

ALVARO-CS

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Sri Basanta Kumar Bisoi
Chairman, EATM

Alvaro-CS is the manifestation of the desire of Computer Science Faculty and Students to share their innovative ideas on common platform. It gives me great pleasure to know that Alvaro departmental magazine for the academic year 2019-20 is ready for publication. This E-magazine is a perfect blend of magnificent and groundbreaking articles. It has concentrated in disseminating information to the student community and quenches their thirst for knowledge updates. I am very glad to congratulate the editor for their hard work and bringing out this edition.



Sri Krushna Chandra Bisoi
Secretary, EATM

Alvaro-CS is the annual magazine of department of Computer Science & Engineering for the academic year 2019-20. This is a combination of exquisite articles and innovative ideas from faculty members in the computer science and engineering departments and a new generation of students. We are confident that useful articles and innovative ideas in magazines will be appealing and useful to our readers.



Dr. Suwendu Prasad Sahu
Principal, EATM

Alvaro-CS is the annual magazine for the academic year 2019-20 released by the Department of Computer Science & Engineering. It is a blend of exquisite articles and innovative ideas from the faculty and new age Students of Computer Science & Engineering Department. I strongly believe that the informative articles & innovative ideas presented in the magazine will be appealing and useful to the readers



Dr. Biswajit Nayak
Dean, Academics

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Dr. Anil Kumar Mishra
(HOD, Department of CSE)

“Coming together is a beginning, keeping together is progress and working together is success”. This E-Magazine “**Alvaro-CS**” for the academic year 2019-20 a flag ship magazine of Department Computer Science & Engineering, Einstein Academy of Technology and Management. This is the culmination of the never tiring initiative and endeavors taken by the faculty and students of CSE. The Magazine strives to inform, engage, inspire and educate diverse readership on developments in Computer Science field.



A Bug By any other name

Prof. Sanjaya Kumar Sen (Associate Professor)

Picture this: It's late. A busy 1 a.m. kind of late.

You're tired – or at least your increasingly scratchy eyes think so – and the characters on the screen blur into a rainbow goop.

“Public static void main...” you mutter as you struggle to read through the code flow one more time.

You shake the dreariness from your eyes for one last burst of energy before the pixelated shower overtakes your vision.

Suddenly, you sit up from your chair, the springs screeching so loud it could wake up your neighbors upstairs.

“The function runs into an infinite loop!” you exclaim, clarity washing over.

Your eyebrows furrow.

“Wait, the function runs into an infinite loop?” you question. “Who wrote this buggy code?!?”

If your mind works anything like mine, your next thought isn't to pull out your phone and ping that teammate who can't tell a while loop from a Fireman's coil. It's instead to ask why there even is buggy code.

No, not in a philosophical sense. I mean literally: Why is there such a thing as “buggy code?”

Think about it: Bugs – you know, the many-legged creatures we would much rather not have crawling over us – are littered throughout computer science. There's buggy code, debugging, bug bashing, and bug fixes. Computer enthusiasts are paid by major software companies as part of bug bounty programs. Companies host hackathons to squash bugs (yes, the imagery is intentional). Version control providers like GitHub and Visual Studio Team System have “bugs” as a separate task category and even embellish them with an icon of the creepy crawlers.

What drove computer scientists to obsess over bugs?

The story goes something like this: The date was September 9, 1947. Engineers at Harvard University were testing the Mark II, a bulky electromechanical computing device the size of a room and weighing more than 8,000 kgs.

That night, in the windowless room that was the Mark II's home, the machine broke down. Engineers began seeking out the problem. After much investigating, they found moth smashed into one of the relays.

The team recorded the discovery in a famous logbook entry now stored in the National Museum of American History.

“Relay #70 Panel F (moth) in relay,” an engineer wrote. “First actual case of bug found.”

The team, which included Grace Hopper, the famous mathematician and computer scientist, later popularized the term “debugging” to mean solving glitches in machinery or programming. More than 70 years later, we even have industry-scale applications called debuggers to help us step through and find the virtual moths in our code.

But the surprise here isn't that dead bugs caused – and still cause – headaches for computer scientists. It's that “bugs” existed long before computers even made an appearance. The first documented instance in the Oxford English Dictionary of “bug” being used as a metaphor for a logic or machinery glitch was in March 1889. In the Pall Mall Gazette, a sentence read as follows: “Mr. Edison, I was informed, had been up the two previous nights discovering 'a bug' in his phonograph – an expression for solving a difficulty, and implying that some imaginary insect has secreted itself inside and is causing all the trouble.”

Yes, that Mr. Edison – the one and only Thomas Edison. The Father of Electricity, according to the Oxford English Dictionary, had animated an insect to personify his tinkering woes. And unless there are records to prove otherwise, he might as well have shaken hands with Grace Hopper to doom future software developers to become well-paid digital bug exterminators.

Of course, today's bugs are more than moths in relays or tricky wire configurations. With the advent of the internet, bugs have turned into costly problems for colleges, universities, companies, and even governments.

In 1988, a bug in a program meant to map the internet ended up tearing through and shutting off thousands of servers, marking the first prominent internet worm. A race condition in power grid management software cut off electricity in 2003 for eastern US states like New York and even the Canadian province of Ontario.

In 2013, Apple's update to the browser Safari included a line that was accidentally copy-pasted twice in a row, opening up users to attacks and spoofs from across the internet. And just as recently as 2017, more than 230,000 machines across 150 countries were encrypted and held as ransom by hackers because of a buffer overflow bug in the Microsoft Server Message Block service. The cost of that last bug: \$4 billion, or almost Rs. 29,900 crores.

Perhaps this is a sign we should call software mistakes something bigger – something more gargantuan.

Or maybe there is a reason for Edison and Hopper's fascination with small, antenna-driven creatures: They're hard to catch, annoying, and ever-persistent.

That much has remained constant across the centuries of technological advancement. Bugs are a pain in the rear end, a ghastly sight to see at 1 a.m., and often cause us to slap our foreheads in exasperation.

Even if they do sometimes come with an eye-popping price tag.

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Migrate To Sky

Prof. Prof. Riyazuddin Khan (Associate. Professor)

Technology is evolving is at a very fast pace and at equally fast pace business needs are getting change because of multiple business parameter however main reason can be the ever evolving customer demand and business competition.

Multiple approaches may be available at the disposal of any organization to beat the competition and meet customer demand. IT can be one of the approaches available with organization to deliver the required services to its customer. However the challenge will be the usage of existing business critical application effectively and efficiently, so organization may not be able to discard the existing applications (past investment), which is built over a period of time with significant effort, time and cost to address a business requirement on which organization business depends i.e. the legacy application migration can be a way to achieve organization goal/target. As per BusinessDictionary.com; **legacy system** is defined as “Obsolete computer system that may still be in use because its data cannot be changed to newer or standard formats, or its application programs cannot be upgraded” and **legacy application** is defined as “Computer program (typically a database system) which, although critical to an organization's operations, is in an obsolete format or is installed on an obsolete system.

