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Mail to: csc@sfc.ac.in

SFC-BYTES
VOLUME 3, ISSUE 2

NEWS LETTER

DEPARTMENT OF COMPUTER SCIENCE
ST. FRANCIS COLLEGE FOR WOMEN, HYD—16

PRINCIPAL- DR. SR.SANDRA HORTA

Vision: Inspired by the visionary dynamism of St. Bartholomea, the Foundress of the Sisters of Charity, St. Francis College has its vision "Holistic Education for the Empowerment of Women"

Mission

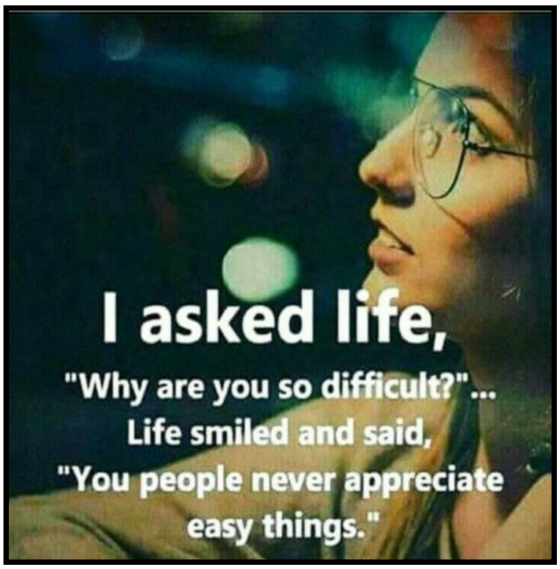
Therefore we strive to help students develop into

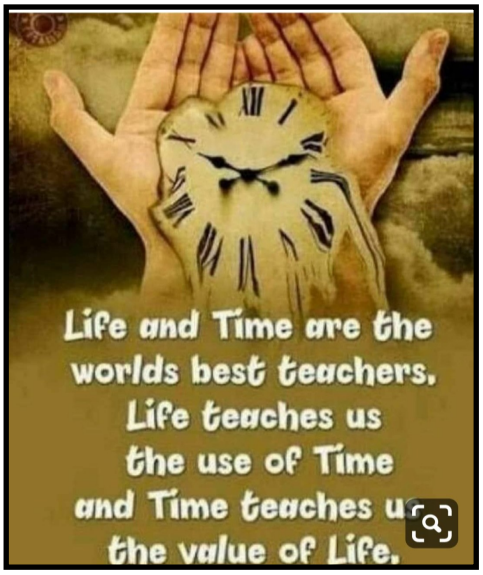
- Intellectually Competent
- Morally Upright
- Socially Committed
- Emotionally Stable
- Spiritually Inspired
- Patriotic Women citizens of India

FROM DR. SR. SHERLY- VICE PRINCIPAL

Dr. Sr. Sherly
Vice Principal

Happy to note that the department of Computer Science is bringing out the second issue of their e-magazine Sfc-bytes this academic year. The Department magazine is a forum which could aptly be used for recording the academic events, curricular and extracurricular achievements of staff and students. I extend my hearty congratulations to the entire faculty and students of the department for their enthusiasm and efforts to bring out this magazine. Congratulations to the editorial board for their meticulous work which is reflected in the pages of the magazine.





" Technology is best when it brings people together."
"

AI

Ms. Padmasree

Head,
Dept. of CSc.

Over the years, artificial intelligence has amazed everyone with numerous breakthroughs. Tech companies from across the world benchmarked various leaps in artificial intelligence

Some amazing AI advancements that changed the world forever.

1. Robot Hand's Dexterity

OpenAI's successfully trained a robot hand called Dactyl that adopted to the real-world environment in solving the Rubik's cube. The robot was entirely trained in the simulated environment but was able to transfer the knowledge into a new situation successfully.

2. Deepfake – Bringing Picture To Life

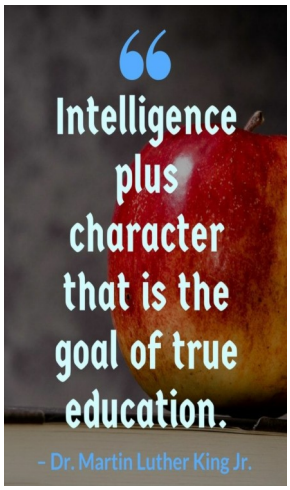
Samsung, created a system that can transform facial images into video sequences. They used the generative adversarial network (GAN) to create deep fake videos just by taking one picture as input.

3. AI-Generated Synthetic Text

OpenAI released a small model called Generative Pre-Training (GPT) to generate synthetic text automatically. On writing a few sentences, the model perfectly picked the context and generated text on its own.

4. Explainable AI

AI is making great strides, but understanding the methodologies inside the black box is crucial for bringing thrust. Therefore, different companies released services to allow businesses to underline the prime factors that lead to outcomes from their machine learning models. For the first time, firms are able to clear the cloud and gaining insights into the way the black box works.



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AI VS ML VS DL

Ms. B. Kavitha

Asst. Professor,

Dept. of Csc

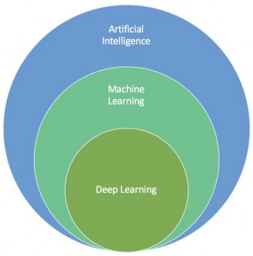
Artificial intelligence (AI) vs Machine learning (ML) vs Deep learning (DL)
Although the three terminologies are usually used interchangeably, they do not refer to the same things.
Therefore, is there a difference between artificial intelligence, machine learning, and deep learning?. The image mentioned below attempts to visualize the distinction between them.
So, AI is the all-encompassing concept that initially erupted, then followed by ML that thrived later, and lastly DL that is promising to escalate the advances of AI to another level. Now let us understand which is better for your use case: artificial intelligence, machine learning, or deep learning.

Artificial Intelligence

As the name suggests, it can be loosely interpreted to mean incorporating human intelligence to machines. Whenever a machine completes tasks based on a set of stipulated rules that solve problems (algorithms), such an "intelligent" behavior is what is called artificial intelligence.
Ex. Machines can move and manipulate objects, recognize whether someone has raised the hands, or solve other problems.

Machine Learning

Machine learning can be loosely interpreted to mean empowering computer systems with the ability to "learn". The intention of ML is to enable machines to learn by themselves using the provided data and make accurate predictions. ML is a subset of artificial intelligence in fact; it's simply a technique for realizing AI.It is a method of training algorithms so that they can learn how to make decisions. Training in machine learning entails giving a lot of data to the algorithm and allowing it to learn more about the processed information. Ex: The table that identifies the type of fruit based on its characteristics:



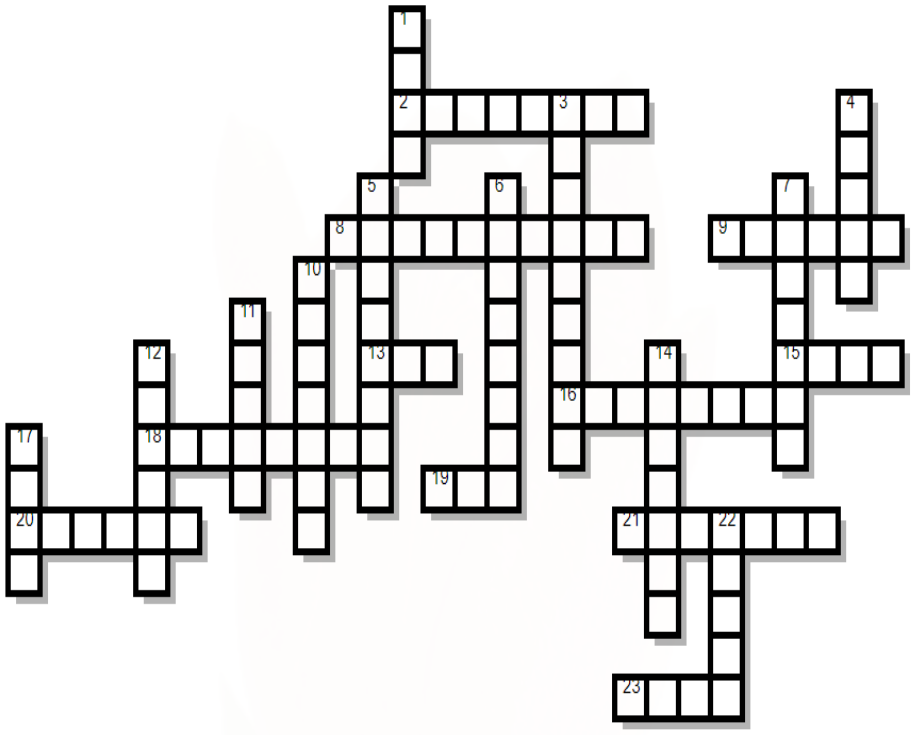
The fruits are differentiated based on their weight and texture. However, the last row gives only the weight and texture, without the type of fruit. A machine learning algorithm can be developed to try to identify whether the fruit is an orange or an apple. After the algorithm is fed with the training data, it will learn the differing characteristics between an orange and an apple. Therefore, if provided with data of weight and texture, it can predict accurately the type of fruit with those characteristics.

Weight (grams)	Texture	Type of Fruit
155	Rough	Orange
180	Rough	Orange
135	Smooth	Apple
110	Smooth	Apple
120	Smooth	?

