywords: - **Additive White Gaussian Noise (AWGN), Interleave Division Multiple Access (IDMA), PSK, Gold sequence generator, Kasami sequence generator.**

I. INTRODUCTION

From last several years, the broadband communication service in wireless grows rapidly. It gains extensive popularity in all over the world. Due to various parameters in wireless communication systems, it also performs many personal or organizational requirements. It include mobility and cost effectiveness that need the transmission of high rate data are highly reliable in order to fulfill the increasing services applications such as high quality audio recording , messaging services, and video chatting in next generation mobile system that is 4G generation. Existing wireless technologies reliably cannot support high rates of data, because of these technology fading become very sensitive. For broadband wireless networks, the various multiple access technique (MA) has been proposed to support multi- service transmissions over the shared wireless link. In wireless communication system, the multiple access technique is one of the most efficient methods, particularly used in cellular network by mobile phone communication system. In recent that is many years back, the availability in wireless networks can be exceeded by the use of bandwidth. It has been studied that, various techniques are used to make the efficiency of bandwidth utilization; is better more users can be allotted in the cell. So that it can provide sufficient space within each cell. Previously existed multi- access techniques like FDMA, TDMA and CDMA are used in 1G/2G/3G systems are suitable for voice communication only but it is not suitable for burst data traffic and high data rate transmission which would be the

dominant part in 4G system for traffic load. For high mobility, the data rate is up to 100 Mega bits per second (Mbps) and for low mobility the data rate is up to 1 Giga bits per sec (Gbps). But the 3rd generation systems allows the data rate of nearly 3.6 to 7.2 Mbps. usually if the systems fulfill all these requirements then it can be considered as fourth generation (4G) systems. There are different types of multiple approaching techniques which are proposed for 4G systems follows CDMA, MC- CDMA, OFDMA and IDMA. In code division multiple access, every user assigned a single coded sequence and it is used to encode the significance of information signal. The receiver knows the sequence of the user code. After reception, it converts or decodes the received

signal and retrieves the sequence of data. Hence the spectrum of the coded sequence is selected to be larger than the information signal. In Multi-carrier CDMA, it is also a multiple access technique which is used in orthogonal frequency division multiplexing based telecommunication system. It permits the system to hold multiple-users at identical time. Multicarrier CDMA system is highly complex in receiver and exceedingly necessary for changing the spreaded code at high data rates in transmitter which build the system inefficient. One of the most multi-carrier techniques that are used in modulation system that transmits the signal through multiple carriers is nothing but orthogonal frequency division multiplexing (OFDM). These sub carriers are orthogonal to each other and they have different frequencies. On the other side, the orthogonal frequency division multiplexing is quickly detect or response the slight changes in carrier or offset frequency and phase noise than compared to single carrier systems. OFDM subcarriers result in the appearance of inter-carrier interference (ICI) and common phase error (CPE) due to loss of orthogonality in OFDM. To maintain the condition of orthogonality and to eliminate the loss of collision between the Interleavers in the channel. In OFDM, the cyclic prefix needs to be greater than the time delay increases in the channel.

A basic fundamental of Interleave division multiple access i.e. IDMA is differentiated by two users in Interleaver. A multi-user technique in which chip Interleaved are only means of separating the users that is nothing but IDMA. The iterative multi-user detection is done by receiver in chip-by-chip form. In this work, by combining the OFDM and IDMA, we propose a new method referred as a multi- user system in the mobile radio environment.

All users can transmit their information in same time at same frequency band in OFDM and IDMA method. By using Interleaving technique, the orthogonality can be obtained between the users. The choice of good Interleaver must demonstrate that the inter leavers are weekly correlated, do not require large memory or large bandwidth to communicate between transmitter and receiver and easy to generate.

II. IDMA MECHANISM

Application Of Machine Learning Technique In Image Processing

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Abstract - There are usually two reasons why Human beings process or conduct computations on pictures:-
1) In-order to highlight or bring out certain features in an image or 2) To process the image in a manner where a machine is able to read and pick up patterns for learning. An image is an electronic representation to a real world object. It can typically either be a bitmap image which is an image

certain intensity. Club several such dots of varying intensities together and you have a picture ready. In contrast, vector images are constructed from lines and curves which can be used to construct scalable geometric images. Besides these two types, images can be further classified into different types based on their characteristics such as grayscale images, 2D or 3D images, bit depths classified based on no. of pixels such as 8 bits, 16 bits, 32 bits etc. Reiterating intentions of processing images, each of these image formats would have different applications depending on their characteristics. This paper will discuss the different pre-processing techniques that an image is subject to before it can be used further.

***Key Words*: Image processing, image pre-processing algorithms, image segmentation, image contrast, transformations, edge detection**

1.INTRODUCTION

Following are the steps we follow for imageProcessing:-

1. Image Acquisition- It is done through many mediums such as cameras, live videos, phone cameras or other sources such as the internet: blogs, social media, websites, image libraries etc. In this stage, image obtained is raw or in case of the internet there may some processing already done.

**2. Image Pre-processing-** The stage we will focus on the

It could be to reduce noise, or normalize the data, changing the depth ratio. Mainly it is to do some process, which will make the subsequent processes simpler.

3. Data Reduction- Ideally means compression techniques. Post performing computations on an image, its image size usually increases. An image is compressed so that it occupies limited bandwidth or memory space.

4.Image Segmentation- It partitions an image in fundamentals such as edges, contours, shapes etc.

5.Object Recognition
on the descriptions gathered about the image. Eg- Car, Dog etc. Description could be boundary or regional representations. Boundary refers to external or corner shape and styled characteristics and regional refers to internal characteristics.

Fig. 1. Steps in Image Processing
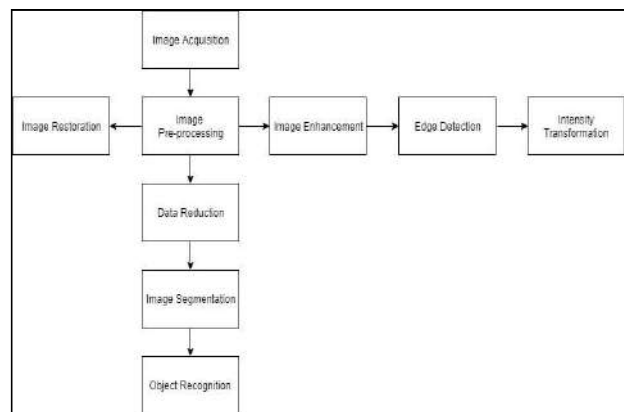
2. PRESENTING THE IDEA

Though any technique can be used in pre-processing stage depending on how you want to edit the image, certain operations typically done in this step include intensity transformation, improvement of image data by enhancing or distorting certain features in the image, geometric transformations such as rotation, scaling, translation etc.

seem left out.

1.Image Restoration
the quality of the image from problems such as blurring, noise, unfocused image etc. It can be called a type of image enhancement but where Image Enhancement is more subjective, Restoration techniques are usually more objective. We can use certain filters which can help to restore an image using signal to noise ratios.

Weiner Filter- Is an inverse filter. Uses liner technique and does restoration for deconvolution, where an image is blurred by a lowpass filter. This filter is sensitive to additive noise. It tries to balance both blurring as well as noise.

Area and Power Efficient Multipliers for Image Processing

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Abstract- **Inexact or approximate computing can decrease the complexity of the design, thereby increasing its performance and power efficiency for error-tolerant applications. This brief deals with a new outline approach for inexact multipliers. The partial products results obtain for the multiplier are altered for producing varying probable terms. The logic complexity for inexact computing depends on the probability for the accumulation of altered partial products. The proposed inexact multiplier is utilized in two variations of 16-bit multipliers. They consume less power and area when compared to existing inexact multipliers. The performance of the proposed multipliers is estimated using image processing application, where it achieves the highest peak signal to noise ratio.**

Index Terms— **inexact computing, error tolerant analysis, low power.**

I. INTRODUCTION

In applications like multimedia and digital signal processing which can tolerate error, exact computations are not always required. Approximate counterparts can be used to replace them. It brings the rise in the research on inexact computing for error-tolerant applications. Applications like Adders and multipliers form the key components in these. In digital signal processing applications, approximate full adders are proposed at transistor level and they are utilized [1]. In an accumulation of partial products, proposed full adders are used in multipliers. In fixed-width multiplier designs, truncation is widely employed to reduced hardware complexity of multipliers. To compensate for the quantization error introduced by the truncated part, a constant or variable correction term are added [2], [3]. In terms of power consumption, approximation techniques in multipliers focus are crucial on the accumulation of partial products. While forming partial products to reduced hardware complexity, broken array multiplier is implemented in the least significant bits of inputs are truncated. In partial product accumulation, the proposed multiplier saves few adder circuits [4]. In partial product reduction tree of four variants of 8×8 Dadda multiplier, two designs of approximate 4-2 compressors are presented and used [5]. For partial product accumulation of the multiplier, a new approximate adder is presented [10]. 26% of power is reduced is accomplished in 16-bit approximate multiplier as compare to exact multiplier [10]. Reduction of focus on the straightforward application of approximate adders and compressors to the partial products in the previous works on logic complexity. In this brief, the partial

products are altered to introduce terms with different probabilities. Probability statistics of the altered partial products are analyzed, which is followed by systematic approximation. Simplified arithmetic units (half-adder, full-adder, and 4-2 compressor) are proposed for approximation. The arithmetic units are not only reduced in complexity, but care is also taken that error value is maintained low. While systemic approximation helps in achieving better accuracy, the reduced logic complexity of approximate arithmetic units consumes less power and area. The proposed multipliers outperform the existing multiplier designs in terms of area, power, and error, and achieves better peak signal to noise ratio (PSNR) values in image processing application. The rest of this brief is organized as follows. Section II details the proposed architecture. Section III provides extensive result analysis of the design of the proposed and enhancement approximate multipliers. The proposed multipliers are utilized in image processing application and results are provided in Section IV. Section V concludes this brief.

II. PROPOSED ARCHITECTURE

It comprises of following three steps in the implementation of the multiplier. They are as follows i) Generation of partial products, ii) Partial products reduction tree and iii) A vector merge addition to produce the final product from the sum and carry rows generated from the reduction tree. In this brief, an approximation is applied in reduction tree stage. Consider two 8-bit unsigned input operands $a = \sum_{m=0}^{7} a_m 2^m$ and $\beta = \sum_{n=0}^{7} {}_n 2^n$.
$p_{m,n} = a_{m,n} + a_{n,m}$

FPGA Implementation of Proficient DLAU

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Abstract- **These days, the size of systems are increasingly large scale due to the practical applications, which poses significance importance in the field of neural networks. Deep neural networks(DNN)has been employed for image recognition since it can accomplish high exactness by copying conduct of optic nerve in living animal. In order to enhance the execution and additionally to keep up low power cost, in this paper, we design deep learning accelerator unit(DLAU), which is the scalable accelerator for large-scale networks using field-programmable gate array(FPGA) as hardware prototype. In order to improve throughput, it utilizes the tile techniques and employs three pipelined processing units to explore the locality for deep learning applications.**

Keywords: **Deep neural network, tile technique**

I. INTRODUCTION

In recent years, the deep learning has become pervasive in many of the various research fields and commercial applications, and achieved satisfactory products. The demonstration of deep learning accelerator unit (DLAU) on the state-of art Xilinx FPGA board, is used for designing the accelerator unit, which is a scalable accelerator architecture for large-scale neural networks, which improve the performance as well as to maintain the low power cost. The success in the Deep learning is unstoppable, which has speeded up the development of machine learning and artificial intelligence [1].
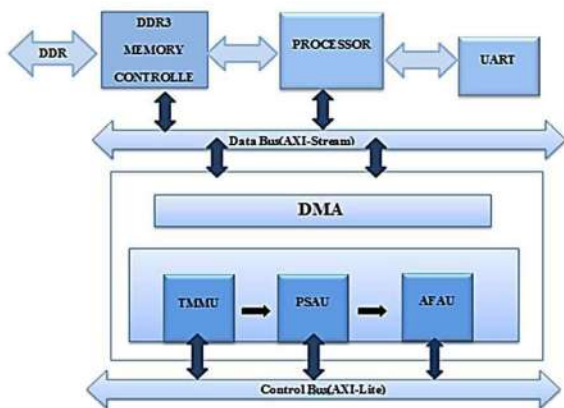

Fig1:DLAUacceleratorarchitecture

In general, neural networks are multilayered networks, the deep learning uses these multilayered network model to extract high-level abstractions to find the distributed data

Features in order to solve the complex machine learning problems [2].