Big question is; what should an organization do with these legacy applications, which they are not able to discard as heavy investment has gone into to build these application over a period of time and these applications are business critical that is that these applications are crucial for the business smooth operation. If due to any reason, an enterprise choose not embrace the new prevalent technology then enterprise may face the multiple challenges such as shortage of skilled manpower, high cost of software maintenance, lack of scalability, business continuity, along with customers experience, enterprise image, etc., which will not be in the interest of enterprise. If an enterprise chooses to embrace the new technology such as cloud, which deliver hardware and software resource as virtualize service than enterprise has three options with respect to their current application in the

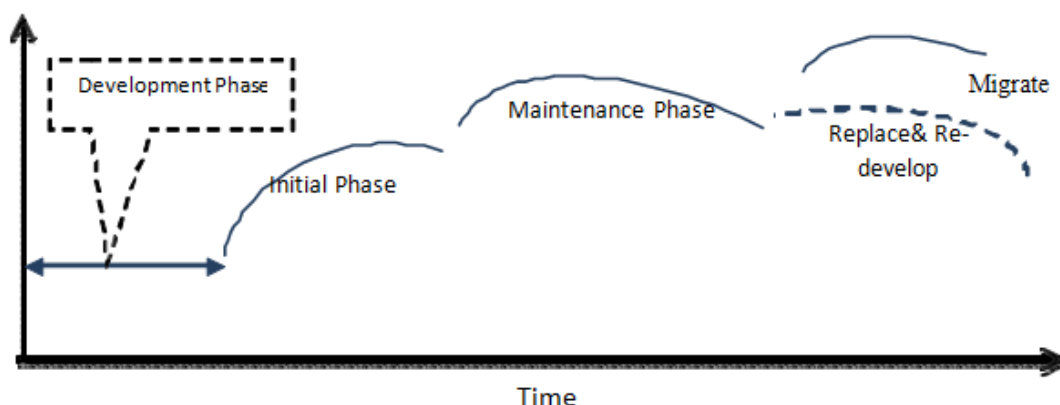


Figure - Legacy Application Modernisation Options

- a) Migrate existing application
- b) Replace existing application with any off-the-shelf application
- c) Re-develop the existing application interest of the enterprise long term goal:

Option (b) i.e. replace or option (c) i.e. re-develop option may not be feasible as organization may not like to put in all the effort, time and cost again, when they already have an existing application running, so the only feasible option available with enterprise is to migrate the current application to new technology that is most talked about i.e. Cloud. An enterprise may understand the importance of migrating legacy application to Cloud technology; however the challenge an enterprise faces is an uncertainty of where to begin the legacy application migration process and what need to be done during the migration process. Biggest of all question is will the migration be successful.

DEYPOS: De-duplicable Dynamic Proof of Storage for Multi-user Environments

AMIT KUMAR MAHAPATRA (1901322060)

INTRODUCTION

Cloud Computing is the use of computing resources (hardware and software) that are delivered as a service over a network (typically the Internet). The name comes from the common use of a cloud-shaped symbol as an abstraction for the complex infrastructure it contains in system diagrams. Cloud computing entrusts remote services with a user's data, software and computation. Cloud computing consists of hardware and software resources made available on the Internet as managed third-party services. These services typically provide access to advanced software applications and high-end networks of server computers.



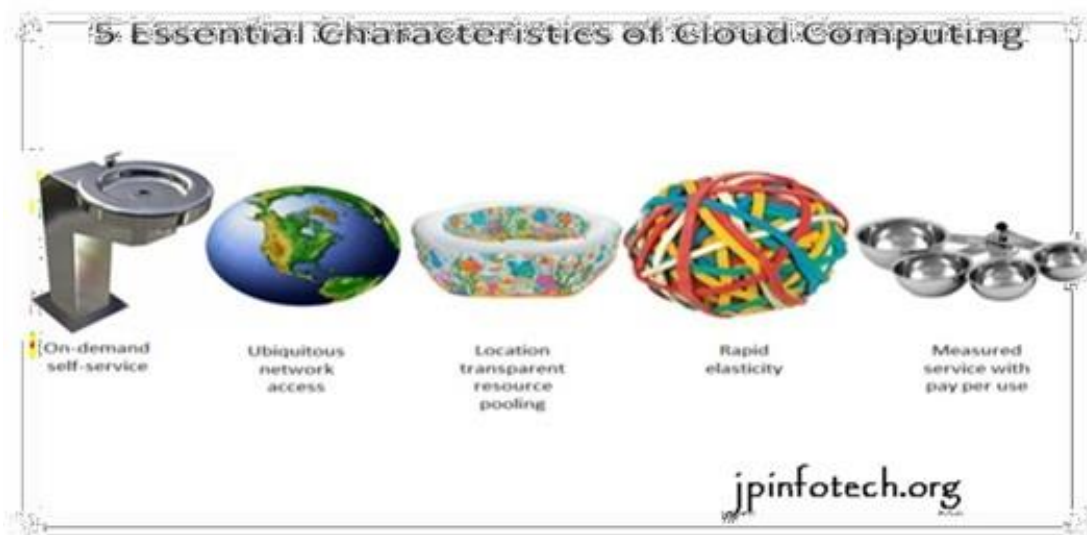
Structure of cloud computing

Characteristics and Services Models:

The salient characteristics of cloud computing based on the definitions provided by the National Institute of Standards and Terminology (NIST) are outlined below:

- ☆ **On-demand self-service:** A consumer can unilaterally provision computing capabilities, such as server time and network storage, as needed automatically without requiring human interaction with each service's provider.
- ☆ **Broad network access:** Capabilities are available over the network and accessed through standard mechanisms that promote use by heterogeneous thin or thick client platforms (e.g., mobile phones, laptops, and PDAs).