Deep Learning

Deep learning is a subset of ML as mentioned earlier. In fact, it's simply a technique for realizing machine learning. In other words, DL is the next evolution of machine learning. DL algorithms are roughly inspired by the information processing patterns found in the human brain. Just like we use our brains to identify patterns and classify various types of information, deep learning algorithms can be taught to accomplish the same tasks for machines. The brain usually tries to decipher the information it receives. It achieves this through labeling and assigning the items into various categories. Whenever we receive new information, the brain tries to compare it to a known item before making sense of it — which is the same concept deep learning algorithms employ.
Ex: Artificial neural networks (ANNs) are a type of algorithms that aim to imitate the way our brains make decisions. Comparing deep learning vs machine learning can assist you to understand their subtle differences.
Example: while DL can automatically discover the features to be used for classification, ML requires these features to be provided manually. Furthermore, in contrast to ML, DL needs high-end machines and considerably big amounts of training data to deliver accurate results.

HEY! SNACK FOR YOUR BRAIN!.. CROSSWORD



Ms. B. Jyothi

Asst. Professor,

Dept. of CSc

ACROSS

2-A security system preventing access to a computer or network
8-The subject we are in
9-Any finite sequence of characters
13-An error in a program that prevents the program from running
15-A unwanted e-mail
16-The opening page of a web site
18-Another term for parameter
19-A binary digit can have only one oftwo values
20An instance of a class
21-An instruction for the computer be opened.
23-A specific size and style of type within a type family

DOWN

1-A wireless method of sending information using radio waves
3-A precise rule specifying how to solve some problem
4-An action that causes something to happen
5-1000 Terabytes
6-A value that never changes
7-A program used to view HTML documents
10-A data type that has two possible values: “true” and “false”
11-Removing errors from computer program
12-To look up something
14-A system of interconnected electronic components or circuits
17-A symbol in a graphical user interface

22- Type of adhoc network that can change locations and configure itself on the fly.

For Answers Refer page 7

A ROBOT AND SOFTWARE

A robot and software make it easier to create advanced materials

Automated way to make unique materials with polymers

A Rutgers-led team of engineers has developed an automated way to produce polymers, making it much easier to create advanced materials aimed at improving human health.

The innovation is a critical step in pushing the limits for researchers who want to explore large libraries of polymers, including plastics and fibers, for chemical and biological applications such as drugs and regenerative medicine through tissue engineering. While a human researcher may be able to make a few polymers a day, the new automated system -- featuring custom software and a liquid-handling robot -- can create up to 384 different polymers at once, a huge increase over current methods. Synthetic polymers are widely used in advanced materials with special properties, and their continued development is crucial to new technologies, according to a study in the journal Advanced Intelligent Systems. Such technologies include diagnostics, medical devices, electronics, sensors, robots and lighting. "Typically, researchers synthesize polymers in highly controlled environments, limiting the development of large libraries of complex materials," said senior author Adam J. Gormley, an assistant professor in the Department of Biomedical Engineering in the School of Engineering at Rutgers University-New Brunswick. "By automating polymer synthesis and using a robotic platform, it is now possible to rapidly create a multitude of unique materials. "Robotics has automated many ways to make materials as well as discover and develop drugs. But synthesizing polymers remains challenging because most chemical reactions are extremely sensitive to oxygen and can't be done without removing it during production. The Gormley lab's open-air robotics platform carries out polymer synthesis reactions that tolerate oxygen. The group developed custom software that allows a liquid handling robot to interpret polymer designs made on a computer and carry out every step of the chemical reaction. One benefit: the new automated system makes it easier for non-experts to create polymers

R.Vigneshwari,
121317044048 ,
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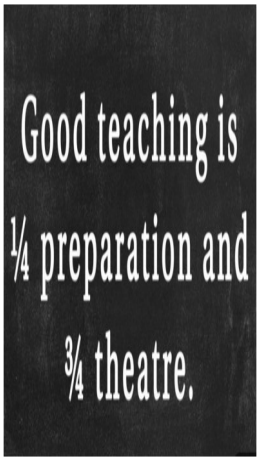
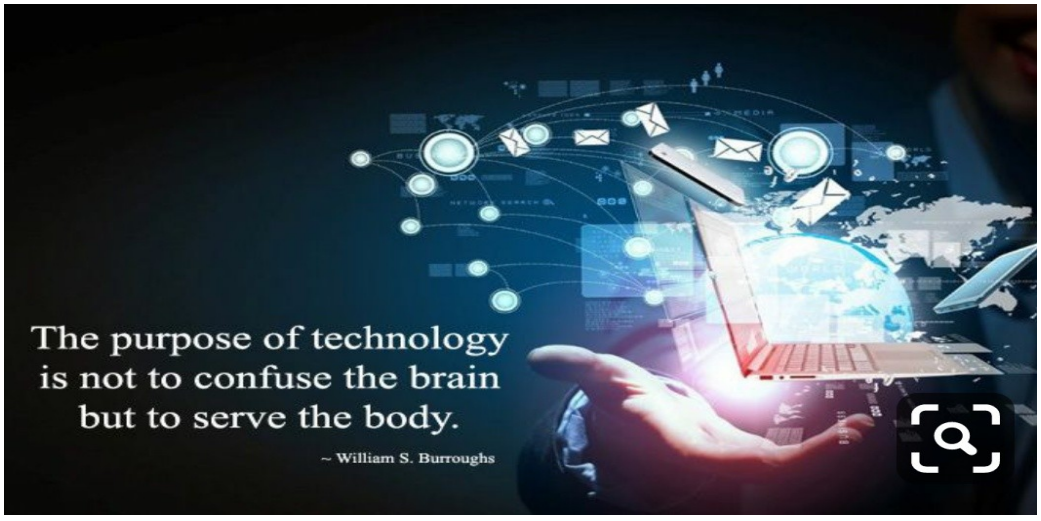




HUMAN RIGHTS VS. INHUMAN ACTS...

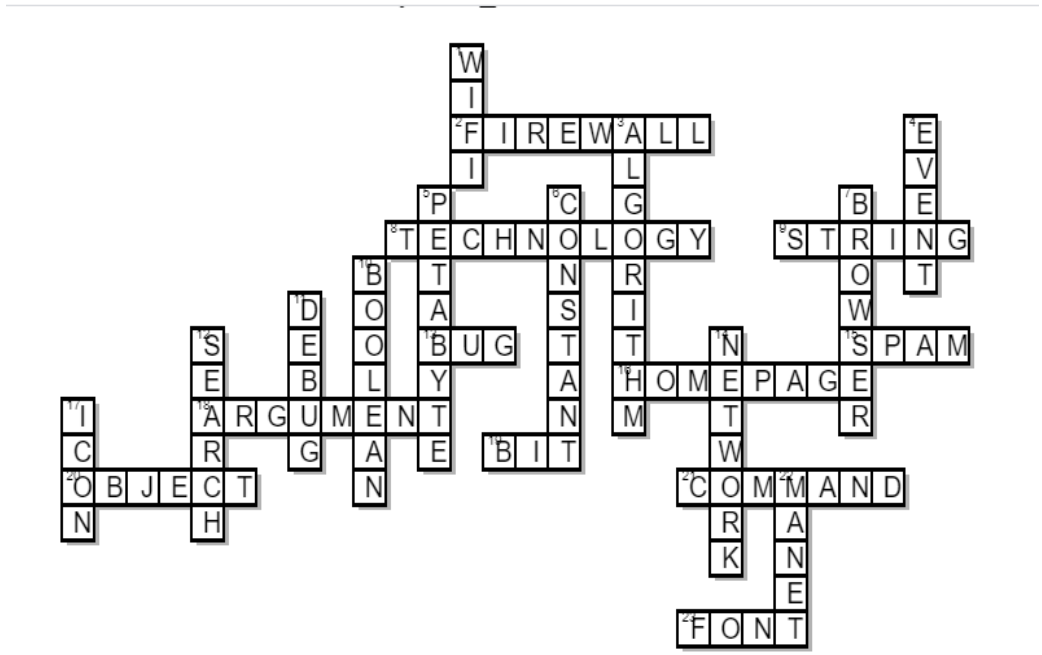
Dr. Uma Joseph
Associate Prof and Head, Department of History

We have entered a new year and stand on threshold of a new decade. We are thankful we live in a civil society. But we realize that sometimes the law of jungle still prevails. The Disha rape and murder case in Telangana shook the country and triggered protests all over. A few days later we woke up to another shocking news .While most people applauded the Police for the killing of the rapists it sparked off another debate on Human rights. None of us feel safe when killed in police custody. It becomes custodial murder. It's a failure of democracy when law enforcement takes the law into their own hands.

A Former Union Minister said, "You can't kill people because you want to. You cannot take the law in your hands. They [accused] would have been hanged by the court anyhow," she told reporters. Have we lost faith in our courts? Are we fed up of delayed justice? The failure to prosecute Rape is a Human Right failure and has a discriminatory impact on women who are the large majority of rape victims. A woman will enjoy her rights truly if there is a change in the community attitude towards women. The comment by the CM that women should go home early so that they are safe holds no ground when you realize that most crimes against women are perpetrated at home and by people known to the victims. Another fact to note is that Disha called her sister and not the police because women who complain are harassed by the police. And think about this, Can we stop the Rape culture perpetuated though movies??

Do we have answers to these questions????????

ANSWERS FOR CROSSWORD



" The spiritual virtue of a sacrament is like light; although it passes among the impure, it is not polluted.- Saint Augustine "

VIRTUAL REALITY VS. AUGMENTED REALITY

CH. Aishwarya Harshini (121317044015), B.Sc3D

Virtual Reality vs. Augmented Reality

One of the biggest confusions in the world of **Augmented reality** is the difference between augmented reality and virtual reality. Both are earning a lot of media attention and are promising tremendous growth. So what is the difference between virtual reality vs. augmented reality?

What is Virtual Reality?

Virtual reality (VR) is an artificial, computer-generated simulation or recreation of a real life environment or situation. It immerses the user by making them feel like they are experiencing the simulated reality firsthand, primarily by stimulating their vision and hearing.

Virtual reality is possible through a coding language known as VRML (Virtual Reality Modeling Language) which can be used to create a series of images, and specify what types of interactions are possible for them.