II. LITERATURESURVEY

As designated by chao wang[1],the research field of machine learning, deep learning shows an outstanding capability in resolving complex problems. As the size of the network becomes bulky, it poses extensive challenge to construct a high performance implementation of deep learning neural networks, so as to improve the performance as well as to sustain the low power cost. In this paper it focuses on the implementation of accessible accelerator architecture, DLAU using FPGA as a hardware sample.

D.L.Ly and P.Chew,[2]explain the primary cause for limitation of the neural networks in commercial and industrial applications. The neural networks are typically employed as the software running on general-purpose processors. The algorithms of neural networks that runs in software are typically of$O(n2)$but the proposed Multi-purpose hardware framework is designed to reduce the$O(n2)$ into an $O(n)$ resources.

As indicated by Chen Zhang,pengLi.jasonCong[3] convolution neural network (CNN) plays a vital role in image recognition, to achieve high accuracy by emulating behavior of optic nerves in living creatures. Recently, rapid growth of modern applications based on deep learning algorithms has further improved research and implementations on FPGA platform because of its advantages of high performance, reconfigurablity, and fast development. But one critical problem is that the computation throughput may not well match the memory bandwidth provided an FPGA platform.

In[4] author Q.YU,C.Wang,X.ma,X,Li and X.Zhou, in tim a test he emerging field of machine learning, deep

Image Enhancement Technique Used In Underwater Area

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Abstract – *Underwater images are originally characterized by accomplished low visibility because light is growing contract as it tour in the water and the scenes result poorly mismatched. The blue color tours the enlarged in the water expected to its shortest observations , building the underwater pictures to be control originally by blue color. In brief, the pictures we are interested go through of one or more of the coming problems: made-drunk visibility, low contrast, non homogeneous lighting, blurring, honest artifacts, color and noise. Image enhancement need subjective principle to harvest a more optically attractive pictures and they do not commit on any real model for the image architecture.*

*Key Words***:** underwater, filtering, enhancement, retinex, denoising.

1. INTRODUCTION

Underwater imaging is the method of pickup images down the water. The compulsion for underwater imaging appear while scuba diving, floating, diving from a U-boat, or diving from a remote underwater vehicle, or programmed cameras. But underwater imaging look a number of points due to following obstacles:

➢ **Lighting**: The primary obstacle faced by underwater photographers is the loss of color and contrast when submerged to any significant depth. The loss of color increases not only vertically through the water column, but also horizontally, so subjects farther away from the camera also appear colorless and indistinct[8].

➢ **Equipment**: In many cases waterproof digital cameras doesn't capture underwater images**.** The enlargement of lens rises by the refraction, this features serves as an advantage to photographers to obtaining very small cases.

➢ **Underwater flash**: The use of a reflection is often regarded as the most difficult aspect of underwater photography.

➢ **Split images**: Split images are popular in recreational scuba magazines, often showing divers swimming beneath a boat, or shallow coral reefs with the shoreline seen in the background.

➢ Skills and training: There is the possibility of encountered poor conditions, such as heavy currents, tidal pool , or low visibility. Underwater ducking training providers provides programs to help improve divers' diving technique and arts.

2. UNDERWATER IMAGE ENHANCEMENT TECHNIQUE

Homomorphic Filtering:

➢ Homomorphic filtering is a establish approach for signal and image processing, contain a nonlinear checking to a different scope in which continuos filter performance are practiced , succeed by averaging back to the starting department.

➢ If the image model is occupying on radiance and reflectance, then structural region measures are not simple to execute.

➢ The major understanding is that lighting and reflectance ingredients of the model are not severable.

➢ Its mandatory to separates the two ingredients for concurrent shine area squeezing and distinct improvement.

➢ This is executed by the homomorphic filter.

➢ Homorphic filters concurrently establishes the shine crossed an image and gain divergance.

➢ Homomorphic filtering is principally used to discard multiplicative noise.

➢ Since lighting and reflectance get together multiplicatively, the items are built supplement by catching the logarithm of the picture strength [1][5].

➢ So that these multiplicative items of the picture can be operated linearly in the density department.

Implementation OF PID Controller by using HDL On FPGA

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Abstract— This paper concentrates on the work done on control using field programmable gate array (FPGA) technology. FPGA based realization offers high speed, complex functionality, consume less power, and provides parallel Processing. Proportional-Integral-Derivative (PID) controllers are universal control structure and have widely used in Automation systems. For such an PID to obtained an pre-defined output a Car is created which may called as a application of PID Controller. The car is composed by three cards DE0-Nano main card, SCD(Smart Car Daughter card) daughter card, and sensor daughter card. The SDC daughter card includes the lamp, buzzer, motor driver DRV8833, IR receiver, ADC chip LT2308, and TMD (Terasic Mini Digital) expansion header. The sensor daughter card includes seven Photo Interrupters used to track dark line(s) on a white background. Proportional-integral-derivative (PID) controller is a vastly used control algorithm for many real-time control applications and among many types of PID controller, FPGA based PID controller is one of the effective one. FPGA can offer parallel processing, more speed and easy to implement. In this paper, we focused our works designing PID controller with its application by Field Programmable Gate Arrays (FPGAs) with some parameter change so that the cost will be minimized and accuracy will be maximized.

Keywords: P1D, HDL, FPGA, Control system.

I.   INTRODUCTION

Proportional-Integral-Derivative (PID) controllers are universal control structure and have widely used in Automation systems, they are usually implemented either in hardware using analog components or in software using Computer-based systems. PID controller can be understood as a controller that takes the present, the past, and the future of the error into consideration. After digital implementation was introduced, a certain change of the structure of the control system was proposed and has been adopted in many applications. But that change does not influence the essential part of the analysis and design of PID controllers. A proportional– integral–derivative controller (PID controller) is a method of the control loop feedback. This method is composing of three controllers [1]: 1. Proportional controller (PC) 2. Integral controller

(IC) 3. Derivative controller (DC) .The PID controller is implemented in C++ code running on the Altera NIOS II Processor. The program is stored on the FPGA on-chip memory. Proportional Integral Derivative (PID) based scheme is widely preferred in industries because of their simple structure and ease of realization. Project is to design a PID controller with its application which I have created a cute line follower Car and implement it on FPGA using hardware description language. PID controller along with PWM module is used for speed control of DC motor and current – voltage control of DC –DC converter. Proportional-Integral-Derivative (PID) controller are still dominating in the motion control systems in the industry due to the well acquaintance of the operating personnel with PID controllers.

II. PID CONTROLLER

The PID algorithm consists of three modes proportional, integral and derivative mode.

PID algorithm consists of three basic coefficients:

- Proportional: For Proportional $p(t) = Kp*e(t)$

- Integral: For integral $i(t) = Ki*\int e(t)dt$

- Derivative: For derivative $d(t) = Kd* de(t)/dt$

LI-FI BASED LAMBENT AUDIO TRANSMISSION

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***Abstract:* - Light Fidelity (Li-Fi) is an emerging technology that is expected to be one of the fastest wireless accesses in future and is used for establishing wireless communication at a very high speed. In this paper, basic LED is used for the purpose of data transfer. The main objective is to use the LED for illumination as well as for the transmission of data automatically in a room by sensing the presence of humans using piezoelectric sensor. Here, the data to be transmitted is audio signal. Since it is used for both the purposes, energy is conserved which is important in the current century. A Piezoelectric sensor is used to detect the person when they enter into a room. So it can be used in waiting halls to make the person entertained by playing an audio when they enter the hall.**

***Keywords:* - Light Fidelity; Light emitting diode; Visible Light Communication; Audio transmission.**

I. INTRODUCTION

Advancement in telecommunication technologies is increasing rapidly each and every year. So the high speed data communication is considered to be one of the major aspects in the current century. This communication is also possible through Visible Light Communication. Visible Light Communication is a wireless technology that facilitates communication of voice, images and data [11]. It is found that the demand for wireless access of data doubles each year. Li-Fi technology is found to be one of the fastest wireless accesses in future [12]. Li-Fi supports the transmission of data through illumination of the light that varies the intensity which cannot be noticed by the human eye. LED is used to send the audio signal or to transmit the data in a wireless medium. Li-Fi technology comes under the Free Space Optics because the signal is transmitted in the air medium [1]. It is preferred because it can replace radio waves for wireless communication. Comparing to Wi-Fi, the main advantage is that Li-Fi uses LED bulbs that light the room as well as transmits the data.

II. LI-FI TECHNOLOGY

Li-Fi is a wireless optical communication technology that uses LED as a transmitter and photo detector as a receiver. Data is transmitted form source to destination via light medium. Li-Fi uses light bulbs and light spectrum to transfer data with the speed of above 200 GB per second. Li-Fi technology can provide illumination to a larger work space and is also well suited for providing internet access to the areas under the range of light spectrum. Li-Fi is preferred as an alternative to Wi-Fi because of the secure transfer of data.

III. METHODOLOGY

In this section, the experimental setup and methodology is described with the help of block diagram. The audio signal is given as an input. The signal is amplified and given to an optical source. The illumination of the optical source is passed through the optical fiber. The fiber is used to connect the optical source with multiple rooms. A piezoelectric sensor is connected to the arduino and attached to the front and back side of the entrance. When a person enters the room, the sensor attached to the front side of the entrance is detected first followed by the sensor attached to the back side of the entrance. The output of the arduino is connected to a switch which makes the LED in the Li-Fi module to glow only in the presence of humans. So when a person enters the hall, the LED glows and music gets played automatically. On the other hand, when the sensor attached to the back side of the door is detected first, it implies that the person is leaving the room. So the LED stops glowing and there is no transfer of music. Thus, depending on the sensor detection, entry and exit of the person is determined. Li-Fi module is a combination of the LED and photo detector and is present in every room. The light from the LED is captured by a photo detector. The output of the photo detector is amplified, and the resultant signal is given to the speaker. Thus, we can hear a pleasant audio signal.

Microgrid based Renewable Energy And its Sustainability

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Abstract: Microgrids are now moving from lab benches and test demonstration sites to the commercial market with technological improvements, falling costs, proven track records and growing recognition of their benefits. They are used to improve the reliability and resilience of power grids, to manage the generation of distributed clean energy resources such as wind and solar energy to reduce fossil fuel emissions, and to provide electricity to areas not served by a centralized energy infrastructure. This review article (1) explains what a microgrid is and (2) provides an interdisciplinary overview of today's microgrid drivers, real-world applications, challenges, and future perspectives..