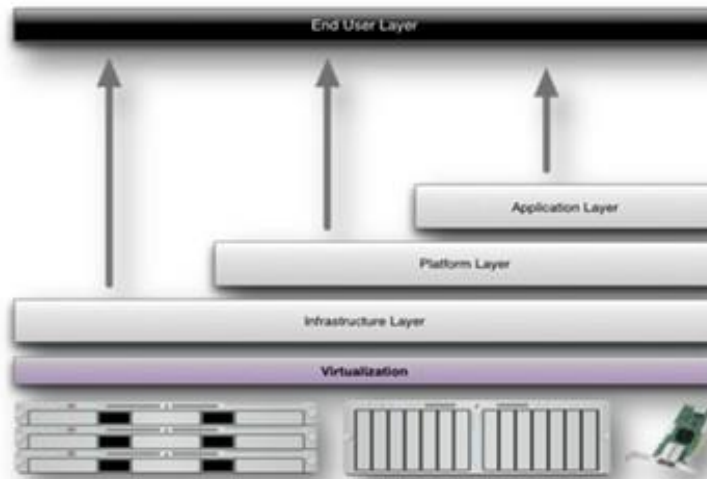
- ☆ **Resource pooling:** The provider's computing resources are pooled to serve multiple consumers using a multi-tenant model, with different physical and virtual resources dynamically assigned and reassigned according to consumer demand. There is a sense of location-independence in that the customer generally has no control or knowledge over the exact location of the provided resources but may be able to specify location at a higher level of abstraction (e.g., country, state, or Datacentres). Examples of resources include storage, processing, memory, network bandwidth, and virtual machines.
- ☆ **Rapid elasticity:** Capabilities can be rapidly and elastically provisioned, in some cases automatically, to quickly scale out and rapidly released to quickly scale in. To the consumer, the capabilities available for provisioning often appear to be unlimited and can be purchased in any quantity at any time.
- ☆ **Measured service:** Cloud systems automatically control and optimize resource use by leveraging a metering capability at some level of abstraction appropriate to the type of service (e.g., storage, processing, bandwidth, and active user accounts). Resource usage can be managed, controlled, and reported providing transparency for both the provider and consumer of the utilized service.



Characteristics Of Cloud Computing

Services Models:

Cloud Computing comprises three different service models, namely Infrastructure-as-a-Service (IaaS), Platform-as-a-Service (PaaS), and Software-as-a-Service (SaaS). The three service models or layer are completed by an end user layer that encapsulates the end user perspective on cloud services. The model is shown in figure below. If a cloud user accesses services on the infrastructure layer, for instance, she can run her own applications on the resources of a cloud infrastructure and remain responsible for the support, maintenance, and security of these applications herself. If she accesses a service on the application layer, these tasks are normally taken care of by the cloud service provider.



Structure Of Service Models

Conclusion

We proposed the comprehensive requirements in multi-user cloud storage systems and introduced the model of deduplicatable dynamic PoS. We designed a novel tool called HAT which is an efficient authenticated structure. Based on HAT, we proposed the first practical deduplicatable dynamic PoS scheme called DeyPoS and proved its security in the random oracle model. The theoretical and experimental results show that our DeyPoS implementation is efficient, especially when the file size and the number of the challenged blocks are large.

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Time Series Feature Extraction (Tsfresh-A Python Package)

RAJALAXMI NAYAK (1901322088)

SANDIP SWAIN (1901322098)

Prof. Nalini Kumar Sethi (Associate. Professor)

Introduction :

Inpainting is a conservation process where damaged, deteriorating, or missing parts of an artwork are filled in to present a complete image. Digital image inpainting means virtually painting some regions of an image that appears to be part of original image. Image inpainting was applied on old images in order to remove scratches and enhance damaged images.

Example :



Fig1: Image before and after image inpainting

Now, it is used for removing artifact objects that can be added to the images by filling the target region with estimated values. Image inpainting is also used to remove any type of distortion including text, blocks, noise, scratch, lines or many types of masks. In the future, but when the image editors hide their traces using sophisticated techniques, the detection of forgery and the inpainting of image can become difficult. For that reason, almost all detection approaches attempt to handle this by detecting the abnormalities of similarity between blocks of the image that can be affected during the postprocessing operation.

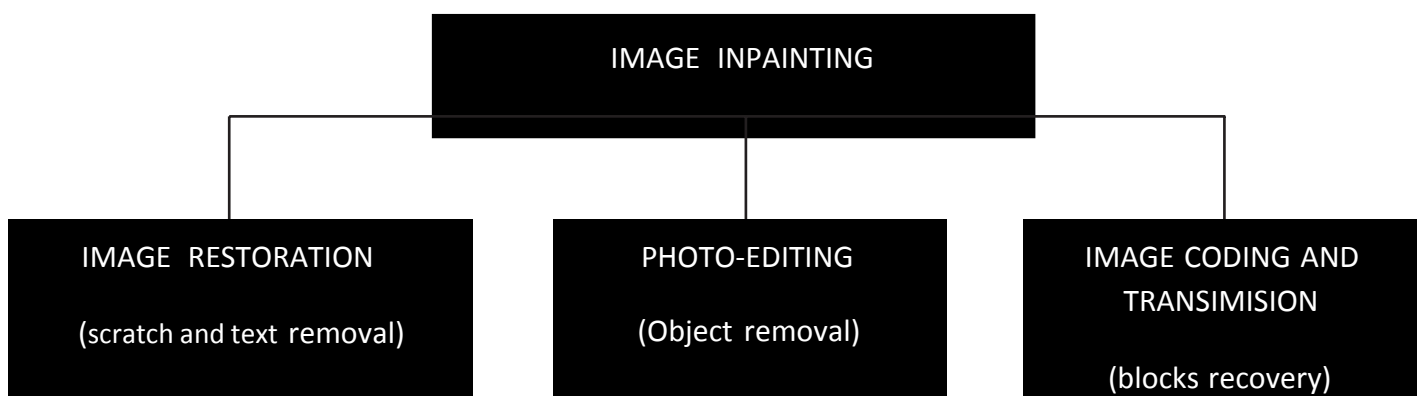


Fig 2: Image inpainting applications and the purposes of each category.

Techniques:

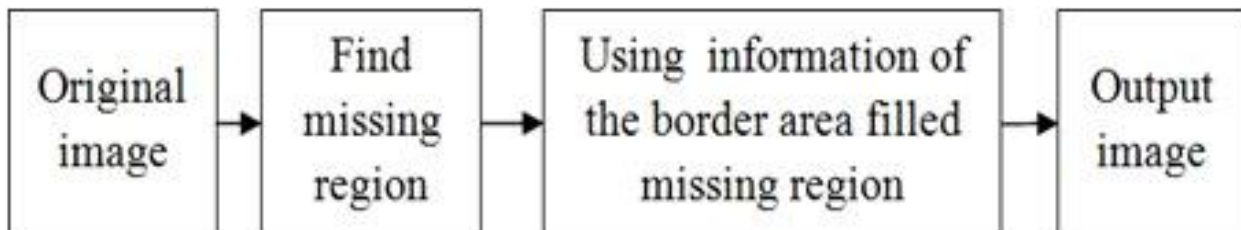
The mostly used in-painting methods are PDE based method, Patch based method and Sparse based method. PDE based method also known as diffusion-based method. Patch based method also known as exemplar-based method.