What is Augmented Reality?

Augmented reality (AR) is a technology that layers computer-generated enhancements atop an existing reality in order to make it more meaningful through the ability to interact with it. AR is developed into apps and used on mobile devices to blend digital components into the real world in such a way that they enhance one another, but can also be told apart easily. . AR technology is quickly coming into the mainstream. It is used to display score overlays on telecasted sports games and pop out 3D emails, photos or text messages on mobile devices. Leaders of the tech industry are also using AR to do amazing and revolutionary things with holograms and motion activated commands.

K.Chathurya Goud (121317044035), BSc 3D

How do Augmented and Virtual Realities Differ?

*Purpose:*Augmented reality enhances experiences by adding virtual components such as digital images, graphics, or sensations as a new layer of interaction with the real world. Contrastingly, virtual reality creates its own reality that is completely computer generated and driven.

*Delivery Method:*Virtual Reality is usually delivered to the user through a head-mounted, or hand-held controller. This equipment connects people to the virtual reality, and allows them to control and navigate their actions in an environment meant to simulate the real world.

THE DARK WEB

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Kaptnali / Getty Images

The dark web is a part of the internet that isn't indexed by search engines. You've no doubt heard talk of the “dark web” as a hotbed of criminal activity — and it is. A 2019 study, Into the Web of Profit, conducted by Dr. Michael McGuires at the University of Surrey, shows that things have become worse. The number of dark web listings that could harm an enterprise has risen by 20% since 2016. Of all listings (excluding those selling drugs), 60% could potentially harm enterprises.

You can buy credit card numbers, all manner of drugs, guns, counterfeit money, stolen subscription credentials, hacked Netflix accounts and software that helps you break into other people’s computers. Buy login credentials to a $50,000 Bank of America account for $500. Get $3,000 in counterfeit $20 bills for $600. Buy seven prepaid debit cards, each with a $2,500 balance, for $500 (express shipping included). A “lifetime” Netflix premium account goes for $6. You can hire hackers to attack computers for you. You can buy usernames and passwords.

Is the dark web illegal?

We don’t want to leave you with the impression that everything on the dark web is nefarious or illegal. The Tor network began as an anonymous communications channel, and it still serves a valuable purpose in helping people communicate in environments that are hostile to free speech. “A lot of people use it in countries where there’s eavesdropping or where internet access is criminalized,” Tiquet said. There’s also plenty of practical value for some organizations. Law enforcement agencies keep an ear to the ground on the dark web looking for stolen data from recent security breaches that might lead to a trail to the perpetrators. Many mainstream media organizations monitor whistleblower sites looking for news.

FASTAG:AN ELECTRONIC TOLL ON NATIONAL HIGHWAYS

K. S. Padmapriya

Assistant professor

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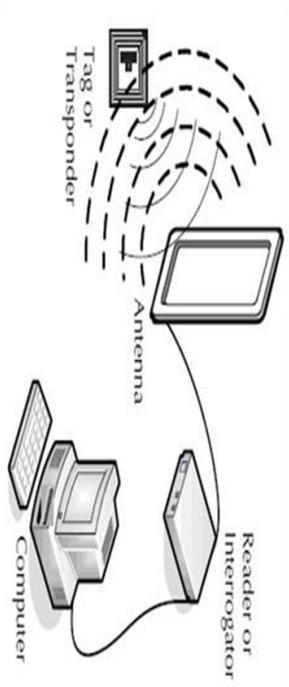
FASTag is an electronic toll collection system that is being introduced in India recently. This scheme is presently operated by the National Highway Authority of India. FASTag works by Radio Frequency Identification (RFID) technology. Under this system, toll payments can be made directly from the prepaid or savings account linked to the Tag. FASTag is affixed to the windscreen of the vehicle and the vehicle can be driven through the toll plazas without making a stopover for transactions. The tag is made available for purchase from the participating banks or official Tag issuers. Once FASTag is linked to the prepaid account of the vehicle owner, recharging or top-up can be done as per the wish of the owner.

How does RFID work?

Radio-frequency identification (RFID) uses electromagnetic fields to automatically identify and track tags attached to objects. The tags contain electronically stored information. Passive tags collect energy from a nearby RFID reader's interrogating radio waves. Active tags have a local power source (such as a battery) and may operate hundreds of meters from the RFID reader. Unlike a barcode, the tags don't need to be within the line of sight of the reader, so it may be embedded in the tracked object.

RFID belongs to a group of technologies referred to as Automatic Identification and Data Capture (AIDC). AIDC methods automatically identify objects, collect data about them, and enter those data directly into computer systems with little or no human intervention. RFID methods utilize radio waves to accomplish this. At a simple level, RFID systems consist of three components: an RFID tag or smart label, an RFID reader, and an antenna. RFID tags contain an integrated circuit and an antenna, which are used to transmit data to the RFID reader (also called an interrogator). The reader then converts the radio waves to a more usable form of data. Information collected from the tags is stored in a database and analysed later.



FASTagTransaction Process Flow

Whenever the vehicle passes through the appropriate lane of the Toll Plaza, the system captures the FASTag details (like Tag ID, Vehicle class, etc.) and sends it to the background server having bank and mapper details for processing. Once the Tag ID is validated, mapper program responds with details like Vehicle class, registration number, Tag Status etc. If the Tag ID is absent in mapper system, it will respond that the Tag ID is not registered. After successful validation of Tag ID from the mapper, the system calculates the appropriate toll fare and initiates a debit request. The debit request is sent to the respective issuer bank of the customer. Issuer bank debits the linked tag holder account and sends a SMS alert to the tag holder. The debit request is sent to the respective issuer bank of the customer. Issuer bank debits the linked tag holder account and sends a SMS alert to the tag holder.

CONT...

The Issuer sends the response message to system. If the response is not sent within the defined acceptance time, the transaction is considered as Deemed Accepted. The system will notify the response to respective toll plaza system and the boom barrier is lifted.

Benefits of FASTag: Travellers need not worry about cash and change for payment to toll plaza while travelling. They get information about their transaction in each toll plaza through email and SMS. The issuing bank also alerts them for recharging or topping up the amount. It increases transparency and efficiency in processing toll related transactions. It reduces wait period in toll plazas thereby reducing fuel consumption. It reduces air pollution by reducing the congestion around toll plaza.

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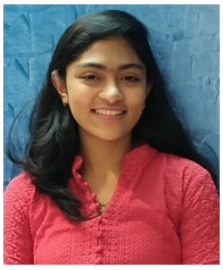
ARTIFICIAL INTELLIGENCE: A BOON OR A BANE

Artificial Intelligence is transforming the nature of almost everything which is connected to human life, e.g. employment, communication, Warfare, privacy, security, ethics, Healthcare etc. However we are yet to see its evolution in long-term, whether it's leading humanity towards making this planet a better place to live or a place which is full of disasters. Every technology has its advantages and disadvantages but the advantages must outweigh disadvantages for technology to survive in the market. For Artificial intelligence we are not yet sure whether in the long-term positive effects always keep outweighing the negative effects and if that is not the case we are in serious trouble. If we look around us on one hand we are embracing the development in technology, be it smart phone, smart healthcare, Industry 4.0 autonomous cars. On the other hand we are protesting against government in the context of unemployment, taxes, privacy etc. As AI development is speeding up, more robots or autonomous systems are being born and replacing the human labour. This is the current situation; however, in long-term results seem to get more interesting.

Right here, Right now—Artificial Intelligence is moving beyond the popular image of self-driving cars and smart phones to become a large part of everyday life. If you own a voice activated personal assistant such as Amazon Echo's Alexa or Apple's Siri, you're already invited AI into your home. But its impact goes for deeper, as machine learning gets better at, for example detecting fraud. If you have ever been contacted by your bank concerning unusual activity on your account, have you considered that it could be down to the way you walk, hold or interact with your phone? Behavioural biometrics-measuring a user's behaviour to verify their identity-is the latest tool in the fight against cybercrime. So, even if the password is entered correctly, callsign's technology can detect that it has been typed slightly differently. There may be a legitimate reason-you've cut your finger-or something more sinister. By linking the device, its location and the user's typical behaviour, behavioural biometrics can build a profile of our idiosyncrasies. All made possible by machine learning algorithms. From rooting out fraud and monitoring tax compliance to detecting how employees are feeling, artificial intelligence is increasing its reach.

FUTURISTIC RESEARCH TRENDS IN INDUSTRY



Jisha Sara Jose
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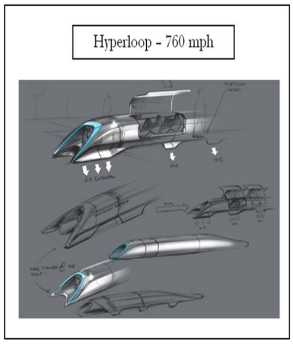
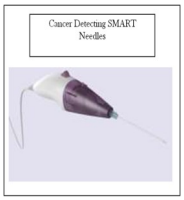
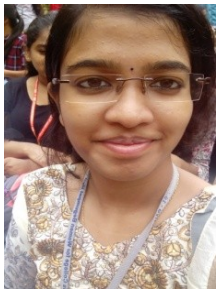
A multidisciplinary team of experts has developed a ground-breaking 'smart needle' probe that uses light to pinpoint cancerous tissues or cells almost instantaneously. "The Raman smart needle can measure the molecular changes associated with disease in tissues and cells at the end of the needle. Provided we can reach a lump or bump of interest with the needle tip, we should be able to assess if it is healthy or not." The "smart needle" probe, is comprised of fiber-optics encased within a fine needle that can look for cancer under the skin's surface. "It could potentially bring huge advantages over traditional methods providing an instant diagnosis, reducing patient anxiety and it may eliminate the need for unnecessary diagnostic surgery. As a result, there can be a much-improved patient experience and significant cost and time savings for the NHS."