Keywords: Microgrids Resilience,Renewable integration Prosumers,Distributed energy

Introduction

It has been noted recently that the world's electricity systems are starting to "decentralize, decarbonize, and democratize", in many cases from the bottom up [1]. These trends, also known as the "three Ds", are driven by the need to rein in electricity costs, replace aging infra- structure, improve resilience and reliability, reduce CO2 emissions to mitigate climate change, and provide reliable electricity to areas lacking electrical infrastructure. While the balance of driving factors and the details of the particular solution may differ from place to place, microgrids have emerged as a flexible architecture for deploying dis- tributed energy resources (DERs) that can meet the wide ranging needs of different communities from metropolitan New York to rural India.

In industrialized countries, microgrids must be discussed in the context of a mature "macrogrid" that features gigawatt-scale generating units, thousands or even hundreds of thousands of miles of high voltage transmission lines, minimal energy storage, and carbon-based fossil fuels as a primary energy source. Today's grid is not a static entity, though; we are traveling a historic arc that began with small-scale distributed generation (recognized as the original DC microgrids) pio- neered by Thomas Edison in the late 19th century, that underwent consolidation and centralization driven by growing demand, and that is now experiencing the beginnings of a return to decentralization. From the 1920s through the 1970s, the increased reliability afforded by connecting multiple generating units to diverse loads, decreased con- struction costs per kilowatt (kW), and ability to draw power from dis- tant large generating resources like hydropower drove the development of the grid we see today [2,3]. However, those advantages seem to have reached their limits and are increasingly undermined by environmental and economic concerns. Driven by utility restructuring, improved DER technologies, and the economic risks that accompany the construction of massive generating facilities and transmission infrastructure, com- panies that generate electricity have been gradually shifting to smaller, decentralized units over time [3]. This transition is driven by a range of DER benefits that have been studied in detail; [4,5], such as deferral of generation, transmission, and distribution capacity investments; vol- tage control or VAR (reactive power) supply, ancillary services, en- vironmental emissions benefits, reduction in system losses, energy production savings, enhanced reliability, power quality improvement, combined heat and power, demand reduction, and standby generation. These benefits accrue not only to small, dispatchable fossil-fueled plants many also accompany deployment of intermittent renewable generating sources, as shown by a foundational study of a 500 kW distributed generation PV plant in California [6,7]. The challenge of ra- dically decreasing greenhouse gas emissions to avoid catastrophic climate disruption has also led to governmental policies that incentivize deployment of carbon-free generating sources, many of which lend themselves to distributed applications. While this paper focuses on microgrids in areas with existing centralized electrical grids, it is im- portant to remember that they also present many advantages to rural and remote communities in developing countries; these are covered in more detail below.

Analyzing and comparing different types of dc-dc converters considered in battery-powered vehicle applications

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Abstract: *This article discusses various DC-DC converters such as buck converters, boost converters and bidirectional converters. The integration of boost, septic, bidirectional DC-DC converters allows identification of the appropriate power converter for renewable energy applications. Based on this review, the performance of a non-isolated converter is evaluated. Solar energy conversion efficiency is low, so a transformer is used to raise/lower the voltage level. This article attempts to verify the efficiency of DC-DC converters and the voltage and current ratings of switches. A detailed overview is given of basic electric cars and electric cars based on fuel cell.*

Keywords: Fuel cells, Solar PV, Boost, Sepic and Bi-directional converters, Electric vehicles.

1. INTRODUCTION

The power generated through the photo voltaic (PV) panels remains intermittent and random in nature. To maintain continuous supply from PV panels DC-DC converters are required. These converters are classified as isolated and non-isolated converters. According to the configuration of converter topologies isolated converters has two configurations full and half bridge topologies [1- 5]. In addition, the half-bridge converter needs a centre-tapped transformer, which results in a complex structure, and the full-bridge converters are require a higher number of semiconductor devices and cost of the converter also increased [6-9]. In order to reduce the voltage stress caused by the leakage inductance, a DC-DC converter with an active clamp circuit is used [10]. The leakage inductance utilized in dual active bridge and the phase-shift full-bridge to achieve the soft- switching, and stored energies in leakage inductance are transmitted to the load [11-13].

2. Non-Isolated DC-DC Converters

This topology is widely used for the application of Uninterruptible Power Supplies (UPS) and Hybrid Electric Vehicle (HEV). The design of the circuit itself helps to charging and discharging the battery bank. The above figure 1 shows the Non-isolated DC-DC converters. Bidirectional converter delivers a large voltage assortment in two operating conditions since it operates under a Zero Voltage Switching (ZVS) condition. The benefit of the BDC is as follows. 1) In both boost and buck mode the BDC attains high static voltage gain. 2) If we want to oprate the converter as a bidirectional condition three active switches are required. 3) To design these converters less number of passive elements are required. 4) The switching and conduction losses is reduced by using voltage clamping circuit, ZVS and synchronous rectification.

Boost Converter

The conventional boost converters used for medium and low power applications. The input current of the converter is non-pulsating and structure is simple. The simple boost converters are used for low and medium power levels. Electromagnetic interface is the major drawback of the basic converter. These converters have non-pulsating input current and simple structure. The conventional switched inductor boost converter (SIBC) having more switching losses at the main switches and the switching diodes having more conduction losses. The converter having the advantages are soft switching, low duty loss and high voltage gain. The converter conduction losses reduced by adding the auxiliary switches [1]. The interleaved coupled inductor boost converter needs a single active soft switching module to achieve the soft switching property. These converters share the input and output currents and also reduce the ripple currents [2]. For extensive range of input voltage, load current variations and switching frequency the ZVZCS provides soft commutation to the main switches [3]. If the number of capacitors and diodes increases higher voltage gain is attained but the cost of the converter becomes increases. By increasing

Distribution Network with DG Positioning and Protection Impacts That Are Ideal: Review and Analysis

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Abstract

The integration of distributed generation units in electrical power distribution networks is driven by the sharp rise in power consumption and the capacity shortage of the transmission and distribution systems. This integration presented both a difficulty and an opportunity for the development of certain cutting-edge technologies.The problem's objective is to ascertain the ideal placement, dimensions, kind, and degree of penetration for Distribution Generation units in order to maximize the functioning of the Electrical Distribution Network while taking into account different protection implications and difficulties. Numerous approaches and technologies have been created in an attempt to solve this issue. An overview of the approach created thus far to examine potential future research directions in this area is provided in this publication.

Keywords — *Distributed Generation (DG), Optimal placement models, Real time simulations*

I.   INTRODUCTION

Electrical Distribution networks are one of the key elements of Electrical power systems. These systems are characterized by high R/X ratios with either radial or meshed or weakly meshed topology. These networks are close to the consumer side supplying energy from the substation. Though there is need in power generation due to rapid increase in demand, implementation of large conventional power generation plants are not entertained due to environmental and economic aspects. However to meet the demand, generation becomes a mandatory issue. This paved the way for the emerge of renewable energy resources but their capacity being not enough to be compatible with power generation system rather were more suitable for installing in distribution networks near the consumer points. This concept of small Generation Units installed at strategic points of a distribution network or directly to the consumer is coined as Distributed Generation (DG). DG resources are diversified as renewables like solar, wind, fuel cells, and also small capacity of non-renewables such as micro turbines, gas turbines etc. DG penetrations have given both beneficial as well as controversial impacts. It enhances the power quality, efficiency, reliability and operational benefits of a Distribution network by meeting the peak demand, reducing the system losses, regulating the voltage islanding. In order to maximize the benefits and minimize the negative impacts, analyzing the integration of DG into the system is a major concern. Many researchers have formulated various Optimal Placement Models and many other works have also addressed the impacts. This paper presents a review and summary of research developments in integrating DG units optimally in distribution systememphasizing the protection impacts which is an essential part of development of effective smart distribution system.

II.   PROBLEM FORMULATION

It is a two stage problem. The first stage being a multi-objective problem in finding an optimum location, size, type of DG in the distribution network under varying penetration levels of DG. This will maximize the benefits such as reduction of the system losses, improvement of the voltage profile satisfying all the constraints. The second stage will be analyzing the protection issues after integrating the DG in the optimal location of the system. The existing protection scheme will also be revised to overcome the issues which rise after the integration.

III.   SOLUTION METHODOLOGY

For the first stage of Optimal Placement Analysis, the problem involves the load flow analysis of distribution networks without DG integration, optimize the decision variables of the problem and then perform the analysis with DG to validate the solution. Load flow analysis gives the steady state voltages of electric power systems at fundamental frequency. The load flow problem ensures that voltages and currents are within the predefined ranges for expected loads. Various Optimization algorithms are being implemented to solve for the deciding variables to locate the DG optimally. This

Objectives of Smart Grid Implementation: Its Challenges and Issues

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Abstract

Smart grid (SG) is emerging as a new facet of power industry. It incorporates numerous advanced technologies to deal issues prevailing with conventional electric networks. Though capable to resolve many of these issues, SG is still facing challenges in deployment. These challenges are associated with adaption of emerging technologies, socio-economic issues, lack of policies and awareness. Since Government of India (GoI) has initiated nationwide deployment of SG projects, the objective of this paper is to identify challenges and issues in SG implementation. In such situation, it is primarily essential to identify and discuss the barriers to overcome deployment concerns, including consumer's acceptance. In this paper, such major challenges and issues for SG implementation have been encapsulated. Considering the vision and roadmap of the Indian SG, an indicative assessment framework has been developed and details are discussed here. A case study of solar PV awareness survey has also been presented to understand consumers' interest and concerns toward components of SG.

Keywords: Smart grid; Clean energy; Grid infrastructure; Indicative assessment; Regulation; Policies

1. Introduction

Over the decades, power system has grown into gigantic network, which spans the globe to meet thriving electricity demand (Anon, n.d.). A report from Global Smart Grid Federation (GSGF) claims that existing power grid networks are not equipped enough to meet demands of 21st century parameters viz. quantity, quality, efficiency, reliability, ecology and economy (SmartGrid Canada, 2012). These led a paradigm shift of centralized power generation based electric grid toward the decentralization (Smart Grid Bulletin, 2015). Today's power situation plays a welcome role for SG as it considers efficiency, reliability, economy and other crucial parameters besides optimally utilizing the available power resources (US DOE, 2010; El-Hawary, 2014).

SG foresees a bright future to stakeholders, consumers, regulators and others which is evident from several pilots of SG projects across the globe. Analysis by different groups under U.S. department of energy initiative (US Department of Electricity, 2012) claims a peak load reduction of 0.75–1.2 kW per consumer. In smart city of Queensland, Australia, it has been recorded 46% reduction in both peak demand and electricity consumption by June 2012 (VassaETT, 2013). As per the studies of ISO/Wholesale markets in US, Demand Response (DR) contribution to peak load reduction has been increased by 10%, since 2006 (EPRI, n.d.). Through utilization smart meters for DR and variable pricing programs, California state is envisaging peak load reduction of 100 MW. The smart grid 2013 global report claims, through a survey of 200 SG projects, 70% of pilots have experienced enhanced reliability up to 9% (VassaETT, 2013). Studies have also demonstrated that SG can be made self-healing and resilient. Smart grid offers a great deal to economy also, as analyzed in Yu et al. (2011) which claims that UK can save £19 billion net present value (NPV) on SG investments between 2012 and 2025, if opted for upgradation to SG rather than augmenting in conventional ways. Further, SG has a potential to support 12,000 jobs annually in UK alone (Easton and Byars, 2012). Duke Energy in Ohio has reported saving of $10.18 per customer per year in special meter reads and additional $3.5 saving per customer per year on non-labor expenses such as meter testing, repairing and replacement. Smart Grid Consumer Collaborative (SGCC) claims to find a benefit of $2.00–$19.98 per customer per year through Time of Usage tariff. SG facilitates optimal planning, scheduling and maintenance of all types of power generators and storage units thereby reducing operational and capital costs. Apart from direct savings, SGs also facilitates for integration of secondary power sources viz. Electric Vehicles, Renewables, Thermal and Distributed Generation. SG thus provides direct benefits to consumers through.