Different Approaches of Image In painting Techniques

1. Partial Differential Equation (PDE) based
2. Texture synthesis based
3. Exemplar based
4. Hybrid based
5. Semi-automatic and Fast
6. Wavelet transformation based
7. Discrete cosine transform based in painting.

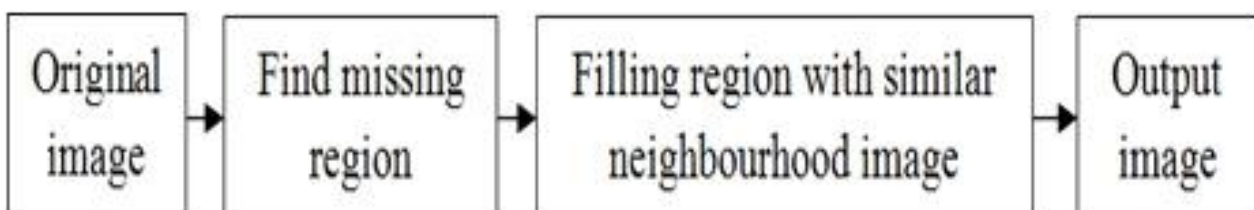
1. Partial Differential Equation (PDE) based image in painting

Partial Differential Equation (PDE) is a differential equation contains one or more variables, relating the values of the function itself and its derivatives of various orders. The algorithm is to continue geometric and photometric information that arrives at the border of the occluded area into area itself.



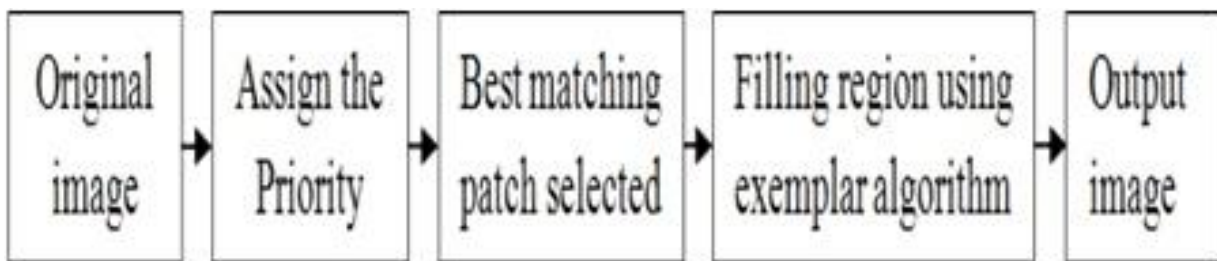
2. Texture synthesis-based image in painting

The main objective of texture synthesis based inpainting is to generate texture patterns, which is similar to a given sample pattern, in such a way that the reproduced texture retains the statistical properties of its root texture. The texture synthesis is based Inpainting perform well in approximating textures. These algorithms have difficulty in handling natural images as they are composed of structures in form of edges. Also, they have complex interaction between structure and texture boundaries.



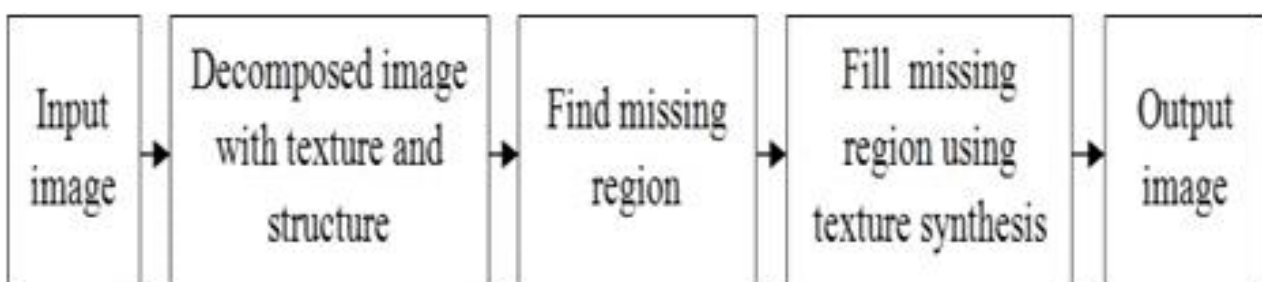
3. Exemplar based image inpainting

It overcomes the drawback of PDE based inpainting and it is used for reconstructing large target regions. Basically, it consists of two basic steps: priority assignment is the first step and the second step consist of the selection of the best matching patch. The exemplar-based approach samples the best matching patches from the known region and pastes into the target patches in the missing region. According to the filling order, the method fills structures in the missing regions using spatial information of neighboring regions. Most of the new exemplar-based algorithms adopt the greedy strategy, so these algorithms suffer from the common problems of the greedy algorithm, being the filling order (namely priority) is very critical.



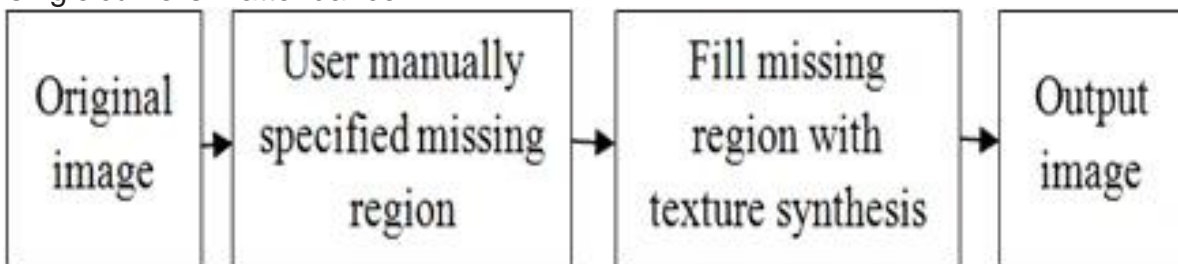
4. Hybrid based image inpainting

Hybrid inpainting technique is also known as Image Completion. It is used for filling large target (missing) regions. The hybrid approaches combine both texture synthesis and PDE based Inpainting for completing the holes. The main idea behind these approaches is that it decomposed the image into two separate parts, one for Structure region and another for texture regions. The corresponding decomposed regions are filled by edge propagating algorithms and texture synthesis techniques. Structure completion uses two step methods: First a texture-based segmentation on the input image and extrapolating the boundary regions by tensor voting to generate a complete image segmentation and second by using tensor voting missing colors are synthesized. Tensor voting method is good for maintaining curvature, but cannot perform well on complex structures and image segmentation of natural images is also a difficult task to perform.