Hyperloop is essentially a train system that Musk calls "a cross between a Concorde, a railgun, and an air hockey table". It's based on the very high-speed transit (VHST) system proposed in 1972, which combines a magnetic levitation train and a low pressure transit tube. It evolves some of the original ideas of VHST, but it still uses tunnels and pods or capsules to move from place to place. Hyperloop is being proposed as an alternative to short distance air travel, where the system will be much faster than existing rail networks and much cleaner that flight. Hyperloop isn't about going as fast as possible, because you'll have to deal with high G forces when it came to turns, which isn't ideal for passenger travel. Speeds of over 700mph are suggested for journeys. But there are practical implications that have to be considered on a short stop-start journey, such as the acceleration and deceleration sensation that passengers would go through.



Vyshnavi Lokhande
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COMPUTATIONAL PHOTOGRPHY

Are you a software engineer? Photography is more than a hobby to you? Here, lies the answer to your question, where you get to work with both simultaneously. Computers are in each and every field, from the smallest toy to the huge rockets. *Computational Photography* is one such field which not only deals with the artistic photographers but also with software engineers. It is a study of how computers and photography are related, why computational photography is better and how famous it has become today.

So, how exactly computers and photography related? Both are very important for today's trending world. Nowadays, it's about working with a ordinary camera, which has a film installed in it. The world is digital today, where nothing goes in a old traditional way. Computers are ruling the media world. A Digital Single Lens Reflex has its own built in computer which include in- camera computation, digital panorama, light fields camera, light adjusting techniques and high dynamic range of images.

COMPUTATIONAL PHOTOGRPHY

G.R.SHANKAVI VARSHA
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Computational Photography better than normal photography?

Yes, it absolutely is. After several experiments and research, experts say photos taken using computational photography looks better than those clicked by professional who use more expensive equipment. It is easy to handle, review and isn't time or energy consuming. It has the best filters and adjustments to work on for better pictures at the live location. Pictures are more detailed and have high-dynamic-range. Is Computational famous? Of course, it is. But, to clearly mention computational photography doesn't only talk about the built-in computer inside the digital cameras, but it also mentions the study of post processing of images. Most of us know about adobe Photoshop which is a widely used image processer which helps in 3D images, enhanced depth of fields, post focus, image scaling, tone mapping and artistic effects. The term photoshopped is a quite famous term for creating fictional images that was actually clicked on a camera. Computers have their reach in every corner of the world and they are our future. Software engineers interested in photography have explored this study in a very deep scale. Everyday there is a release of a new software and update related to computational photography. This field has its own diploma course to be mastered. Computational Photography is important, is getting better and is also very famous all over the world.

JUST CALL THEM WOOD CHIPS

Computer Chips Can Now Be Made From Wood Just call them wood chips. The wood product that the scientists are using is called cellulose nanofibril, or CNF. It is thin, flexible, and when a layer of epoxy is applied, it doesn't expand or attract moisture like wood normally does (think of a warped board--not something you want in a computer). The researchers were able to use CNF as a substrate or base layer for electronic circuits in lab tests, and they hope that their invention will be an eco-friendly solution to a growing electronic waste problem. Every year, 3.2 million tons of electronic waste are thrown out in the United States alone. Organizations are trying to recycle the waste or mine it for valuable resources like gold, but there's still a ton of electronics (well, a few million tons) headed for the landfill. Wood is a renewable resource, unlike a lot of the petroleum-based alternatives that manufacturers use to build the bases of modern computer chips. But wood has another advantage: it can degrade. By changing the materials that we build electronics with, instead of waiting until they're headed to the trashcan to clean up the waste, they're tackling the problem at the very start of the supply chain.

Nimmya Mol Varghese
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B.Sc 3F (BC.CA.C)

AGILE- SCRUM METHODOLOGY IN PROJECT DEVELOPMENT

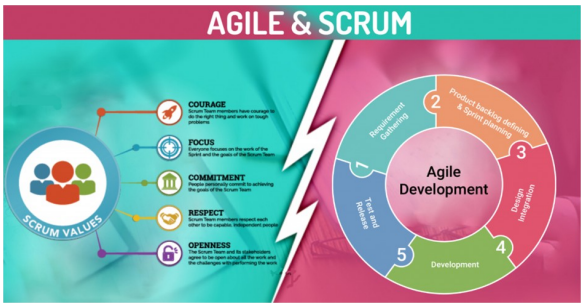
Renuka S
Asst. Professor.
Dept. of CSC.

Scrum is an agile project management methodology or framework used primarily for software development projects with the goal of delivering new software capability every 2-4 weeks. Scrum is widely used by software development teams. However, Scrum has spread to other business functions including IT and marketing where there are projects that must move forward in the presence of complexity and ambiguity. Leadership teams are also basing their agile management practices on Scrum. Agile is a set of values and principles that describe a group's day-to-day interactions and activities.The Scrum methodology follows the values and principles of agile, but includes further definitions and specifications, especially regarding certain software development practices.

Benefits of the Scrum Methodology

Organizations that have adopted agile Scrum have experienced:

Higher productivity
Better-quality products
Reduced time to market
Improved stakeholder satisfaction
Better team dynamics
Happier employees



The Scrum Team

Scrum teams are typically composed of 7 +/- 2 members and have no team leader to delegate tasks or decide how a problem is solved. The team as a unit decides how to address issues and solve problems. Each member of the Scrum team is an integral part of the solution and is expected to carry a product from inception to completion. There are three key roles in a Scrum team:The Product Owner is the project's key stakeholder - usually an internal or external customer, or a spokesperson for the customer. There is only one Product Owner who conveys the overall mission and vision of the product which the team is building. The Product Owner is ultimately accountable for managing the product backlog and accepting completed increments of work.The ScrumMaster is the servant leader to the Product Owner, Development Team and Organization. With no hierarchial authority over the team but rather more of a facilitator, the ScrumMaster ensures that the team adheres to Scrum theory, practices, and rules. The ScrumMaster protects the team by doing anything possible to help the team perform at the highest level. This may include removing impediments, facilitating meetings, and helping the Product Owner groom the backlogThe Development Team is a self-organizing, cross-functional group armed with all of the skills to deliver shippable increments at the completion of each sprint. Scrum broadens the definition of the term "developer" beyond programmers to include anyone who participates in the creation of the delivered increment. There are no titles in the Development Team and no one, including the ScrumMaster, tells the Development Team how to turn product backlog items into potentially shippable increments.

LIVING CELLS ARE THE FUTURE OF DATA PROCESSING

Lalitha.Karnati
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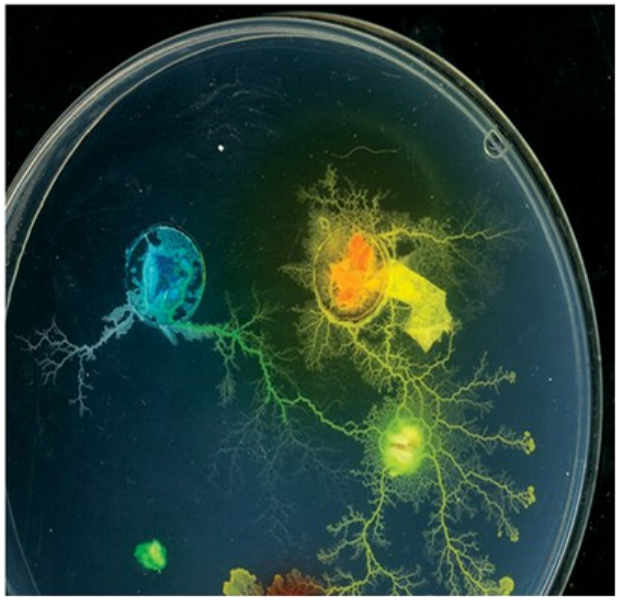
Not all computers are made of silicon. By definition, a computer is anything that processes data, performs calculations, or uses so-called logic gates to turn inputs (for example, 1s and 0s in binary code) into outputs. And now, a small international community of scientists is working to expand the realm of computers to include cells, animals, and other living organisms. Some of their experiments are highly theoretical; others represent the first steps toward usable ***biological computers***. All are attempts to make life perform work now done by chips and circuit boards. Last year, for example, a computer scientist at the University of the West of England named Andy Adam-atzky and a team of Japanese researchers built logic gates that ran on soldier crabs. First they constructed mazes that replicated the shape of the wires in a computer's logic gates. Then they chased two swarms of crabs (inputs) from one end of the gate to the other. When the swarms collided, they combined to form a new swarm (output), which often headed in the direction of the sum of their vectors, demonstrating that a living, somewhat random system can produce useful order. The hybrid technology would process information less like a computer and more like a brain, learning and growing through experiences and trial and error, making it possible to solve problems in both neuroscience and computer science. "We envisage that the *Physarum*-based computing research will lead to a revolution in the bioelectronics and computer industry," he says.



Advantage :Biocomputers may be that they can function in places that conventional electronics can't. "Think about computing in harsh environments like the bottom of the ocean, the human body, or on another planet where our computers may not survive," he says. Life forms could thrive in settings where silicon chips might melt, freeze.

" Try not to become a person of success, but rather try to become a person of value." –Albert Einstein

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NEUROCOMPUTING

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There has always been an intriguing question for humans wondering as to how brain process information and how it is organised? What are the biological mechanism involved in brain functioning? To answer all these questions neurocomputing brain like computation) was introduced but most often referred to as artificial neural networks (ANN), can be defined as information processing systems (computing devices) designed with inspiration taken from the nervous system, more specifically the brain, and with particular emphasis in problem solving.