- Saving from restructured tariff.

Technical challenges in Integration of Small-Scale and Large-scale PV Systems into the Grid

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Abstract: Decarbonisation, energy security and expanding energy access are the main driving forces behind the worldwide increasing attention in renewable energy. This paper focuses on the solar photovoltaic (PV) technology because, currently, it has the most attention in the energy sector due to the sharp drop in the solar PV system cost, which was one of the main barriers of PV large-scale deployment. Firstly, this paper extensively reviews the technical challenges, potential technical solutions and the research carried out in integrating high shares of small-scale PV systems into the distribution network of the grid in order to give a clearer picture of the impact since most of the PV systems installations were at small scales and connected into the distribution network. The paper reviews the localised technical challenges, grid stability challenges and technical solutions on integrating large-scale PV systems into the transmission network of the grid. In addition, the current practices for managing the variability of large-scale PV systems by the grid operators are discussed. Finally, this paper concludes by summarising the critical technical aspects facing the integration of the PV system depending on their size into the grid, in which it provides a strong point of reference and a useful framework for the researchers planning to exploit this field further on.

Keywords: Small-scale PV system; Large-scale PV system; PV system integration; High penetration; Technical challenges; Power system stability

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1. Introduction

Energy from renewable sources is becoming a growing component of the electricity grid around the world, due to its contribution to achieving decarbonisation, energy security and improving the energy access. The integration of renewable energy resources into existing electrical grids is the way forward to achieve clean and sustainable power generation due to the rapid depletion of the conventional power sources, better known as fossil fuels, which contribute to the increasing greenhouse gas emissions and create environmental concerns such as the depletion of the ozone layer, change in global climate and acid rain [1]. On the other hand, the usage of nuclear energy can raise hazardous concerns to the health of living creatures and the environment, and this gives renewable energy the advantage for future sustainable power generation [2].

The average energy supplied from the sun's radiation that the Earth's surface receives is approximately 1.2×10^{17} W of solar power, which is enormous: less than an hour of this can meet the demand of the whole population for a whole year [3]. However, most renewable energy resources are not available for use all the time due to factors that are outside our control, better known as intermittent nature. Intermittent renewable energy resources may be predictable, but they cannot be dispatched in a flexible way for meeting the fluctuating demand because their output cannot be altered quickly. Thus, there is a relationship between the intermittency and dispatchability of the electricity resources in which most non-dispatchable electricity sources are often highly intermittent. There are many different types of non-dispatchable renewable energy, including tidal and wave energy, but the two main types of non-dispatchable renewable energy that contribute noticeably to the electrical grid are wind and solar energy.

The current paper seeks to illustrate thekey technical aspects facing the integration of the large-scale PV systems into the grid, and includes both recent studies that have been carried out to tackle the voltage regulation issue in high penetration levels of small-scale PV systems and the current practices for managing the variability of large-scale PV systems by the grid operators. Thus, this review provides a strong point of reference and a usefulbackground for the researchers planning to exploit

An Investigation for the Optimal DG Allocation in a Distribution System to Reduce Losses

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Abstract: Small-scale generation units that are directly connected to the distributed system are referred to as distributed generation (DG) or dispersed generation. Installing distributed generation sources in close proximity to the consumer load center has garnered significant interest. The DG technologies are designed to meet the ever-increasing need for energy by producing power from both conventional and non-conventional sources. A network of active power systems can function better when DG units are positioned and sized optimally. By integrating DG units with the best capacity at the best locations, the system's voltage profile is improved and its active and reactive losses are reduced. Modern methods for the ideal positioning and dimensions of DG have been proposed in this research.

Keywords: Distributed Generation, Loss Minimization, Optimum Location, Optimization Techniques, Voltage Profile Improvement

I. Introduction

The deregulation of the electricity sector has created many opportunities to develop new technologies. Dispersed generation is one of those technologies to meet the ever increasing demand of electricity. The term "Dispersed Generation" refers to small-scale electric generation units close to the point of consumption. The advantages could be maximized by proper positioning of DG units at optimum location with ideal capacity and suitable type of DG unit. Distribution generation allows collection of energy from many sources and may give lower environmental impacts and improved security of supply.The benefits of integrating DG are segregated into technical, economical and environmental benefits. Technical advantages comprise of voltage improvement, minimization of real and reactive power losses, enhancement of system efficiency, increase in system reliability, improving power factor of the system and therefore improving power quality of the system.

The economical benefits include the reduction of transmission and distribution congestion, decrease in electricity transmission pricing and better performance of network system in deregulated utilities. The environmental benefits constitute the reduction in the emission of pollutants, less noise pollution and extra saving of fuel [1-5]. Several researchers have been working this area to avail the maximum benefits from the integration of DG units in the power system. With the deregulation of the power system network, it is important for the electrical utilities to maximize the positive effects of DG [6]. Numerous methods have been proposed to determine the optimum location and size of DG in order to improve the voltage level and for loss minimization. Improper location and non-optimum capacity of the DG unit can have negative impact on the active power system network. It may cause the voltage to rise above a pre-determined voltage level, increase of fault current in the system, poor efficiency and elevation of system losses. Therefore, it is necessary to find out the optimum location and size of DG units along with its type to enhance the working and planning of active network. This paper suggests various techniques to determine the ideal location and optimum size of DG units for voltage level improvement and loss minimization

II. Different Dg Technologies

Different DG technologies are available in the market today. DG size ranges from a few kilowatts to less that 10 Megawatts. Distributed generation resources (DER) can be classified

Review of DG Placement and Sizing Techniques in Distribution Systems

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Abstract: *The term "distributed generation" (DG) refers to the process of producing electricity on-site as opposed to sending energy through the electrical grid. By employing distribution generation (DG) in the power system, the voltage profile is improved, power losses are decreased, and the substation's stability is increased. Distribution generators (DG) should be carefully allocated in the power system to maximize benefits because they are situated close to load centers. This paper explains how to control actual and reactive power as well as improve the voltage profile optimally by installing distributed generators in the primary distribution system. The VSI is used to determine the DG's optimal allocation, and ratings are calculated by*

Key words: Distribution systems, Optimal placement of DG, Sizing of DG

Introduction

Now a days, the demand for electrical power has been increasing rapidly. Due to the limited resources the generation stations and transmission systems expansion is less. For last 20 years a lot of research going on the DG. Dugan and MC. Dermott, T.E[1] defined the dispersed generators systems as below: dispersed generators are the generators that are interconnected with the distribution system and power distribution is less than 10Mega Watt. Basically, the larger units are connected to the transmission lines directly. Dispersed generators are installed in system where the power distribution is not more than 1 or 2Mege Watt and most of them are installed by utility. This type of power generation is called as "Dispersed Generation".

By the load flow analysis, the system operation conditions like phasor voltages, real and reactive power flow will obtain. To solve the power flow problem, many algorithms are developed for transmission network. These algorithms for low voltage distribution network are not suitable, since they are inefficient to these networks. Forward and Backward Sweep (FBS) methods are proposed by Augusto Cesar dos Santos and Marcelo for easy implementation and robustness in power flow analysis, to get load flow solutions without solving the equations, they consider radial distribution network [2].

The problems arise as the load demand on the distribution system increases and many changes occur when the load increases from low to high. M. Chakravortyand D. Das [3] proposed VSI technique is used in RDS. The sensitive node of the system will be identified by a numerical method approach, which was represented by voltage source index(VSI). This method will protect the distribution system from the faults by initiating automatic remedial actions and the distance between two points (working and the constant point) can be find by the voltage source index (VSI). Voltage faults will occur at the node (sensitive node) of the distribution system and later all other nodes (sensitive nodes)of the system will effect.

Creating and Simulating Fuzzy Control System Designs

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ABSTRACT

A formal framework for building systems with strong numerical performance(accuracy) andlanguage representation (interpretability) is offered by fuzzy logic. Building fuzzy systems, or fuzzy modelling, is a difficult undertaking that necessitates the identification of numerous factors. In order to address the fuzzy modelling challenge, this study examines various strategies, with a particular emphasis on evolutionary fuzzy modelling, which is the creation of fuzzy inference systems by the use of evolutionary algorithms. This paper has two goals in mind. After giving a brief summary of the conventional method for building a fuzzy control system, we list numerous pertinent system modelling approaches. The discussion of the Fuzzy Modelling Problem—the curse of dimensionality—and possible solutions is covered in the paper's later sections. The article offers an overview of the application of fuzzy logic system.

Keywords: *Fuzzysystem modeling, Fuzzylogic controller, Fuzzymodeling problem, Fuzzy learning approaches.*

FUZZYSYSTEMS

Fuzzysettheorywasproposedby Zadeh,—Afuzzyset AinXis characterized by a membership function $f_A(x)$ which associates with each point in X a real number in the interval [0,1], withthe value of $f_A(x)$ at x representing the ‗grade of membership 'of x in A‖. The fuzzy set[1] conceptintends to capture the vagueness to describe concepts, objects, events, phenomena or statements.

Fuzzy logic deals with uncertainty in engineering by attaching degrees of certaintyto the answer to a logical question which is commercial and practical. Commercially, fuzzy logic has been used with great success to control machines and consumer products.Intherightapplicationsfuzzylogicsystemsaresimple to design, and can be understood and implemented by non- specialistsincontrol theory. ApplicationsofFuzzysystems vary in wide range starting from Environmental control (Air conditioners,Humidifiers),Domesticgoods(Washingmachines, Vacuum cleaners, toasters, microwave ovens, refrigerators), consumer electronics (television, photocopiers, cameras, HI-fi systems) to Automotive systems (Vehicle climate control, automatic gearboxes, four-wheel steering, seat/mirror control systems).

FuzzyLogic–Athree-stepprocess

How to do Fuzzy logic is an interesting question. The answer to it is a three-step process: (1) Classification; (2) Fuzzy decision blocks, and (3) Defuzzification.

Classification.