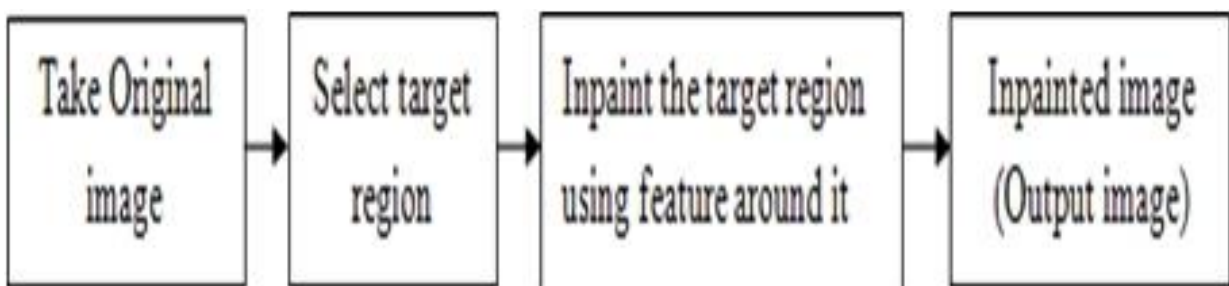
5. Semi-automatic and Fast image inpainting

This performs a two-step process. First, a user manually specifies important missing information in the hole by sketching object boundaries from the known to the unknown region, and then a patch-based texture synthesis is used to generate the texture. The missing image patches are synthesized along the user-specified curves by formulating the problem as a global optimization problem under various structural and consistency constraints. Effortless dynamic programming can be used to obtain the optimal reply if only a single curve is in attendance.



6. Wavelet transformation-based image inpainting

The algorithm presented the technique with the help of the wavelet transform. Here we expect the best global structure estimation of damaged regions in addition to shape and texture properties. If we consider the fact of multi-resolution analysis, data separation, compaction along with the statistical properties, then we have to consider the wavelet transform due to its good image representation quality. Wavelet transform tries to satisfy the human visual system (HVS). The algorithm decomposition of an incomplete image is done with the help of wavelet, and after that, wavelet and scaling coefficients are found. The image inpainting process is applied in the wavelet domain by considering both scaling and wavelet coefficients from coarse to fine scales in the target region. Using this algorithm, one benefit is that it utilizes inter and intra-scale dependency to maintain image structure and texture quality using Wavelet Transform. But difficulties in this algorithm are that masks for regions are defined manually.



7. Discrete cosine- transform based In painting

A discrete cosine- transform (DCT) expresses a finite sequence of data points in terms of a sum of cosine functions oscillating at different frequencies. The DCT as an orthogonal transform is used in various applications. DCTs are important to numerous applications in science and engineering, from lossy compression of audio (e.g. MP3) and mages (e.g. JPEG) (where small high-frequency components can be discarded), to spectral methods for the numerical solution of partial differential equations. In particular, a DCT is a Fourier related transform similar to the discrete Fourier transform (DFT), but using only real numbers. DCTs are equivalent to DFTs of roughly twicethe length, operating on real data with even symmetry, where in some variants the input and/or output data are shifted by half as sample.



Conclusion

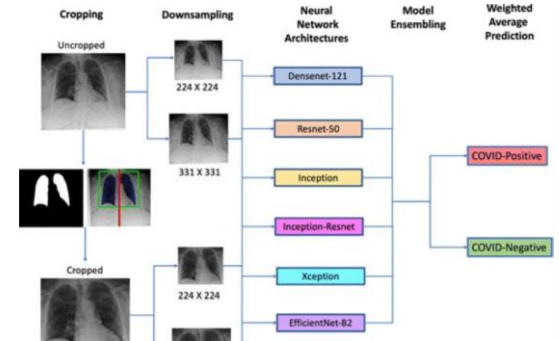
Image in painting is an important task for computer vision applications, due to large modified data using images editing tools. From these applications, we can find wireless image coding and transmission, image quality enhancement, image restoration and others. In this paper, a brief image in painting review is performed. Different categories of approaches have been presented including sequential-based (classical approach without learning), CNN based approach and GAN-based approaches. We also attempt to collect the approaches that handle different types of distortion in the images such as text, objects added, scratch, and noise as well as several categories of data like RGB, RGB-D, historical images. A good alternative to these conventional features is the learned ones, e.g. deep learning, which has more generalization ability in more complicated scenarios. To be effective, these models need to be trained on a large amount of data. For that, we collect the most used datasets used for training these models. In order to summarize the different analyzed cases and their performance, we present a description using tables for each category of methods by presenting their evaluation performing the types of data, the datasets and the metrics used for each approach. As a conclusion, there is no method that can inpaint all the types of distortion in images, but using learning techniques there are some promising results for each category of analyzed cases.

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12. OVERVIEW OF AN IMAGE INPAINTING TECHNIQUES Bansi B. Thanki. International Journal for Technological Research In Engineering

As we know Artificial Intelligence is already in demand in every sector of society. Recently, AI has brought a huge revolution in the medical field.

Researchers of Northwestern University have developed a new AI platform Called Deep COVID-XR, that detects Covid-19 by analyzing X-ray images of the lungs. The machine learning algorithm was able to spot Covid-19 in X-rays about 10 times faster and 1-6% more accurately than a team of specialized thoracic radiologists.



Researchers think that this AI system can be used in hospitals to detect Covid-19 faster and earlier so that the patient can be isolated in early stages. In order to create this algorithm the researchers used 17,002 chest X-ray images. Of those images, 5,445 came from COVID-19-positive patients from sites across the Northwestern Memorial Healthcare System. Where the radiologists took approximately 2.5 hours to

3.5 hours to examine a set of images, the A.I. system took about 18 minutes. The radiologist's accuracy ranged from 76-81%, whereas, Deep COVID-XR performed slightly better at 82% accuracy.