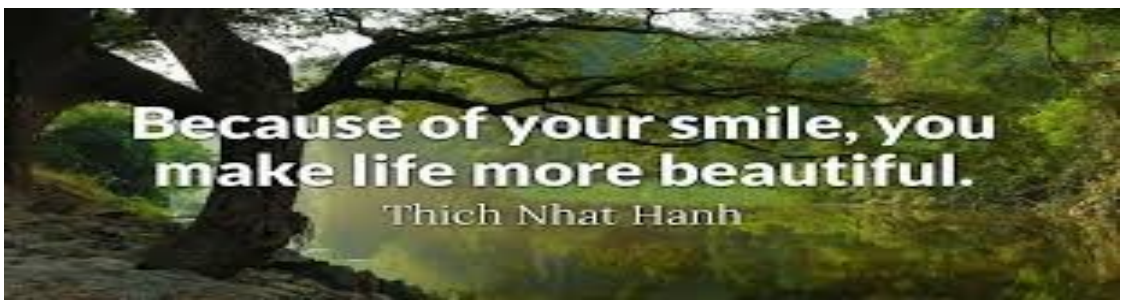
"An artificial neural network is a massively parallel distributed processor made up of simple processing units, which has a natural propensity for storing experiential knowledge and making it available for use."Artificial neural networks (ANN) present a number of features and performance characteristics in common with the nervous system:

The basic information processing occurs in many simple elements called artificial neurons (nodes or units); These neurons are interconnected thus forming networks of neurons or neural networks; Information (signals) are transmitted between neurons via connection links called synapses. The efficiency of a synapse, represented by an associated weight value or strength, corresponds to the information stored in the neuron, thus in the network; and Knowledge is acquired from the environment by a process known as learning that is basically responsible for adapting the connection strengths (weight values) to the environmental stimuli.

ANNs principle, compute any computable function, i.e., they can do everything a standard digital computer can do. Practical applications of neural networks most often employ supervised learning, where the training data includes both the input and the desired outputs or results. After successful training, the input data can be can presented to the network that is then used to compute an output value that approximates the desired output. However, for many applications it may be hard to select appropriate input data and to code the data, if necessary, as numeric values.

ANNs are particularly useful for clustering, classification and function approximation (mapping) problems to which hard and fast rules cannot be easily applied. Recurrent networks have been broadly applied to time series prediction, pattern recognition, system identification and control, and natural language processing. Vast lists of practical and commercial applications.

" Just as a candle cannot burn without fire, men cannot live without a spiritual life." – Buddha



ROBOTICS

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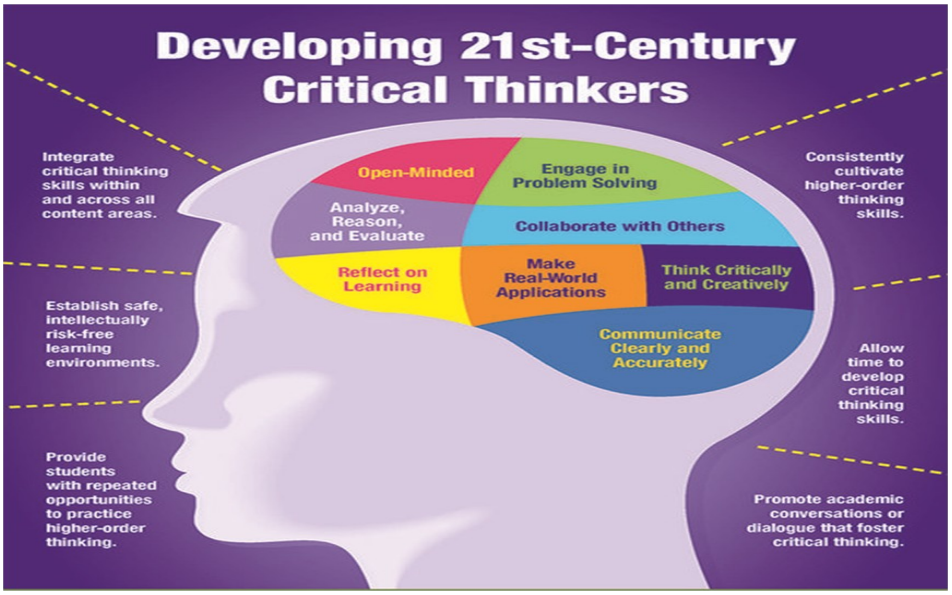
The main era of robotic research and development was the mid-20th century, primarily within an industrial environment where repetitive movements and lifting of heavy objects made the use of machines over humans attractive. Robots were mainly employed for tasks that were too dirty, distant or dangerous for humans. Joseph F. Engelberger and George Devol developed the first industrially used robot, the Unimate, in 1961. Robotics is one of the most advanced and emerging technologies in the field of medicine. Electronic sensors incorporated with combination of control into mechanical systems greatly enhance the performance and flexibility of systems. The robotic technology used for movement of arms were not accurate and unable to send the exact sensory feedback, exact movement, and positioning. With the advances in hardware, software, and control programming systems, extensive automation is being utilized to operate with more degree of freedom than humans under an extensive array of conditions. Currently, robotic innovations are introduced in numerous areas that specifically influence the understanding and consideration of patient care. Robotics technology in medicine is the prime focus of the healthcare services in ICUs, general rooms, and surgery room which reduces risks for patients, doctors and it is also utilized in laboratories to collect the samples followed by transportation of samples if required, analyzing, and preserving them for long-term storage. The healthcare services provided by robotics become complex and critical pertaining to sharing of information, data communication and distribution of the sensors data. The Internet of Medical Robotics Things (IoMRT) approaches incorporated robots as a “thing” and buildup connections with new communication such as Li-Fi technology and information technology on web. This chapter demonstrates the overview of robotics in performing surgeries, other healthcare services and it also emphasizes on long-term benefits for human beings using robotics with IoMT-based new communication (Li-Fi) technology. Also the limitations and future challenges associated with this technology are described in detail.



CLOUDDROPS

Parsi Kalpana,
Asst Professor,
Dept of Csc.

CloudDrops is a pervasive awareness platform that integrates virtual information from the Web more closely with the contextually rich physical spaces in which we live and work. People intensively use physical space for accessing and remembering paper-bound information. Transforming large parts of our formerly physical information environment into the digital realm has its obvious advantages that cannot be underestimated; but this also comes at a cost: we are giving up the notion of having an information item at a meaningful place and of using our entire surroundings for managing information. Recent advances in pervasive display technologies enable high-resolution yet tiny, stamp-sized touch-displays that include processing power and networking capabilities. These self-contained devices are capable of displaying tiny information bits while being tangible and highly mobile, such that they can be situated at virtually any location. This opens up a physical design flexibility for awareness systems, which largely overcomes the possibilities of using a handheld device (such as a smart phone) or a static installation (such as a large screen or a projector).

The end user can flexibly arrange the set of stamp-sized displays, locate them at meaningful places and thereby easily instrument, orchestrate and reconfigure his or her personal information environment, to stay aware of digital information. However, making use of such tiny displays for awareness applications poses various challenges. This includes the questions of how content should be mapped to displays, how it should be visualized on the tiny displays, and how the user can interact with content. It is also unclear how several displays can be used in concert and how displays can be combined with physical artifacts to support situated awareness. These challenges can be addressed by using CloudDrops, an interactive awareness platform that consists of many stamp sized displays, which provide awareness of websites, contacts and places. The end-user can scatter the displays throughout the architectural space, to ensure each piece of information is available at a meaningful physical location. Each display represents one user-defined digital entity: a Web page, contact or place. CloudDrops provide visualizations that can be perceived at a glance such that the user can skim changes of Web pages, contacts and places by visually browsing through physical space. In contrast to static installations, tangible tokens do not suffer from high initial costs and can easily be moved around. In addition, CloudDrops provide lightweight interactions.

" Education must be conceived as a continuing reconstruction of experience "

COMPUTER THAT RUNS ON WATER

Jaweria Fatima Mohammed

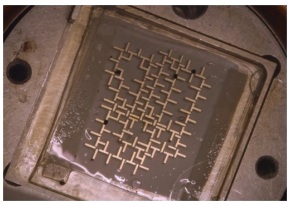
121317061014

B.Sc 3F

As anyone who has experienced the devastation of spilling a glass of water on their laptop knows,H_2O and computers don't mix. Almost equally as bad? Magnets. Both are terrible no-good computer killing substances... which is why it was kind of a surprise to learn about a brand new computer built using water droplets and an electromagnet.

"Droplets are fascinating material, because they are a little bag, you can put anything you want in it" said Manu Prakash, a bioengineer at Stanford who designed the computer along with his students.

In this computer, a droplet of water serves in place of a bit. Tiny droplets of water are infused with magnetic nanoparticles, which are then drawn over a chip using magnetic fields. Instead of ones and zeros, the presence or absence of a water droplet acts as code. This new kind of computer is synchronized with a clock that moves the droplets in perfect time without errors. So far, the scientists have demonstrated that the computer can be used for everything that's key for basic computation: things like logic gates and feedback that make a computer a computer.



Since the magnetic fields that control the water can do so with millions of droplets at the same time, the researchers note in a paper about their invention, it can be scaled and used for different applications. The team hopes to get the systems small enough so that they can do more operations more quickly.

What's the point of water-driven physical computers? It's all in the droplets, says Manu Prakash, who spearheaded the project. In the release, he notes that eventually such computers could be used as mini laboratories — just infuse droplets with chemicals and they could become their own individual test tubes that perform tests consistently and measurably. Mundane drops of water just got a lot more exciting.