The first step is to convert the signal into a set of fuzzyvariables. Thisiscalledfuzzyclassificationor fuzzification. It is done by giving values to each of a set of membership functions. The values for each membership function are labeled and determined bythe original measure signal and the shapes of the membership functions. A common fuzzy classifier splits the signal x into five fuzzy levels: -

LP:xislarge positive.
MP:xismediumpositive.
S:xissmall
MN:xismediumnegative.
LN:xislargenegative

A Transmission Fixed Cost Allocation Application of the Optimization Method for Real Power Tracing

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Abstract— **Megawatt (MW) power flow tracking is a useful tool for evaluating how much of the network is being used by users. It can be used effectively for a variety of purposes, including transmission pricing and loss allocation. There are several ways to solve MW power tracing, a post-facto examination of power flow solution. This suggests that the transmission cost and loss al-location problems have several solution spaces. In order to determine the shares, traditional tracing techniques impose a "proportionate sharing rule." Unlike the postage stamp mechanism, which is distance-insensitive, these shares are sensitive to both quantity and distance. A fairness concern is raised because a subset of constituents will be penalized by any of these options. The experiences of developing nations like India make this clear. This paper presents a novel paradigm.**

Index Terms—**Multicommodity network flow, network optimization, power flow tracing, power transmission, transmission cost allocation.**

I. NOMENCLATURE

$\bar{c}_{lm}$	Cost of line lm per MW.
n	Total number of nodes.
n_b	Total number of branches.
n_G	Total number of generators.
n_L	Total number of loads.
P_{lm}^i	Real power contribution of ith load in line lm.
P_{lm}^k	Real power contribution of kth generator in line lm.
P_{G_k}	Real power injection by generator k
P_{L_i}	Real power load at bus i.
P_{lm}	Real power flow over a line lm.
TSC^i	Transmission service charge for ith constituent.
TSC$_{lm}$	Transmission service charge for line lm.
x_i^k	Real power fraction of generator k contributing toward load i
x_{lm}^k	Sending end real power fraction of generator k on line lm.
y_k^i	Real power fraction of load i contributed by generator k
y_{lm}^i	Receiving end real power fraction of load i on line lm.

II. INTRODUCTION

THE transmission pricing philosophies prevailing all over the world can be classified into three paradigms [1]: embedded cost, incremental cost, and composite. Generally, the choice of adopting a particular paradigm of pricing is dominated by the degree of deregulation or liberalization in the power sector of that country. Again, for fully deregulated power industry, the choice can vary depending on the market models. The overall desired features of transmission pricing schemes are established in [2].

The short-run marginal costs [3] are commonly employed in the fully deregulated centralized dispatch power markets. The marginal pricing scheme in competitive markets provides prices at each node that show spatial variation by virtue of losses and possible network constraints in the system [4]. The marginal pricing of electricity satisfies the important principle of pro- viding economically efficient price signals [5]. However, it fails to recover the embedded or sunk costs of the existing network [6]. It is shown in [7] that only 10% of the required transmission remuneration is done in the Chilean system, while 4% remu- neration is done in the Bolivian system using marginal pricing schemes. To recover the embedded costs of the network, top- ping up of marginal prices with a complementary charge has been proposed in [8] and [9]. This represents the composite pricing paradigm. The limitation associated with this paradigm is that the application of complementary charge tends to distort the economical signals provided by marginal costs [10], [11].

The less liberalized power systems or the ones in which the power market concept is in the premature stage cannot afford to adopt the much sophisticated and complex marginal pricing schemes. Hence, these types of power systems rely upon the em- bedded or rolled-in paradigm of transmission pricing. Tradition- ally, electric utilities allocate the fixed transmission cost among its users having firm contracts, based on postage stamp rate [12]. Application of this principle eases the settlement procedure. However, in the postage stamp method, transmission users are not differentiated by the extent of use of transmission facilities. Review of usage-based transmission cost allocation methods under open access is dealt with in [12]. The paper overviews various usage-based methods, including tracing-based methods [13], [14] for transmission system costs under open access.

Utilizing Particle Swarm Optimization in a Deregulated Power System to Reduce Congestion

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Abstract— The optimization method based on swarm intelligence that is presented in this paper can be used to control congestion in power system networks that have transmission line overload. In deregulated systems, line congestion is nearly inevitable in order to fulfill all power transaction requirements. This can lead to additional line interruptions, which can worsen the stability, security, and dependability of the system. In reality, System Operators (SO) impose an extra cost known as a congestion management charge for exceeding line limits. Therefore, it is crucial to control power flows within safe bounds for both stability and economic reasons. The technique shown in this study optimizes "congestion management charge" without requiring load curtailment or the installation of FACTS devices. It does this by using a standard congestion sensitivity Index to detect the crowded lines in a large power network.

Keywords-Congestion; ; Contingency; Congestion; Congestion Sensitivity index;

I. INTRODUCTION

Transmissionlinecongestionduetocontingencieslikeline orgeneratoroutagemayleadtocascadingfailureofthesystem [1]. Hence congestion management is a challenging task for independent System Operator (ISO) for maintaining stability, security and reliability. A generation rescheduling method for alleviation of line overloads using PSO has been proposed in [2].Theobjectiveofthemethodistominimizetherescheduling of generation to tackle line congestion, which may have a beneficiary impact from the economic considerations, but put less emphasis on the management of the congestion itself. A control method based on power flow tracing and generator re-dispatching has been proposed [3] but the adjustments of generators are not optimal. In [4], the authors have proposed a congestionconstrainedeconomicloaddispatchusingIPSObut the solution could only limit line congestions within the thermal limits ofthelinesrather thanrestrictingline flows toa desiredvalue.PSObasedzonalcongestionmanagementwith

optimal rescheduling of real and reactive power of generators hasbeendepictedin[5]butthecontingentconditionsandtheir impactonpowerflowshavenotbeenconsidered.Penalty basedSecurityconstrainedoptimalpowerflow(SCOPFs)have been proposed in [6] and [7] where rescheduling cost have beenminimizedwithout ascertainingmaximumallowableline

flow or level of congestion. Moreover, the penalty method applied has to trace andcalculatepenalties forall the lines, the therefore time complexity of the algorithms may be very high at times. [8] and [9] proposed a voltage stability constrained Optimal Power Flow (OPF) to alleiavate congestion, but the proposed generation schedule could not maintain a particular level of congestion during contingencies. The line congestion canalsobemanagedbyemployingFACTsdevicesandHVDC as cited in [10]-[12].But the excess costassociated with these devices may prohibit their use in many existing systems. In [13], [14] load curtailment based congestion management has been proposed, but the value of lost load (VOLL) may restrict its practical implementation. In [15] a generator and load participation factor based congestion management technique has been proposed which curtails the specific loads contributingmoretocongestion.Butsustainedloadcurtailment mayagainbeprohibitiveinmanysystems.Dynamiccontrolof congestion as reported in [16] may be too expensive and also require precise monitoring.

In the present work, the congestion zones in a power network are first identified using a 'Congestion sensitivity index'methoddescribedinsectionII.Trippingofoneor more of these lines may lead to even greater level of congestion in the remaining lines. The objective of the present work is to relieve congestion in these lines by formulating a 'congestion constrained OPFproblem' and solving the same using Particle SwarmOptimization(PSO)techniqueasdescribedinsection II. The OPF solution attempts to reschedule the generators in suchawaythattheindividuallineflowsarebroughtdowntoa desired level, not exceeding their loadability limits with an optimum 'congestion management charge' without any load curtailment and installation of FACTS devices.

II. THEORY

A. Problemformulation

Objective function in a conventional cost optimization problem can be described as:

$$\text{Minimize} F = \sum_{n=1}^{N_G} C_T \quad \text{\$/hr} \tag{1}$$

$$C_i = AP_{gi}^2 + BP + C_{gi} \tag{2}$$

Review of DG Placement and Sizing Techniques in Distribution Systems

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Abstract:
The term "distributed generation" (DG) refers to the process of producing electricity on-site as opposed to sending energy through the electrical grid. By employing distribution generation (DG) in the power system, the voltage profile is improved, power losses are decreased, and the substation's stability is increased. Distribution generators (DG) should be carefully allocated in the power system to maximize benefits because they are situated close to load centers. This paper explains how to control actual and reactive power as well as improve the voltage profile optimally by installing distributed generators in the primary distribution system. The VSI is used to determine the DG's optimal allocation, and ratings are calculated.

Keywords: *Distribution systems, Optimal placement of DG, Sizing of DG.*

1. INTRODUCTION

Now a days, the demand for electrical power has been increasing rapidly. Due to the limited resources the generation stations and transmission systems expansion is less. For last 20 years a lot of research going on the DG. Dugan and MC. Dermott, T.E[1] defined the dispersed generators systems as below: dispersed generators are the generators that are interconnected with the distribution system and power distribution is less than 10Mega Watt. Basically, the larger units are connected to the transmission lines directly. Dispersed generators are installed in system where the power distribution is not more than 1 or 2Mege Watt and most of them are installed by utility. This type of power generation is called as "Dispersed Generation".

By the load flow analysis, the system operation conditions like phasor voltages, real and reactive power flow will obtain. To solve the power flow problem, many algorithms are developed for transmission network. These algorithms for low voltage distribution network are not suitable, since they are inefficient to these networks. Forward and Backward Sweep (FBS) methods are proposed by Augusto Cesar dos Santos and Marcelo for easy implementation and robustness in power flow analysis, to get load flow solutions without solving the equations, they consider radial distribution network [2].

The problems arise as the load demand on the distribution system increases and many changes occur when the load increases from low to high. M. Chakravorty and D. Das [3] proposed VSI technique is used in RDS. The sensitive node of the system will be identified by a numerical method approach, which was represented by voltage source index(VSI). This method will protect the distribution system from the faults by initiating automatic remedial actions and the distance between two points (working and the constant point) can be find by the voltage source index (VSI). Voltage faults will occur at the node (sensitive node) of the distribution system and later all other nodes (sensitive nodes)of the system will effect.

Kyu-Ho-Kim and Yu-Jeong-Lee [4] presented a logic approach for placing distributed generation (DG) in radial distribution system. The main aim of the technique is to decreases the cost of the power loss of the radial distribution system. By implementing this logic, constrains can be transformed into the unconstrained multi-objective function. To reduce the losses, Caisheng Wang[5] proposed a method for calculating the optimal size of the Dispersed Generators and for identifying optimum location. This technique is tested with different sizes and complexities, the obtained results are compared with exhaustive power flow techniques.

A. Lakshmi Devi [6] proposed the Optimal Dispersed Generation unit by using the Frizzy logic. By using this method, we can find the optimal size of Dispersed Generation and the node is identified by using reasoning technique. Dispersed Generation installed at the node with high suitable index and power. The power losses of the radial distribution system nodes are designed by using the frizzy logic.

As the load demand increases the power distribution network is facing many problems to meet the demand, this increasing load reduced voltage and increases of the power loss[7].If the voltage at the nodes reduces as the nodes are far away from the substations. The voltage varies by the requirement of the reactive power in the system. In industrial sector this is the main reason to collapse the voltage. For improving the voltage

Distribution Network with DG Positioning and Protection Impacts That Are Ideal: Review and Analysis

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Abstract: The integration of distributed generation units in electrical power distribution networks is driven by the sharp rise in power consumption and the capacity shortage of the transmission and distribution systems. This integration presented both a difficulty and an opportunity for the development of certain cutting-edge technologies.The problem's objective is to ascertain the ideal placement, dimensions, kind, and degree of penetration for Distribution Generation units in order to maximize the functioning of the Electrical Distribution Network while taking into account different protection implications and difficulties. Numerous approaches and technologies have been created in an attempt to solve this issue. An overview of the approach created thus far to examine potential future research directions in this area is provided in this publication.

Keywords: *Distributed Generation (DG), Optimal placement models, Real time simulations*

1. INTRODUCTION

Electrical Distribution networks are one of the key elements of Electrical power systems. These systems are characterized by high R/X ratios with either radial or meshed or weakly meshed topology. These networks are close to the consumer side supplying energy from the substation. Though there is need in power generation due to rapid increase in demand, implementation of large conventional power generation plants are not entertained due to environmental and economic aspects. However to meet the demand, generation becomes a mandatory issue. This paved the way for the emerge of renewable energy resources but their capacity being not enough to be compatible with power generation system rather were more suitable for installing in distribution networks near the consumer points. This concept of small Generation Units installed at strategic points of a distribution network or directly to the consumer is coined as Distributed Generation (DG). DG resources are diversified as renewables like solar, wind, fuel cells, and also small capacity of non- renewables such as micro turbines, gas turbines etc. DG penetrations have given both beneficial as well as controversial impacts. It enhances the power quality, efficiency, reliability and operational benefits of a Distribution network by meeting the peak demand, reducing the system losses, regulating the voltage islanding. In order to maximize the benefits and minimize the negative impacts, analyzing the integration of DG into the system is a major concern. Many researchers have formulated various Optimal Placement Models and many other works have also addressed the impacts. This paper presents a review and summary of research developments in integrating DG units optimally in distribution system emphasizing the protection impacts which is an essential part of development of effective smart distribution system.