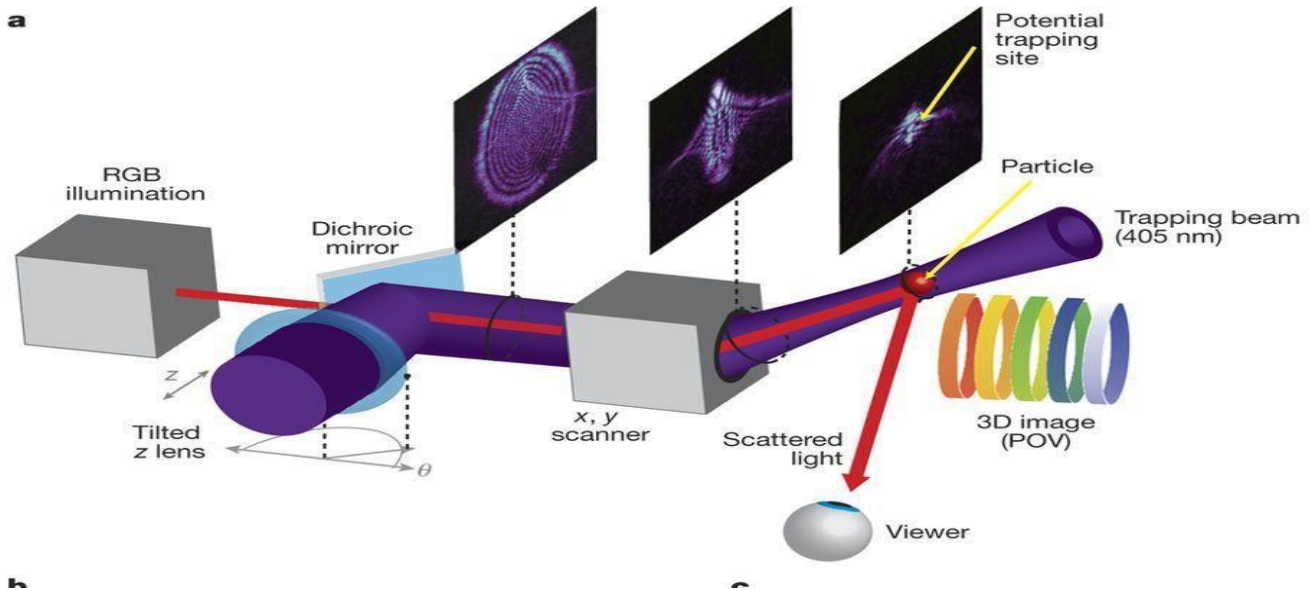
Moreover, another AI designed by Duke University was able to interpret a combination of retinal images and identify Alzheimer's disease in patients. This can help patients in early detection, precise diagnostic, earlier clinical trials etc.



The university team initially identified changes in retinal blood vessel density that correlated with changes in cognition and found out that decreased density of the capillary network around the center of the macula is an indication of Alzheimer's disease. Using this knowledge the team trained a ML model known as Convolutional Neural Network(CNN) using four types of retinal scans as inputs. Scans from 159 study participants were used to build the CNN in which 123 patients were cognitively healthy, and 36 patients were known to have Alzheimer's disease.

By- KRUSHNA CHANDRA ROUT (1901322077)

Remember that iconic scene from “Star Wars” which was developed 40 years ago in which R2D2 projects a video of Princess Leia in free space. That concept of 3D display is no more a fiction now!! We can now feel the image in air, and by that I don’t mean a holographic image, it’s called a volumetric image that floats in air and that you can see from each and every angle, similarly how Tony Stark (Iron Man) interacts with “JARVIS” in free space.



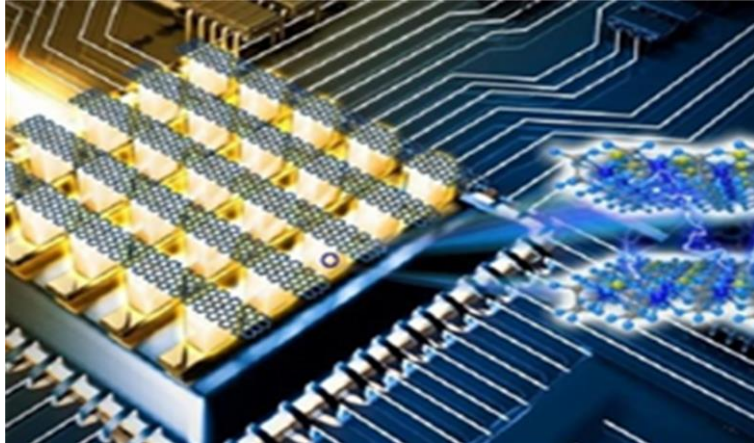
Recently, professors of Electrical and Computer Science department of Brigham Young University, along with holography expert Daniel Smalley have designed a 3D image display, known as Free-Space Volumetric Display. Such displays are capable of producing images in ‘thin air’ and are not subjected to clipping which modulate light at a 2D surface with an edge boundary, like holographic display, Nano photonic arrays, plasmonic displays etc.

Free-space volumetric display is based on photophoretic optical trapping. The optical trapping technique works by capturing and suspending tiny physical particles or cellulose particles around 10 microns in mid-air using special and precise projection lenses in a photophoretic trap created by spherical and astigmatic aberrations. These floating particles then form a screen which is scanned through a display volume by being illuminated with red, green, and blue lights and the particles scatter the light in all directions. The result is a three dimensional image in free space with a large color gamut, fine detail and low apparent speckle. This platform, named the Optical Trap Display, is capable of producing image geometries that are currently unobtainable with holographic and light-field technologies, such as long-throw projections, tall sand tables and ‘wrap-around’ displays.

Sonali Nayak (1901322105)

- *World's smallest memory device created*

The scientists have reduced the size of the thinnest memory storage device by **Shrinking the cross-section area down to just one single square nanometer.**

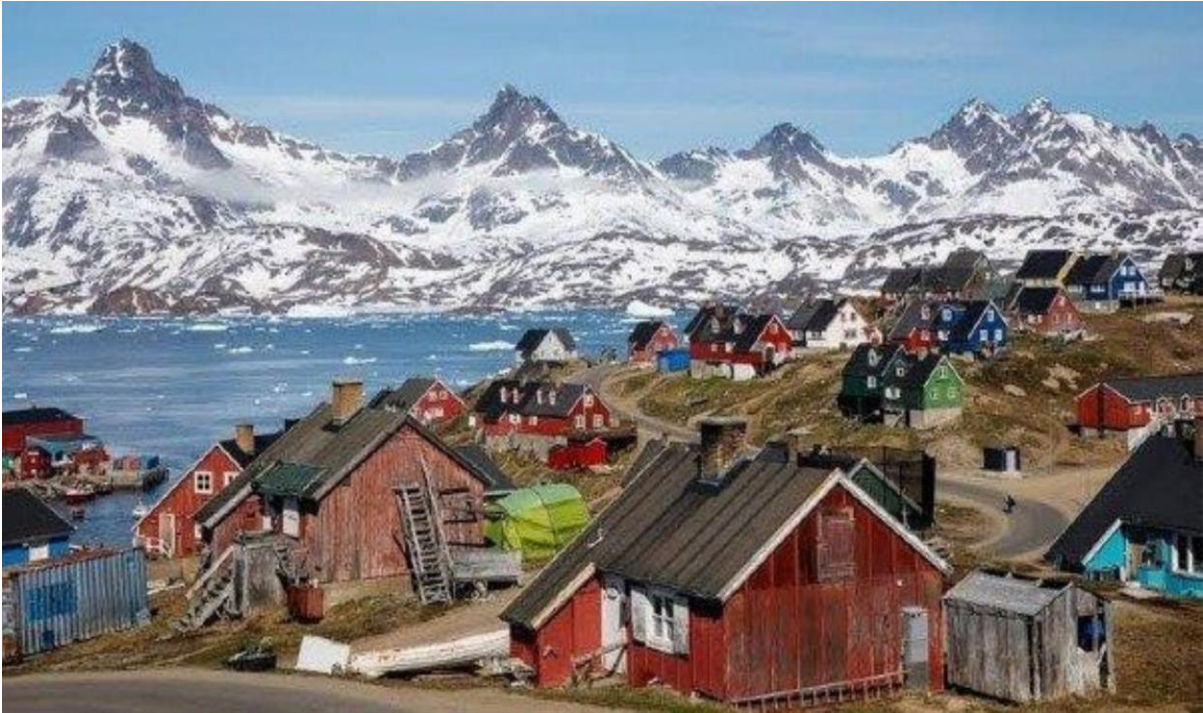


Researchers have created the **world's smallest memory device** yet. This development may lead to the creation of faster, smaller and more energy-efficient electronic chips for consumer electronics and brain-inspired computing.