QUANTUM COMPUTING:

TULSI MANDIRA,

121317052003,

B.Sc 3H

Solving problems beyond the power of classical computing

Weather forecasting today is good. Can it get better? Sure it can, if computers can be better. This is where the quantum computers come into the picture. They have computing capacity beyond anything that today's classical computers can ever achieve. This is because of the quantum computers that can run calculations exponentially faster than today's conventional binary computers. Classical computing has been the pillar of modern society. It gave us the satellite TV, the internet and digital commerce. It put smartphones in our pocket sand robots on Mars. Stefan Fillip, quantum scientist at IBM Research says many of the world's biggest mysteries and potentially the greatest opportunities remain beyond the grasp of classical computer."To continue the pace of progress, we need to increase the classical approach with a new platform, one that follows its own set of rules. That is called quantum computing." Classical computing is based on the binary system, where the fundamental carriers of information that is the bits can take on a value of either 0 or 1. JP Morgan Chase is focusing on use cases for quantum computing in the financial industry, including portfolio optimization, trading strategies,

TOP 3 TRENDS IN ARTIFICIAL INTELLIGENCE IN 2020

RABIA BUTOOL
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1) The rise of AI-enabled chips

Unlike other software, AI heavily relies on specialized processors that complement the CPU. Even the fastest and most advanced CPU may not improve the speed of training an AI model. While inferencing, the model needs additional hardware to perform complex mathematical computations to speed up tasks such as object detection and facial recognition.

In 2020, chip manufacturers such as Intel, NVIDIA, AMD, ARM and Qualcomm will ship specialized chips that speed up the execution of AI-enabled applications. These chips will be optimized for specific use cases and scenarios related to computer vision, natural language processing and speech recognition. Next generation applications from the healthcare and automobile industries will rely on these chips for delivering intelligence to end-users.

2020 will also be the year where hyperscale infrastructure companies like Amazon, Microsoft, Google, and Facebook will increase the investments in custom chips based on field programmable gate arrays (FPGA) and application specific integrated circuits (ASIC). These chips will be heavily optimized for running modern workloads based on AI and high-performance computing (HPC). Some of these chips will also assist next-generation databases to speed up query processing and predictive analytics.

2) Convergence of IoT and AI at the edge

In 2020, AI meets IoT at the edge computing layer. Most of the models trained in the public cloud will be deployed at the edge.

Industrial IoT is the top use case for artificial intelligence that can perform outlier detection, root cause analysis and predictive maintenance of the equipment.

Advanced ML models based on deep neural networks will be optimized to run at the edge. They will be capable of dealing with video frames, speech synthesis, time-series data and unstructured data generated by devices such as cameras, microphones, and other sensors.

IoT is all set to become the biggest driver of artificial intelligence in the enterprise. Edge devices will be equipped with the special AI chips based on FPGAs and ASICs.

3) Interoperability among neural networks becomes key

One of the critical challenges in developing neural network models lies in choosing the right framework. Data scientists and developers have to pick the right tool from a plethora of choices that include Caffe2, PyTorch, Apache MXNet, Microsoft Cognitive Toolkit, and TensorFlow. Once a model is trained and evaluated in a specific framework, it is tough to port the trained model to another framework.

The lack of interoperability among neural network toolkits is hampering the adoption of AI. To address this challenge, AWS, Facebook and Microsoft have collaborated to build Open Neural Network Exchange (ONNX), which makes it possible to reuse trained neural network models across multiple frameworks.

In 2020, ONNX will become an essential technology for the industry. From researchers to edge device manufacturers, all the key players of the ecosystem will rely on ONNX as the standard runtime for inferencing.

" Accumulate power in silence and become a dynamo of spirituality " -

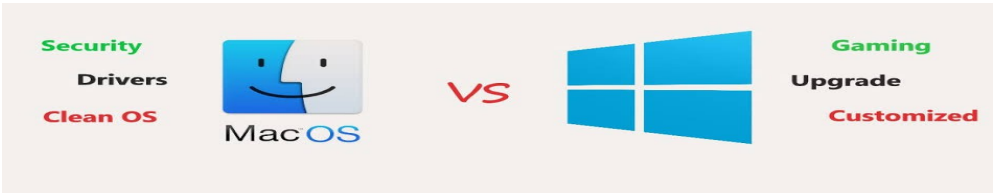
WINDOWS PC VS MAC

Windows Pc Vs Mac, is it exaggerated or really matters.!

Hey, I want to buy a laptop....and the reply comes: oh, which one, mac or pc!?

Probably the most natural question it is...isn't it!?the mac vs pc is perhaps the most controversial but yet confuses anyone...although many makes a quick choice between mac and pc as the popular saying goes "A budget tells us what we can't afford"...joined with "mac is costly"....

But in most IT companies the workplace computers are in majority is the mac...is it just stylish mac they think of improving their reputation or it really matters...



Manufacturers

Deciding on which model to buy...happens only for window...asking one by one about their experience, no doubt youll be even more confused...also thousand of repair shops for each brand...unlike mac...you just find an apple store and tada...!!!

Customization

Where the higher number of manufactuers make windows more difficult in getting re-paired, the same makes it accustomed with pre-built options and if u want to build and have your own customized pc, you are most welcomed.

Security

Some thinks that windows users being in majority will give it more security, While the newest windows 10 is more secure comparably, but still most malware is created for PCs.

Drivers

Apple right from past has been creating one set of drivers for Mac unlike windows... remember the first thing after getting windows home was installing.But the latest up-dated windows requires no such need. And what I like the most and also don't is the apple ecosystem...combined with your mac, other apple devices can offer useful integra-tion...well the problem is you must integrate the apple devices only.

Sure it is one's own choice but it cant be neglected that IT sectors are extending their hands towards mac, for its ability to hold good when it comes to editing,graphic design etc since it being high quality computers,windows too are working on adding up things their own way.Comfort at home is sure our pc and if you want to get into graphics and design,start your mac right away.

DIGITAL TWIN

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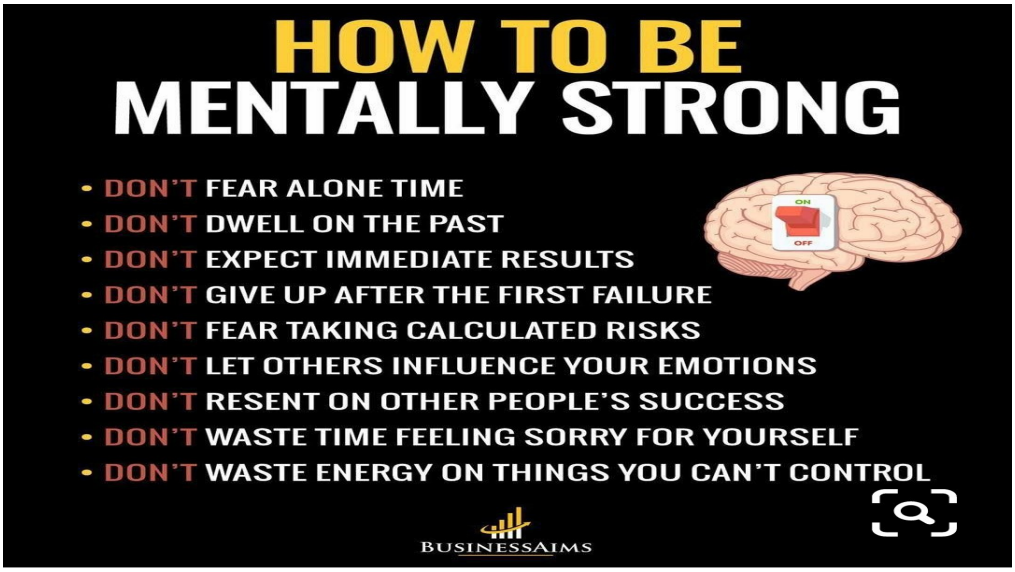
Digital twin technology has moved beyond manufacturing and into the merging worlds of the Internet of Things, artificial intelligence and data analytics with spatial network graphs to create living digital simulation models that update and change as their physical counter parts change. Digital twin is a virtual model of a process, product or service. It uses sensors to provide real time data while integrating the internet of things, artificial intelligence, and software analytics. The data collected can then be used to create a 'twin' which can accurately predict how these processes, products or services work. This has become a staple in modern engineering and is used to drive innovation and performance. A digital twin continuously learns and updates itself from multiple sources to represent its near real-time status, working condition or position. This learning system learns from itself, using sensor data that conveys various aspects of its operating condition from human experts, such as engineers with deep and relevant industry domain knowledge. Quite simply, a digital twin is a virtual model of a process, product or service. This pairing of the virtual and physical worlds allows analysis of data and monitoring of systems to head off problems before they even occur, prevent downtime, develop new opportunities and even plan for the future by using simulations. Think of a digital twin as a bridge between the physical and digital world. First, smart components that use sensors to gather data about real-time status, working condition, or position are integrated with a physical item. The components are connected to a cloud-based system that receives and processes all the data the sensors monitor. This input is analyzed against business and other contextual data.

Lessons are learned and opportunities are uncovered within the virtual environment that can be applied to the physical world — ultimately to transform your business.

" All our dreams can come true if we have the courage to pursue them." – Walt Disney



FUZZY LOGIC

G.Sivani

B.Sc(Honors)

Source code analysis is becoming very important to the universal acceptance of web applications due to automated source code analysis tools plays a vital role in identifying and fixing security-related vulnerabilities. This paper proposes a framework for securing web applications although through source code analysis. As web applications are trusted by billions of users for performing day-to-day activities. Accessibility, availability and performance of web applications have made them a prime target for attackers. A simple implementation of flaw in the application could allow an attacker to steal sensitive information and also to perform adversary actions, and hence it is important to secure web applications from attacks.