2. PROBLEM FORMULATION

It is a two stage problem. The first stage being a multi-objective problem in finding an optimum location, size, type of DG in the distribution network under varying penetration levels of DG. This will maximize the benefits such as reduction of the system losses, improvement of the voltage profile satisfying all the constraints. The second stage will be analyzing the protection issues after integrating the DG in the optimal location of the system. The existing protection scheme will also be revised to overcome the issues which rise after the integration.

3. SOLUTION METHODOLOGY

For the first stage of Optimal Placement Analysis, the problem involves the load flow analysis of distribution networks without DG integration, optimize the decision variables of the problem and then perform the analysis with DG to validate the solution. Load flow analysis gives the steady state voltages of electric power systems at fundamental frequency. The load flow problem ensures that voltages and currents are within the predefined ranges for expected loads. Various Optimization algorithms are being implemented to solve for the deciding variables to locate the DG optimally. This step can be broadly analyzed in two approaches: (i) Analytical or Algebraic, which involves the calculation of various parametric indices of the system like loss sensitivity factor, voltage sensitivity index, power loss index etc, based on which the optimum location is determined and using the loss formula the size and type of DG is

Investigation of Different Optimization Methods for Power System Load Frequency Control

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Abstract: The Load Frequency Control (LFC) in a unified power system is examined from all angles using a variety of optimization strategies to optimize the PI, PID, and fuzzy controllers' parameters. This book primarily analyzes the multi-area power system that uses conventional, renewable, and a combination of both sources of energy together with some energy devices like SMES and battery sources. The controllers are intended to operate in a deregulated LFC power system setting. LFC is controlled under a variety of disturbances, such as dead band control and GRC, using the Model Predictive Control (MPC) and a few additional control strategies. The time response comparison graph of the controller for single and multiple areas of power system is shown for the readers' convenience.
Keywords Automatic generation control, Area control error, Load frequency control, Optimization, Controllers

1. Introduction

With increase in load demand of electrical power, the electrical energy is generated with various energy sources like wind, PV, geothermal and other renewable sources, which intern causes more complicated for control. The system operating with nominal frequency and voltage profile should be stable and reliable to supply power. To operate the power system under different disturbance conditions like imbalance between supply and demand is controlled by a supplementary control AGC [1]. Modern power system is an interconnected system in which power is transferred from one area to other depending on the loading conditions.

AGC plays a significant role in the unified power system as it controls the system with three major purposes such as (A) to maintain the system frequency to its standard value or to its limits, (B) to ensure a precise value of power exchange amongst the areas and (C) to ensure an appropriate value economically for each generating unit. With the increase in the system size there exists a complexity in control of LFC. Change in load demand in an area cause an imbalance in generation as well as the consumption which isn't acceptable [2]. Basically a power system is an inter-connected subsystems. For each subsystem the load demand and losses should be balanced with generation, this is usually known as LFC. LFC is a part of AGC system, LFC aim is to reduce the change in frequency and tie line power exchanges. The real power mismatch between loads in addition to generation will lead to ACE in a system. Both change in frequency and tie-line power is acknowledged as ACE [3]. All the generating units in a particular area are expected to be coherent group. The frequency has to be continued to be constant possible for a stable as well as reliable operation of power system. Throughout the system, the frequency is same so the change in active power at one point will affect the entire system. From literature survey it is evident that several supplementary controllers are designed and considered in LFC for AGC in single area and two areas with same type of generation units or different type of units.

In a contemporary power system, the combination of more than two generating stations in a control area with contribution factor is more natural for studying LFC. The control area may have mixture of hydro, thermal, nuclear, gas, renewable energy sources [4]. AGC is typically prescribed in three subsequent levels which are said as primary, secondary and tertiary controls. In primary control the speed governor of generating unit is controlled for change in load (frequency). The secondary control will alter the frequency to its standard value and keep the tie-line power interchange among the areas by fine-tuning the generation of the selected generators. In the third control the economic operation of different units is done and restores security levels if necessary. Deregulated environment gives an opportunity to generate power in the distributed level known as DG. In a DG level most of the non-conventional resources like wind energy and PV have gained importance due to their unlimited resource also, these are ecofriendly and rapid progress in the technology. Furthermore FC is also a different energy resource which supply both electricity and warmness to its customer [5]. The variation in wind velocity and solar radiation features pose a solemn operating problem, which leads toAnalysis on Various Optimization Techniques used for Load Frequency Control stability of remote DG system, which is already a weak system. It is difficult to control the isolated hybrid power system consisting of renewable energy sources for stable operation unlike those with grid connected [6]. The variation in both wind velocity and solar radiation will change in real power generation

A Study of Wind Turbine Deloaded Operation Mechanisms for Power System Primary Frequency Control

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Abstract: As fossil fuels run out every day, wind farms are popping up all over the world as a less expensive source of renewable energy. Due to wind speed unpredictability, most conventional power plants have been replaced with wind turbine generators as a result of the growing penetration of renewable energy, particularly wind power. However, this has had a severe influence on power systems reliability and frequency stability. A new global grid code regulation states that all wind turbine generators (WTGs) in an interconnected electricity network must engage in primary frequency control (PFC) in order to reduce frequency disturbance in the power system caused by imbalances in generation and load consumption. This is because a required frequency cannot be compromised. According to published research, the deloaded mode of operation, which involves the wind turbine in the primary frequency regulation, is still in its infancy, has a wide application, and is crucial to the availability and dependability of electricity in the modern industrial period. In order to regulate the primary frequency of wind turbine generators in an interconnected power system, this study presents a thorough and current assessment of the literature on the deloaded mode of operation. There are also comparisons with the deloaded mode and a number of control modes highlighted. Once more, an evaluation of a few variables that affect the amount and quality of power reserve margins, the reserve margin % according to the penetration level of wind farms, some optimization techniques, and anticipated future research projects
Keywords: Artificial Neural Network, Deloaded Operation, Fuzzy Logic, Maximum Power Point Tracking, Primary Frequency Regulation, Wind Turbine Generators**.**

1. INTRODUCTION

Frequency deviation is undesirable for all power systems due to the fact that most of the ACgenerators and motors run at speeds that are directly proportional to their respectivefrequencies. Any variation of system frequency will affect the motors' performance. Also, for timely response of generation and demand operation, microcontrollers depend on constant frequency and any error may produce havoc in the digital storage and retrieval process. Again, the blades of steam and hydro turbines are designed to operate at a particular speed. Frequency variations will result in excessive vibration and cause damage to the turbine blades. In general, effective and efficient power system frequency stability depends on the balance between total power generation and total power demand of consumers with the related losses under consideration.

The participation of the power generation system in the primary frequency control has a great significance as illustrated in Fig. 1. There exists power response control that seeks to stabilize frequency and restore the mismatched electric power between what have been generated and consumed within a period of time, in order not to initialize the activation of other control mechanisms. This operation is very important to prevent power system breakdown, blackout and load shedding, that may even result in the overall power system failure. Eventhough primary frequency control will not restore the frequency to its original state, but to a point called the quasi state frequency (df s).It will be able to sustain the power system at its tolerance level for a period of time until the disturbance heals or the secondaryfrequencyregulation[1][2] takes over at ascheduled time.
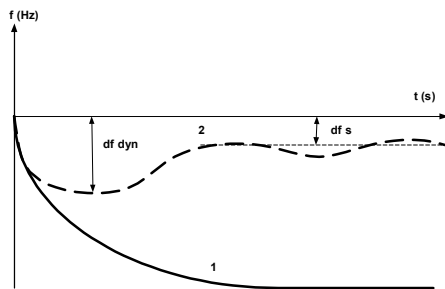

Fig. 1 *A Frequency Drop, line2 with and line1 without regulation of a Power System*

Nowadays, the traditional sources encounter some challenges such aspower generationshortages, high cost of resources and environmental issues. There is an urgent need for some good green resources to replace the

Ideal Grid-Connected Photovoltaic System for a Campus Microgrid

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Abstract: The installation of a grid-connected photovoltaic system on a Malaysian university campus is the topic of this research. Developing a grid-connected microgrid using photovoltaic (PV) and battery storage to meet campus load demand and reduce grid dependency is the main objective of this study. The program Hybrid Optimization Model for Electrical Renewables (HOMER) models and simulates a microgrid. Renewable resources and the actual load profile were employed as the hybrid system's input parameters. University Kuala Lumpur, British Malaysian Institute, was chosen as the campus because it reflects the normal load profile of a small school. As a result, other small campuses in Malaysia can also use the results to depict hybrid system development. First, simulations were run to determine the ideal size of renewable energy (RE) in relation to both overall Net Present Cost (NPC) and Cost of Energy (COE). The system performance was then assessed using sensitivity analysis to account for variations in load growth and renewable resource availability. The findings show that the best HRES combinations for the campus microgrid consist of a 50 kW inverter and 50 kW of PV production.The addition of a 576 kWh battery storage system will, however, raise NPC while increasing RE penetration.

Keywords: *Microgrid, Optimal hybrid system Renewable energy.*

1. INTRODUCTION

Hybrid Renewable Energy System (HRES) is a combination of multiple renewable sources in a microgrid for electricity supply in an area [1]. It can operate either in standalone or grid-connected modes. Typically,standalonemodesareusedinremoteorruralareaswheregridconnectionisuneconomical[2].   Inthis mode,therenewablegenerationsupportedbytradisionalgenerationssuchasdiesel andbatterystorage system. On the other hand, grid-connected modes normally used in buildings, factories and residential area.Inthis mode, the hybrid renewable sources will meetthe load demand and sellsthe excess energyto the grid.

Technicalandeconomicanalysisiscrucialforefficientutilizationofa HRESinamicrogrid. There are many software tools has been used to evaluate and analyse electrical, economical, and environmentalperformanceofa HRESsuchas HOMER [3],H2RES[4],RETScreen[5]and EnergyPlan [6]. This study uses HOMER software for optimal hybrid sytems design. Many researchers were found utilizing HOMER for hybrid system optimizations. For example, Laith M. Halabi et al uses HOMER to design a hybrid system in a remote village in Malaysia [7]. Their hybrid system design includes site survey alongside detailed technical-economic analysis for both on-grid and off-grid connections of a PV-Wind-diesel-battery system. Moreover, Khan et al uses HOMER to investigate the optimal hybrid system combinations in a tourismislandlocatedintheSouthChinaSea[8],[9].Actualloadprofilesandrenewablesourcesofwere used in the study to evaluate different combination of renewable energy generations. Mohammad Mohammadi et al. presents a hybrid renewable system with PV and wind without conventional generation systems for a residential house in Tehran, Iran [10]. HOMER software was used to evaluate the system costs andgreenhousegassesemissions.Additionally,SamirM. Dawoudetal. modeled hybridsystemcomprisesof PV and wind turbines for a remote area in Egypt [11]. Meanwhile, Asad Waqar et al. uses HOMER to minimizetheCO_2emissioninamicrogridwith Vehicle-to-grid(V2G)storage[12].Ontheotherhand, N.A. Jefry et al. integrates renewable energy generations in a Demand Response Program for buildings in Universiti Tun Hussein Onn, Malaysia campus [13]. HOMER was used to identify the technical and economics viability of the system.