The researchers also discovered the physics that unlocks dense memory storage capabilities for these tiny devices. The research was published recently in a journal called 'Nature Nanotechnology'. The researchers belong to the University of Texas at Austin.

SUBHASHREE SUBHADARSHINEE (1901322110)

- *The researchers pointed out that with this melting, the sea level has risen by 8 millimetres. The Ilulissat Glacier discharges 6.5% of Greenland's ice sheet. It produces about 10% of Greenland icebergs.*



According to recent studies, the three largest glaciers have enough frozen water to raise the global sea level to about 1.3 meters, namely the Helheim Glacier, Jacob von Isbre and Kenglussuge Glacier. Melted earlier than expected. The current situation shows that until 2000, sea levels have been rising due to the melting of several glaciers. But in the last 20 years, the ice sheets of Greenland and Antarctica have become the single largest source of sea-level

SWADHIN SAMANTARA (1901322116)

POETRY

Super Mom

Mom, you're a wonderful mother,
So gentle, yet so strong.
The many ways you show you care
Always make me feel I belong.

You're patient when I'm foolish;
You give guidance when I ask,
It seems you can do most anything;
You're the master of every task.

You're a dependable source of comfort;
You're my cushion when I fall.
You help in times of trouble;
You support me whenever I call.

I love you more than you know;
You have my total respect.
If I had my choice of mothers,
You'd be the one I'd select!

SAILENDRI MALLICK(1901322096)

Childhood Friends

**As childhood friends, we grew up together,
Swearing to be friends forever and ever.
Sometimes we would argue and fight,
Other times we would laugh and stay up all night.**

**We went from playing with games and toys,
To talking and dreaming about different boys.
My thoughts and feelings, to you I would confide,
Never having anything to hide.**

**Friends we do remain,
Things changing, and things staying the same.
To each other we still listen and share,
About each other, we will always care.**

SARASWATI KANDI (1901322100)

जादुई मोबाइल

मोबाइल का जादू कर रहा बेकाबू
कर रहा यूज पोता हो या दादू
दादू भी ले रहा मजे यूज कर मोबाइल
बुढ़ापे में पा ली है देखो उसने भी स्माइल

स्माइल करे छोरे छोरियां करके फोटो शेयर
फिर ऊपर लाइवस कमेंट का हो रह फियर
फियर में फेसबुक लाइफ, ट्विटर में दिखी दबंगा
यूँ सोशल मीडिया संग जिंदगी करे हैं हुड़दंगा।

हुड़दंगी एप्पस कहे इसके वया हुकुम मेरे आका
आका होले होले मुस्कुराके फोड़े एप्पस में पटाखा
पटाखा कभी कभी तो कर जाए जीवन में सन्नाटा
कभी करना पड़े आका को अप्पस को ही जी टाटा

सो तिलस्मी जीवन मोबाइल लल्ला बाँट रहा
तरह तरह के रंग मानव फंस के चाट रहा
चाट रहा साथ में समय भी प्यारा सेल फोन
इंसान ने पा लिया संग इसके सेलिफिश का जोन

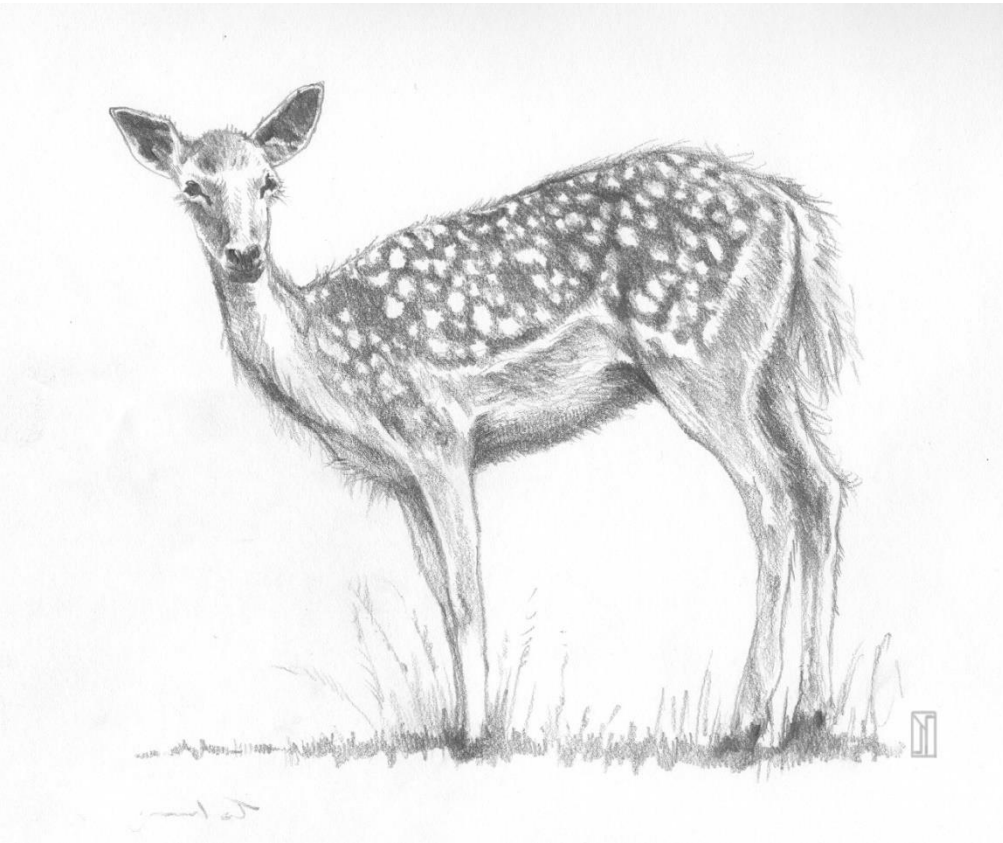
SK AFRID (1901322104)