The framework has been classified into three prescriptive phases that includes executing and monitoring, classifying and controlling and lastly refining and managing. The framework helps to examine the web application source code which is related to security issues. The executing and monitoring phase employs five different open source tools for the statically analyzing of the source code. According to the literature, there are mainly nine major categories of vulnerabilities in web applications. After filtration of these vulnerabilities, classifying and controlling phase categorize the vulnerabilities according to their acerbity level with the help of fuzzy analytical analysis process and suggestive measures. The refining and managing phase takes these measures and also suggests changes to the source code to make it more secure. This framework was also validated through a web-based hospital management system. The results of the validation showed that the framework implementations made the source code more robust towards the upcoming vulnerabilities and bugs.

Fuzzy Logic :

"Fuzzy logic may be a generalization of normal logic, within which a thought will possess a degree of truth anyplace between 0.0 and 1.0. Standard logic applies solely to ideas that area unit fully true (having degree of truth 1.0) or fully false (having degree of truth 0.0). Fuzzy logic is meant to be used for reasoning regarding inherently imprecise ideas, like 'tallness.' for instance, we'd say that 'President Clinton is tall,' with degree of truth of 0.9."

"It seems that the helpful applications of formal logic aren't in high-level computing however rather in lower-level machine management, particularly in shopper product. Usually, fuzzy controllers area unit enforced as package running on customary microprocessors. A few special-purpose microprocessors are designed that do fuzzy operations directly in hardware, however even these use digital binary (0 or 1) signals at all-time low hardware level. There area unit some analysis prototypes of pc chips that use analog signals at all-time low level, however these chips simulate the operation of neurons instead of formal logic."

"DON'T FEAR THE ENEMY WHO ATTACKS YOU .. FEAR THE FAKE FRIEND WHO HUGS YOU."

BLOCK CHAIN TECHNOLOGY

Ms. Rajeshwari,
Lecturer,
Dept. of CSC

A Block chain technology has the potential to upend the way every industry manages its information and data, not only financial services.

Imagine being able to track shipments through your supply chain with ease, down to the individual package or even component level. Or, executing a contract with a vendor without the need for an intermediary auditor. Block chain can even help verify materials and food sourcing to ensure health and ethical standards are maintained.Though most who are familiar with the technology equate it to Bitcoin, opportunities abound in other verticals in effectively storing transaction, customer, and supplier data in a transparent, unchangeable ledger online. Any relationship that depends on third-party maintenance, or those that require multiple data sources to fulfil customer expectations for cohesive experiences, can be improved by block chain applications.By allowing digital information to be distributed but not copied, blockchain technology created the backbone of a new type of internet. Originally devised for the digital currency, Bitcoin, the tech community has now found other potential uses for the technology.

BLOCKCHAIN FOR EVERY INDUSTRY

Legal: “Smart contracts” stored on the block chain track contract parties, terms, transfer of ownership, and delivery of goods or services without the need for legal intervention.

Supply Chain: By utilizing a distributed ledger, companies within a supply chain gain transparency into shipment tracking, deliveries, and progress among other suppliers where no inherent trust exists.

Government: Block chain offers promise as a technology to store personal identity information, criminal backgrounds, and “e-citizenship,” authorized by biometrics.

Food: Using block chain to store food supply chain data offers enhanced traceability of product origin, batching, processing, expiration, storage temperatures, and shipping.

Healthcare: Electronic medical records stored in a block chain, accessed and updated via biometrics, allow for the democratization of patient data and alleviate the burden of transferring records among providers.

Travel and Hospitality: Passengers store their authenticated “single travel ID” on the block chain for use in lieu of travel documents, identification cards, loyalty program IDs, and payment data.

Education: Educational institutions could utilize the block chain to store credentialing data around assessments, degrees, and transcripts.

“ ”Accumulate power in silence and become a dynamo of spirituality.

RUST

NamrataYadav

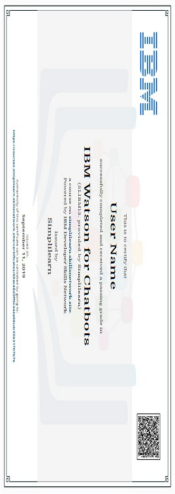
121317052034

Bsc 3H

A language empowering everyone to create reliable and efficient software. This is the tagline on the official Rust website. But what is Rust? Rust is a low-level, multi-paradigm system programming language developed by Mozilla; it focuses on safe concurrency and provides better memory safety than C++ while maintaining high performance at the same time. It first appeared in 2010, but the stable version was released recently on December 19, 2019. This language has been the most loved programming language since 2016 according to stack overflow. It is similar to C and C++ syntactically, but it does not allow null pointers, dangling pointers or data races in its safe mode. Rust is for people that crave speed and stability in a programming language. Why Rust? Rust has a unique feature called ownership, which enables it to make memory safety efficient without ever needing a garbage collector, the ownership system allows values to have a unique owner and the scope of the variables is the same as the owner. Rust is fast and memory-efficient as it has no runtime, it also has great documentation and compiler making it productive. You can use Rust for network services, to build CLI tools and supercharge your JavaScript along with many others. How to learn Rust? “The Book” is the official book on Rust and it has everything you need to learn the language along with examples. The Rust community has a dedicated YouTube channel with content ranging from tutorials to presentations to learn from. You can even install the rustup tool from the official website-“rust-lang.org” to get started. Rust is especially good for students as it’s versatile and it helps them learn more about Operating system development.

COLLABORATION WITH IBM

About the program developed in collaboration with IBM: IBM is the second largest Predictive Analytics and Machine Learning solutions provider globally (source: The Forrester Wave report, September 2018). A joint partnership with Simplilearn and IBM introduces students to integrated blended learning, making them experts in Artificial Intelligence and Data Science. The program in collaboration with IBM will make students industry-ready for Artificial Intelligence and Data Science job roles. IBM is a leading cognitive solutions and cloud platform company, headquartered in Armonk, New York, offering a plethora of technology and consulting services. Each year, IBM invests $6 billion in research and development and has achieved five Nobel prizes, nine US National Medals of Technology, five US National Medals of Science, six Turing Awards, and 10 Inductions in US Inventors Hall of Fame.



What can I expect from this Simplilearn program developed in collaboration with IBM? Upon completion of this Master's Program, you will receive the certificates from IBM and Simplilearn in the Data Scientist courses on the learning path*. These certificates will testify to your skills as an expert in Data Science. You will also receive the following:

USD 1200 worth of IBM cloud credits that you can leverage for hands-on exposure. Access to IBM cloud platforms featuring IBM Watson and other software for 24/7 practice Industry-recognized Master’s Certificate from Simplilearn.

REORGANIZING A COMPUTER CHIP

T. Neha Amulya

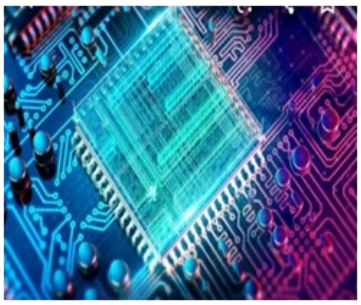
BSc 3E

TRANSISTORS CAN NOW BOTH PROCESS AND STORE THE INFORMATION

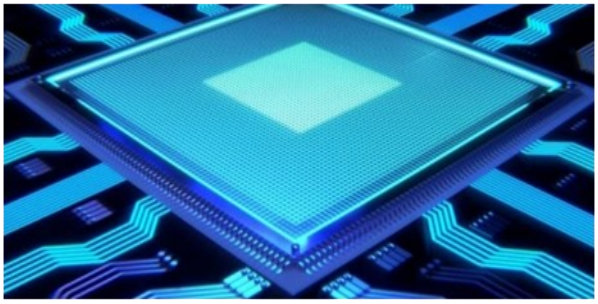
Researchers solve decades-old challenge of building a functional transistor integrated with ferroelectric RAM. A Computer chip processes and stores information using two different devices. If engineers could combine these devices into one or put them next to each other, then there would be more space on a chip, making it faster and more powerful. Purdue university engineers have developed a way that the millions of tiny switches used to process information called transistors could also process information as one device. The method, detailed in a paper published in Nature Electronics, accomplishes this by solving another problem: combining a transistor with higher performing memory technology than is used in most computers, called ferroelectric RAM.

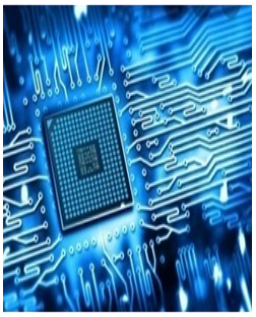
Researchers have been trying for decades to integrate the two, but issues happen at the interface between ferroelectric material and silicon, the semiconductor material that makes up the transistors. Instead ferroelectric RAM operates as a separate unit on-chip, limiting its potential to make computing much more efficient. A team led by Peide Ye, the Richard J. and Mary Jo Schwartz Professor of Electrical and Computer Engineering at Purdue, discovered how to overcome the mortal enemy relationship between silicon and a ferroelectric material. "We used a semiconductor that has ferroelectric properties. This way two materials become one material, and you don't have to worry about the interface issues," Ye said. The result is a so-called ferroelectric semiconductor field-effect transistor, built in the same way as transistors currently used on computer chips.

" The role of the teacher is like the proverbial 'ladder', it is used by everyone to climb up in life, but the ladder itself stays in its place "



The material, alpha indium selenide, not only has ferroelectric properties, but also addresses the issue of a conventional ferroelectric material usually acting as an insulator rather than a semiconductor due to a so-called wide "band gap," which means that electricity cannot pass through and no computing happens. Alpha indium selenide has a much smaller band gap, making it possible for the material to be a semiconductor without losing ferroelectric properties.





Mengwei Si, a Purdue postdoctoral researcher in electrical and computer engineering, built and tested the transistor, finding that its performance was comparable to existing ferroelectric field-effect transistors, and could exceed them with more optimization. Sumeet Gupta, a Purdue assistant professor of electrical and computer engineering, and Ph.D. candidate Atanu Saha provided modeling support.