Other advanced methods also been used by researchers to determine the optimal combinations of hybrid system in a microgrid. For instance, Yashwant Sawle et al. uses multi-objective function to determine the optimal design of a microgrid system [14]. Meanwhile, Abdelhamid Kaabeche et al. uses Firefly-inspired algorithm to determine optimal size HRES for an area in Algeria [15]. Many other advanced methods also used for optimal hybrid system sizing such as Genetic Algorithm [16], Particle Swarm Optimization [17], [18], Fuzzy [19] and Artificial Neural Network [20]. In this study, the HRES for a University campus were modeled in HOMER and results such as NPC, COE and CO_2 emission were assessed.

The rest of the paper are organized as follows: Section 2 describes the data collection for this study such as renewable sources and load profile. Section 3 presents the HRES modeled in HOMER that includes

Real-Power Generator Rescheduling for Congestion Control Employing a New Satin Bowerbird Optimization Algorithm

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Abstract: This research presents an efficient meta-heuristic for Bowerbird Optimization (SBO) algorithms used in the deregulated electricity system for congestion management (CM). Using a generation rescheduling-based strategy, the primary goal of CM is to relieve transmission line congestion while meeting all requirements with the least amount of congestion cost. The male-attracts-the-female for breeding' theory of the specific stick structure mechanism of satin birds served as the foundation for the development of the SBO algorithm, which is nature-inspired. Modified IEEE 30-bus, modified IEEE 57-bus, and modified IEEE 118-bus test systems are used to successfully test the suggested methodology on both small and large test systems. This analysis takes into account restrictions such as line loading, line limits, generator limits, and bus voltage impact, among others. When compared to several contemporary optimization techniques, the suggested method produces better results in terms of congestion cost and losses.

Keywords :

1. Introduction

methods and approaches are used, as given in [2,3].To manage the operation of transmission systems in a deregulated power system based on optimal power flow (OPF), price–area congestion control and

been done of a CM problem solution, based on re-dispatch and a unified framework for a mathematical representation of the market dispatch in various electricity markets all over the world. Phase-shifters

evolutionary approaches solved zonal congestion based on sensitivity indices, which are termed asReal-powerandReactive-powerTransmissionCongestionDistributionFactors[7].Therescheduling of generators for CM with a three block structure, offered by the generating companies (GENCOs), has beenanalyzedandcarriedoutforahybridpowermarketconsideringconstantimpedance,current,andpower[8].In[9], anefficientparticleswarmoptimization(PSO)wasmadeuseoffortthereal-power rescheduling of generators for CM in a deregulated environment. Use of the random search method (RSM) for solving various optimization problems has been analyzed [10].Rescheduling of generatorsfor CM with flexible

REVERSE LOGISTICS'S IMPACT ON FINANCIAL PERFORMANCE

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Abstract
One crucial process that is commonly misinterpreted is reverse logistics. Many companies are unaware of the proper norms and procedures to adhere to or the ins and outs of managing reverse logistics. Although multiple studies have shown the benefits of implementing various reverse logistics tactics, the researcher was unable to find any that specifically illustrated how implementing these strategies might impact the firm's performance. The purpose of this research was to ascertain how much the company's financial performance is impacted by reverse logistics methods that have been implemented.

Keywords: Financial Performance, Reverse logistics, critical operations,

Introduction
The Council of Logistics Management defines logistics as the process of planning, implementing, and controlling the efficient, cost-effective flow of raw materials, in-process inventory, finished goods, and related information from point of origin to point of consumption to meet customer needs.

All of the activities described in the definition above are included in reverse logistics. Because reverse logistics operates in the opposite direction, it comprises all of these processes. As a result, reverse logistics is the process of planning, implementing, and controlling the efficient, cost-effective flow of raw materials, in-process inventory, finished goods, and related information from the point of consumption back to the point of origin to reclaim value or dispose of it properly.

Reverse logistics, to put it another way, is the process of transporting things away from their usual destination to capture value or dispose of them properly (Rogers & Tibben-Lembke, 1998). This notion of reverse logistics may also encompass remanufacturing and refurbishment activities. More than just reusing containers and recycling packing materials is involved in reverse logistics. Redesigning packaging to utilize less material or lowering transportation energy and pollutants are significant operations, but they might be better categorized as "green" logistics. The operation is probably not a reverse logistics activity if no goods or materials are being sent "backward." Damaged merchandise, seasonal inventory, replenishment, salvage, recalls, and surplus inventory all fall under the reverse logistics umbrella. Programs for recycling are also included.

Literature Review
The reverse logistics process, according to Larsen, Masi, Feibert, and Jacobsen (2018), entails the execution of actions connected to the creation of plans, supervision, and cost-effective raw

A RECENT ADVANCEMENT IN FINANCE AND ACCOUNTING STUDY

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Abstract

The policy discussion has been turning away from the nexus between finance and growth and toward the link between finance and inequality. During the transition from the Millennium Development Goals (MDGs) to the Sustainable Development Goals (SDGs), there has been an urgent policy problem of putting some structure on recent advancements in financing for increased inclusivity. This difficulty has been referred to as the "inclusion challenge." The overarching question that will be addressed in this article is as follows: to what extent has the growth of the financial sector contributed to the provision of opportunities for the growth of human development for those who are classified as having a low income, and by what mechanisms has this occurred? We do a literature review on newly published articles in order to give information on current developments in finance for inclusive development. The first step in the analytical process is to place concerns about exclusive growth within the broader framework of the relevant literature, and then the next step is to examine current growth plans for financial inclusion. To take into consideration, the variety of advantages of financial growth, developed and developing nations are engaging in some currents independently of one another. The retained financial innovations are organised according to three topics, the most prominent of which are the rural-urban gap, the empowerment of women, and human capital in terms of skills and training. The articulation of the financial instruments includes case studies, innovations, and investment strategies. Particular emphasis is placed, among other things, on: informal finance; microfinance; mobile banking; crowdfunding; finance; remittances; and the Diaspora Investment in Agriculture (DIA) initiative.

Keywords: Accounting, Finance, Inclusive Growth, Economic Development.

I.   INTRODUCTION

According to Lewis (1955), "Output may be expanding, but the majority of the people may be getting poorer." Lewis, 1955). The controversy surrounding "immiserizing growth" (Bhagwati, 1958) has resurfaced in the acclaimed "capital in the 21st century" (Piketty, 2014), as has Kuznets' (1955, 1971) assumption of an inverted U-shape linkage between inequality and industrialization.

Performance Study of various Aircraft Radome

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Abstract-**Radome is a manifestation made from radar and dome. It is a protection or inclusion in order to save radar antennas from environmental impacts such as dust, rain etc. For various aircraft the shape, size and material of the radome will be different. In this research various aircraft radomes are designed by using CATIA V5 and then analyzed by ANSYS 12 with varying pressure acting on it and material properties. From the analysis it can be concluded which material can withstand high pressure as per its shape and size.**

Key words-cover or enclosure to protect the antenna, different aircraft size and shape will be different.

INTRODUCTION

A radome is a structural, weatherproof enclosure that protects a microwave (e.g. radar) antenna. The radome is constructed of material that minimally attenuates the electromagnetic signal transmitted or received by the antenna. In other words, the radom*e* is transparent to radar or radio waves. Radomes protect the antenna surfaces from weather and conceal antenna electronic equipment from public view. They also protect nearby personnel from being accidentally struck by quickly rotating antennas. Radomes can be constructed in several shapes (spherical, geodesic, planar, etc.) depending upon the particular application using various construction materials (fiberglass, PTFE-coated fabric, etc.). When found on fixed-wing aircraft with forward-looking radar (as are commonly used for object or weather detection), the nose cones often additionally serve as radomes. On rotary-wing and fixed-wing aircraft using microwave satellite for beyond-line-of-sight communication, radomes often appear as blisters on the fuselage. In addition to protection, radomes also streamline the antenna system, thus reducing drag. A radome is often used to prevent ice and freezing rain from accumulating directly onto the metal surface of antennas. In the case of a spinning radar dish antenna, the radome also protects the antenna from debris and rotational irregularities due to wind. Its shape is easily identified by its hard-shell, which has strong properties against being damaged. The basic function of a radome is to form a protective cover between an antenna and the environment with minimal impact to the electrical performance of the antenna. This improves system availability since the antenna is not affected by winds, rain or ice. It also provides a stable environment for service personnel from harsh weather conditions. There are

a wide variety of Radome types, and they can be placed on different parts of the aircraft, making its design different for each case. For example, most common large aircraft radomes typically form the nose or tail cone of the aircraft, or they can be flush mounted or sited on the leading or trailing edges of a wing, fuselage or tail fin. This project is about various aircraft Radome located in front of the aircraft which houses a radar system. The conception of such a unit is subjected to electrical requirements of the radar such as high transmission, low reflection, far-field radiation pattern, power transmittance, low absorption and small bore sight errors among others. The word Radome is a portmanteau of the words radar and dome. So a radome is a dome which covers the radar to protect the antenna assembly from environmental hazards. The cover of a radar sensor builds a very important part of the sensor and can have an important influence on sensitivity, radiated antenna pattern and immunity to vibrations. Radome design means minimizing microwave reflection at the surface of the cover. Poor radome layout can even cause unwanted sensitivity on the backside of the sensor. The cover material can act as a lens and focus or disperse the radar waves. This is why it should have a constant thickness within the area used for transmission. In an airborne application the aerodynamically designed radome is subject to in-flight damage from bird strikes, erosion, precipitation static, thunderstorm electric fields, lightning strikes, delamination, water ingression, and particle damage such as hail or debris on the tarmac. The scope of this project is to present a complete radome design using Catia V5, studying material options, analyzing and determining a wide range of mechanical loads, using ANSYS to finish with structural verifications, as bird impact numerical analysis and mechanical material testing.

TYPES / CLASSES / STYLES

Radomes for use on flight vehicles, surface vehicles and fixed ground installations are classified into various categories according to MIL-R-7705B. Categories are determined by the specific radome use and wall construction. Customer satisfaction is met by the following, Type's definitions

- Type I: low frequency radomes at or below 2 GHz.
- Type II: Directional guidance radomes having specified directional accuracy and requirements.

Design of Ejecting Mechanism of Long Excavator Bucket for Clogged Soil

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Abstract: *Trenching of soil causes clogging on excavator bucket, with time the deposition of soil on bucket surface increases, so the material handling capacity of excavator buckets decreases due to sticking of soil. Methods adopted to remove the soil from bucket surface some time causes damage to the bucket and some time it is also seen that it damages teeth of the bucket. In this article we will design an ejecting mechanism which will remove the clogged soil from the bucket surface easily, without any delay in the work, reduction in down time on site and with minimal energy. We will use different software packages to design and analyze the new bucket and the ejecting mechanism. A prototype is made with CAD module, necessary theoretical calculations are done and model is validated with the FEA tools. Implementing this mechanism in the existing buckets will definitely decrease their jerking to a significant level. It will also increase life and efficiency of bucket to a higher level.*

Keywords: excavator, bucket, adhered, soil.