ABINASH ROUT (1901322058)



DIBYAJYOTI JENA (1901322070)



LAKI NAIKA (1901322078)



PABITRA KUMAR SWAIN (1901322083)



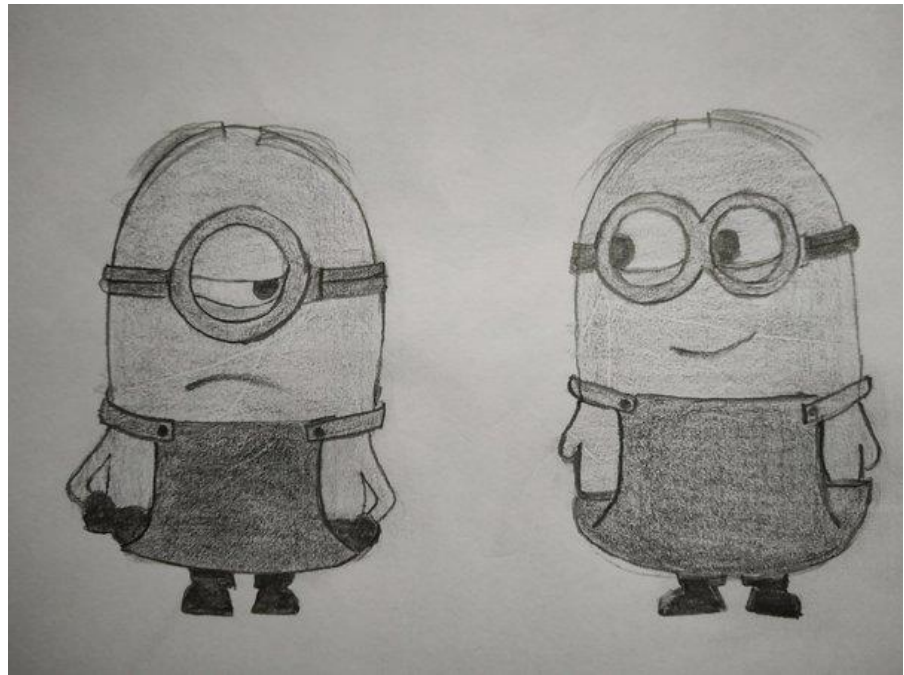
MOUSUMI MAHANANDIA (1901322080)



PRITEE JENA (1901322085)



SONALI NAYAK (1901322105)



SUJATA BEHERA (1901322111)

HAPPENING AT DEPARTMENT



National Conference



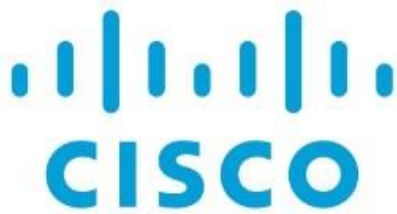


Workshop on Cyber Safety and Security Awareness





Logos & their Hidden Meanings



The lines represent the Golden Gate Bridge Of San Francisco which was a source of inspiration for its founders as they drove down into the city to register the company.



The Ubuntu logo depicts an overhead shot of three people joined together, holding hands and looking up towards the sky. All in all, a rather clever and fitting logo/name combination, as the word Ubuntu means "Humanity".



The white lines passing through give the appearance of the 'equal to' sign in the lower right corner, representing equality.

Amazon is a powerhouse when it comes to online shopping, and their logo reflects that. The yellow arrow in their logo starts at the letter 'a' and ends at the letter 'z', implying that they sell everything from a to z. The arrow also represents a smile, with the arrowhead being a stylized dimple or smile line. The smile indicates the happiness people feel when they shop with Amazon

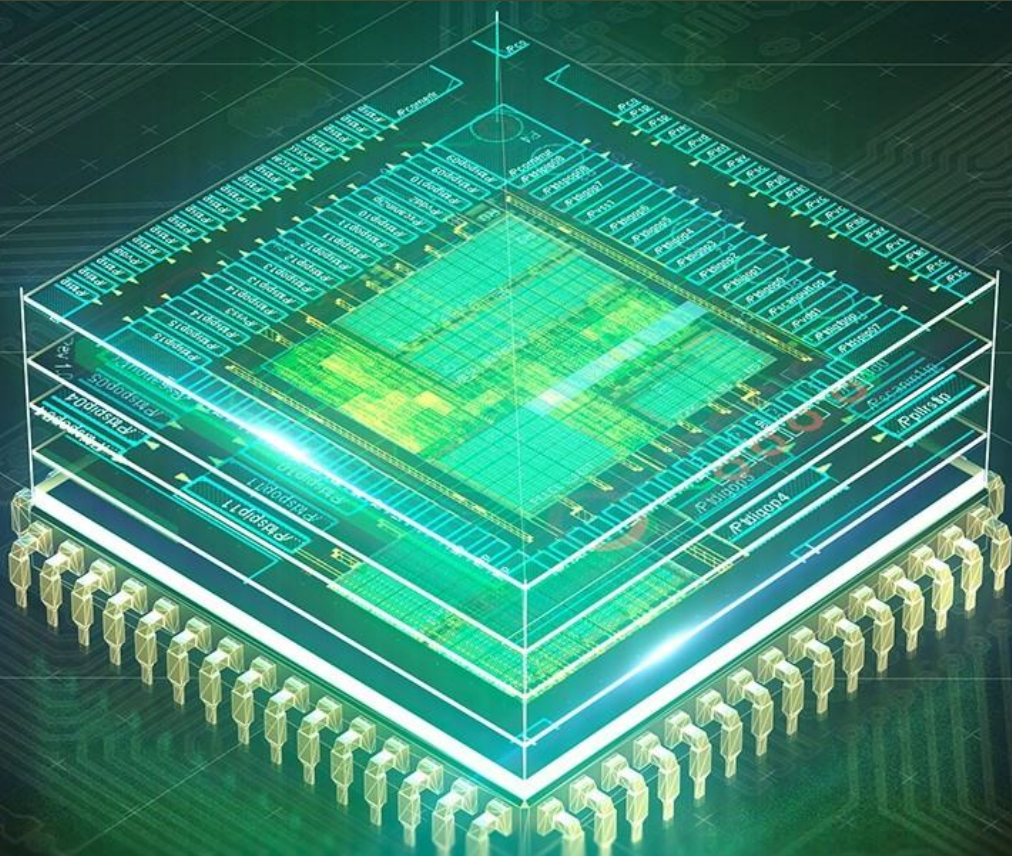


SUN stands for Stanford University Network. The logo of this leading software manufacturer was created by professor Vaughan Pratt from Stanford University where the diamond icon actually says Sun in every direction





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