1. Introduction

Although excavators are used mostly for construction purpose, they have various other applications also like digging and maintenance of rivers, canals, ponds, drainages, etc. Excavators used in such operations have longer arms so as to achieve greater area of approach. They are used for distant digging operations. Such machines are called as „Long-Reach Excavators". These have comparatively smaller capacity buckets and so soil compaction occurs more in them. While digging near riverside or canals, soil is mostly wet, forming lumps of about 1-1.5 kg. (See figure 1).

Figure 1: Bucket with adhered soil

Such lumps remain attached to inner-plates of bucket because of adhesion between soil and metal. M. Khan (2010), in his literature explains that soil adhesion increases with increase in moisture content [1]. These lumps are not easily removed during unloading stage of bucket. If this adhered soil is not removed, then it will reduce intake capacity of bucket during further digging operations. So, to remove this, mostly operators hit the bucket over its teeth against ground on some

hard object like stone. This makes bucket teeth dull and sometimes they brake (See figure 2) [2].

Figure 2: Bucket with damaged teeth

Further due to such hitting (called as jerking), actuators of bucket damage. Operator"s maintenance cost and downtime increases and bucket needs earlier replacement. This reduces overall efficiency of bucket and machine (Vivek Ramsahai, 2011) [3].

This gives us the need for design and development of soil ejecting mechanism in buckets. Implementation of such mechanism will make bucket operations easy.

2. Literature Survey

Researchers have studied on this concept and developed some mechanisms [4]. Some of them are as below:

Bamboo straws outer surface grinding-A design analysis

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Abstract:
This paper presents the results of the design and manufacture of external surface grinders. The grinder performs the following functions: orientation of the work piece and continuous grinding of the outer surface of the work piece. The parameters calculated during the design are: speed chain, kinematic chain and kinematic structure of the machine. The processing capacity of the machine is 430 products per minute. After successful production, grinding machines were widely used in addition to actual production.

Keywords: Straws; Grinding machine; Kinematic, manufacture, structure

I. Introduction

Bamboo is the earth's most sustainable plant. Bamboo can actually grow to full maturity between 3-5 years and grows in abundance, mainly in the warm and tropical climates of Asia. It represents strength and versatility and is used for a variety of things, not just for drinking straws. It's stronger than steel and is fully biodegradable, and the most important thing; it won't contribute to the heartbreaking damage that single-use plastic is causing to oceans, rivers and wildlife habitats all around the world [1].

Figure 1: Bamboo straws

Buying bamboo straws from real bamboo stalks that you can reuse over and over again is about as sustainable and planet-friendly as you can get. If we compare the damage that single-use plastics are causing to our coastlines with what happens when bamboo has reached the end of its' life, there really is no question on which material has the harshest effects on our environment. The good news is that once you have finished with your bamboo straw completely, you can simply toss them onto the compost heap where they will break down and compose naturally [3].

Bamboo straws can be used time and time again and look great in any drink. Because bamboo is a natural material, they of course won't last as long as a metal straw, but they cost a fraction of the price and can be used for many other things after they've finished their life as a straw; think plant stands and props for the kids school craft projects [4]. You can reuse bamboo straws hundreds of times over, so if we do the math, they can be far more economical than nasty plastic alternatives that are designed to be used once, and then instantly disposed of.

Genetic Algorithm based Optimization of Composite Lamina

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Abstract : Composite materials are realized by combining at least two organic or inorganic materials. Composites are highly used on industrial design. The light weight makes them key elements to reduce weight and reduces operating costs in some domains like aeronautics. Genetic algorithms(GA) are heuristic stochastic methods that explore a reduced set of tentative solutions, performing a guided search procedure that evaluates few solutions. The dynamics in GA provide optimal solutions to complex optimization problems when an analytical technique does not work. In this paper, results of optimization of a stiffened composite panel subject to a set of shear and axial loads. The modified GA is proposed to simultaneously minimize the cost and weight of a composite plate under different combinations of axial loading. Two materials with one significantly stronger, but more expensive than the other are used. The optimization techniques is implemented by using convex combinations of cost and weight objective functions into a single value for laminate fitness. To obtain optimal set of designs, the influence of cost and weight on the overall fitness of a laminate configuration was adjusted from one extreme to the other by adjusting the scale factors accordingly. The performance of the proposed configurations are evaluated via nonlinear finite element simulation. The goal is to find the optimal configuration that keeps the principal strains under a given threshold. The proposed method significantly reduce both the weight and iterations required for the optimization.

Index Terms— Composite lamina, GA, Ansys Parametric Design Language, Composite box wing

1. INTRODUCTION

Composites are highly-used on several industrial domains like spacecraft, civil or aircraft design. Their popularity is due to their excellent mechanical properties as well as their available freedom to tailor material properties. Most practical laminate designs require combinatorial optimizations because the ply orientations are usually restricted to small set of discrete values. In spite of this discretization, composite optimizations often have multiple solutions with similar performance. This kind of problems are one of the most complex and expensive to solve. Moreover, its large number of design variables contributes to having multiple local optima. This optimization process is also hardened with the addition of several structural constraints. In order to check some of these constraints (i.e. maximum strain values), a finite element simulation is usually executed. This simulation is highly time-consuming and therefore its number of executions should be reduced to a minimum.

During the last years, Genetic Algorithms (GAs) have been used for a variety of optimization problems. One of their main advantages is the capability to treat multimodal functions, finding its multiple optima and giving the possibility chooses one solution (design) or another. Also, GAs does not use any gradient information during the searching process, in contrast to numerical optimization procedures. Hence, GAs are a compromise between expensive brute force search strategies and numerical approaches**.**

Stability Performance Analysis of an Axial Flow Compressor

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Abstract:-In an aircraft axial flow compressors, blades of compressor encounter stalling during various angles of attack of an aircraft. The aim of this paper is to suppress rotating stall and surge further to extend stable operating range of the compressor system. The uniform flow into compressor inlet can be achieved using moveable inlet guide vanes. This will improve stability and fuel efficiency. But, improper air flow creates stalling, surging and chocking. The aim of this paper is to study the effect of angle of attack on inlet guide vanes and analyzed experimentally and using a software. The experimental procedure started with fabrication of inlet guide vanes and tested them in our wind tunnel.

Key Words: Axial Flow, Rotating stall, Surge, Choking.

INTRODUCTION

A compressor is a part of gas turbine engine especially sensitive on changes their technical state during operation process. Compressor stability and control research parallels the early days of aircraft stability and control research in various ways. Compressor rotating stall and surge are primary design constraints which effectively reduce engine performance, and which consume major fraction of a development program. One reason that these unsteady aerodynamic instabilities can lead to large penalties in performance is that they are difficult to predict accurately during design. Axial flow compressors are working in an unfavorable pressure gradient and therefore the disturbances caused in the working In order to reduce the stall and surge in axial flow compressor by the implementation moving inlet Guide vanes. Due to the moving action of inlet guide vanes there will be proper

flow pattern obtained to the compressor at various angle of attack. The reduction of stall and surge is estimated by various methodologies some of them flow analysis and the design calculation. In these project is used to analyses the flow properties of inlet guide vanes and improve the engine performance also.

1.2 Need and scope
- The stability analysis and estimation of axial flow compressor is very much important for each and every aircraft jet engine.
-
  The instability of compressor in the form of surge and stall is the major cause for engine failure (siege) and in turn accident.

1.3 Gas Turbine Engine
Aircrafts mostly use either a turbofan or turbojet for the purpose of propelling the aircraft. The gas turbine engine consist of various module used are,
- ☐ Inlet diffuser
- ☐ Axial flow compressor
- ☐ Combustion chamber
- ☐ Turbine
- ☐ Nozzle

1.4 Inlet diffuser
An engine's air inlet duct is normally considered an airframe part and made by aircraft manufacture. During flight operation, it is very important to engine performance

1.5 Compressors:
Compressors are the basic unit of any gas turbine engines which compresses air into the gas turbine engine from the diffuser to the combustion chamber by with its rotating action by rotor blades. The combustion of fuel and

Design and Analysis of Cost and Load Effective Tricycle

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Abstract

This research was based on the need for fast, efficient and cost-effective transportation of goods (e.g. agricultural products) to desired locations. In the early stages of tricycle design, Solid works simulation and finite element analysis software were used, which provided an ideal virtual test environment for design evaluation and also helped to make the right choices to improve quality. Considering the choice of materials, the available technology, the severity and impact of the load, as well as aerodynamics and ergonomics, a unitary or frameless substructure reinforced with welded crossbeams was used to produce the platform. Factor of Safety, which describes the expected or actual load-bearing capacity of a tricycle and the ratio of the breaking strength of a part to the actual working stress or maximum force during service. Cold-rolled steel with a yield strength of 350 MPa was used for the chassis frame, with a maximum stress point of 132.391 MPa, resulting in a safety factor of 2.6, which is within the safe range. The twin-spark 4-stroke engine, which improves loading, handling and payload, was installed in a rear-wheel drive arrangement, with the rear wheels connected to the engine via axle supports. Axles connected to the engine's crankshaft drive the rear wheels, which in turn drive the front wheels. When climbing a steep slope, the weight transfer to the rear wheels is fragmented, this improves the grip between the tires. The SAE standard for seat design was introduced for the three-wheel motor vehicle, which significantly improved the ergonomic fit of the driver's seat. The weight of the loads that can be transported simultaneously by the tricycle

Keywords: tricycle, auto rickshaw, design, fabrication, transportation, factor of safety, vehicle, engine

I. Introduction

The need for mobility in various parts of the world grows at a very rapid rate. It is an important and urgent aspect of life as information, foodstuffs, materials, etc. are moved across to people through this need. Fadare, and Salami (2004), noted that the growing transport demand is borne out of the necessity for people to meet social and economic needs. Due to increase in industrialization, urbanization, and population, public transport demand is becoming unavoidably high.

Transportation is defined as the public conveyance of passengers or goods especially as a commercial enterprise. In other words, transportation can be said to be the movement of people and goods from one location to another. Transportation serves as a link between manufacturers, farmers or producers and consumers. It is of utmost importance to them.

A vehicle is a non-living device that is used to move people and goods from one place to another. Unlike the infrastructure, the vehicle moves along with the cargo and riders. Except when being pulled or pushed by a cable or muscle-power, vehicles often provide their own propulsion; this is most commonly done through a steam engine, combustion engine, electric motor, a jet engine or a rocket, although other means of propulsion also exist. Vehicles also need a system of converting the energy into movement; this is most commonly done through wheels, propellers and pressure.

Transportation is pertinent as it promotes trade between people, and this is important for civilization. According to Ipingbemi and Adebayo (2016), Informal Public Transport (IPT) is a widespread means of moving people particularly in developing countries; globally, one of the most visible modes of IPT is the tricycle or three wheeler vehicles. A tricycle is a vehicle with three wheels. Adam (2011), and Michelle and Mitter (2010), also defined a tricycle as a human-powered (or gravity-powered) three-wheeled vehicle. The origin of this three-wheeled vehicle used in transportation was based more on standard carriages, only that the scale was being reduced and then enhanced with additional mechanisms that allowed it to have easier propulsion.

In Nigeria, tricycles are becoming common as a means of transportation especially for low-income earners in the urban area and those living in rural areas. They are also rapidly replacing motorcycles in some certain parts of Nigeria such as in Enugu State, due to its better safety level as compared to the motorcycles.

Motorized tricycles are three-wheeled vehicles which are powered by scooter engines, electric motors, motorcycles or car engines. It is founded on the same technology as bicycles and/or motorcycles. The tricycle