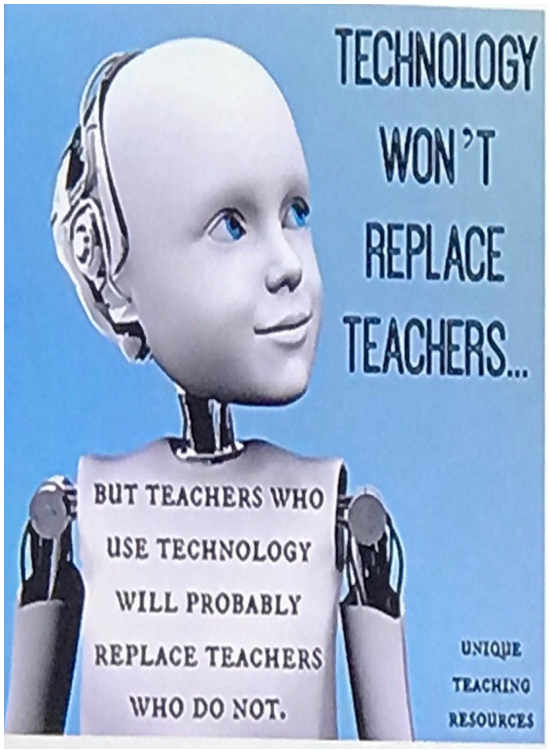
CONT...

Si and Ye's team also worked with researchers at the Georgia Institute of Technology to build alpha indium selenide into a space on a chip, called a ferroelectric tunneling junction, which engineers could use to enhance a chip's capabilities. The team presents this work on Dec. 9 at the 2019 IEEE International Electron Devices Meeting. In the past, researchers hadn't been able to build a high-performance ferroelectric tunneling junction because its wide band gap made the material too thick for electrical current to pass through. Since alpha indium selenide has a much smaller band gap, the material can be just 10 nanometers thick, allowing more current to flow through it.

More current allows a device area to scale down to several nanometers, making chips more dense and energy efficient, Ye said. A thinner material -- even down to an atomic layer thick -- also means that the electrodes on either side of a tunneling junction can be much smaller, which would be useful for building circuits that mimic networks in the human brain.

This research was performed in the Purdue Discovery Park Brick nanotechnology center and supported by the National Science Foundation, Air Force office of scientific research, Semiconductor Research Corporation, Defense Advanced Research projects Agency and the U.S office of Naval Research.

CRUNCHY TECH BITES



Online Courses

1- Coursera
2- Udemy
3- edx
4- Future Learn
5- Code academy
6- Udacity
7- MIT
8- Hravard
9- University Of London
10- UC Berkeley

Learn New Hobby

1- Craft La
2- Create and Craft
3- Annie's Craft Shop

Listen To A Podcast

1- School Of Greatness
2- Good Life Project
3- Tonny Robbins
4- The Farriss Show
5- Mindvalley

Earn Money Online

1- Redbubble
2- Zazzle
3- Cafe Press
4- Shutterstock
5- Creative market
6- Etsy
7- 99 Designs
8- SwagBucks
9- YouGov
10-Shopper's Voice

QUANTUM COMPUTING

M. Sahithya
121317052031,
B.Sc 3H

Quantum computing: Solving problems beyond the power of classical computing:
Weather forecasting today is good. Can it get better? Sure it can, if computers can be better. This is where the quantum computers come into the picture. They have computing capacity beyond anything that today's classical computers can ever achieve. This is because of the quantum computers that can run calculations exponentially faster than today's conventional binary computers.

Classical computing has been the pillar of modern society. It gave us the satellite TV, the internet and digital commerce. It put smart phones in our pockets and robots on Mars.

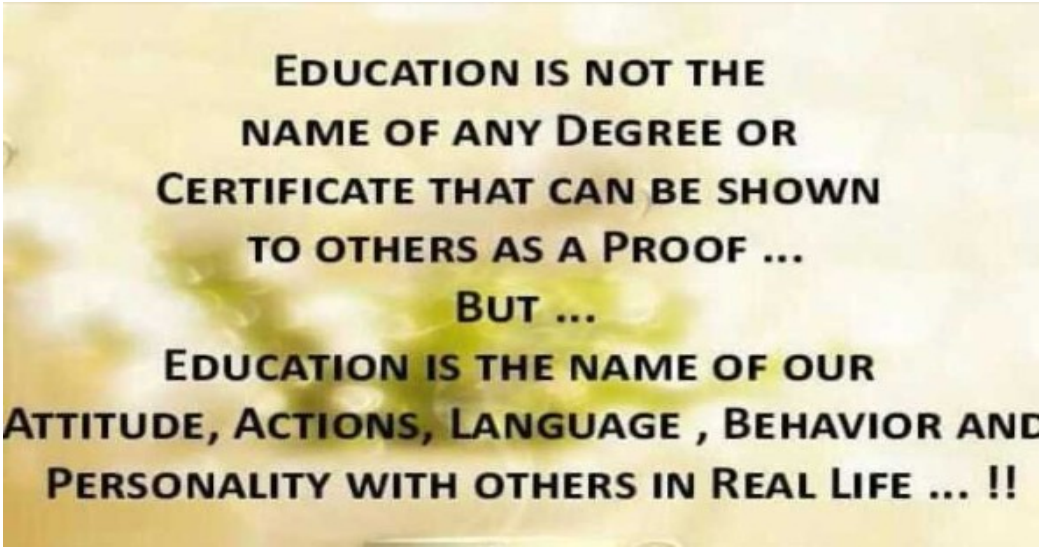
Stefan Fillip, quantum scientist at IBM Research says many of the world's biggest mysteries and potentially the greatest opportunities remain beyond the grasp of classical computer."To continue the pace of progress, we need to increase the classical approach with a new platform, one that follows its own set of rules. That is called quantum computing."

Classical computing is based on the binary system, where the fundamental carriers of information that is the bits can take on a value of either 0 or 1.

JP Morgan Chase is focusing on use cases for quantum computing in the financial industry, including portfolio optimization, trading strategies, asset pricing and risk analysis.

In India, the government has launched two initiatives in the emerging field. A networked program on Quantum Information Science and Technology and the National Mission on Quantum Technologies & Applications.

In spite of all the progress, practical and working quantum systems might take most of the 2020s. And you would not see or need a quantum machine on your desk. These will be used by governments and large enterprises, unless you want to figure out and execute ways to boil the ocean while sitting at home.



WATER DROPLETS COMPUTER

J.Sukanya

B.Sc 3H

Everyone's had a disaster throughout that a couple of drops of water render a laptop well-nigh useless. however what if {the laptop| the pc} was water to start with? Scientists at university have developed simply that — a replacement quite computer that runs on water droplets with the assistance of H2O's distinctive physical properties.

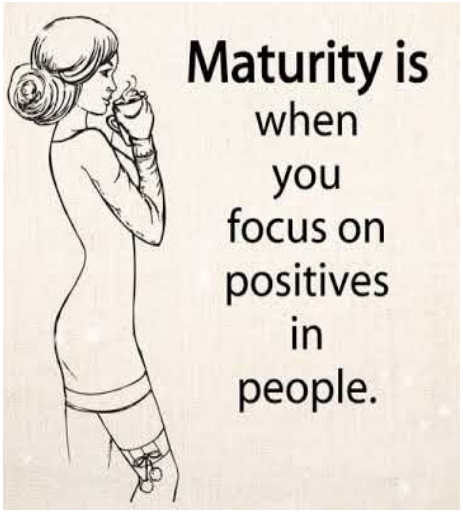
It's taken nearly a decade to develop the pc, the team notes in an exceedingly unleash, and to grasp simply what it will you'll got to place your ancient plan of a laptop on hold. instead of dish news or run games, the new laptop manipulates physical matter at a really tiny scale.

In this laptop, a driblet of water serves in situ of a small amount. small droplets of water area unit infused with magnetic nanoparticles, that area unit then drawn over a chip exploitation magnetic fields. rather than 1s and 0s, the presence or absence of a water driblet acts as code. This new quite laptop is synchronised with a clock that moves the droplets in excellent time while not errors. So far, the scientists have incontestable that {the laptop or the pc} will be used for everything that's key for basic computation: things like logic gates and feedback that build a laptop a computer.

Since the magnetic fields that management the water will do thus with lots of droplets at constant time, the researchers note in an exceedingly paper regarding their invention, it will be scaled and used for various applications. The team hopes to urge the systems sufficiently little so they will do a lot of operations a lot of quickly.

What's the aim of water-driven physical computers? It's tired the droplets, says Manu Prakash, world organization agency spearheaded the project. among the unleash, he notes that eventually such computers could also be used as mini laboratories — merely infuse droplets with chemicals which they could become their own individual take a glance at tubes that perform tests consistently and measurably. Mundane drops of water merely got tons plenty of exciting.

"You don't have to be great to start ..But you have to start to be grea "



T – Talented
E – Elegant
A – Awesome
C – Charming
H – Helpful
E – Efficient
R – Receptive

CLOUD COMPUTING

Name : T.Varsha Reddy
Class : Bsc-3H
RollNo:

What is Cloud Computing?

Cloud computing has gained momentum over the past 10 years. If you have heard people refer to “the cloud” where business applications and personal documents are saved, this means that the organization or the user have shifted from the traditional software programs and applications to using the web in a more advanced way. Cloud computing is a new technology that basically refers to a centralized storage space that is made possible by remote servers software on the world wide web. Users will share resources over the network, share the services and ultimately maximize efficiency. Read on to learn how this new form of computing works and what the benefits of this type of infrastructure are.

How Does Clouding Computing Work?

Storing everything from software programs to documents in the cloud has potential to change the computer industry and also how companies budget to pay for software licenses and other technological tools. Cloud-based computing is a web-based type of service where business would rent remote machines that are owned by the service provider and this machine would run different web-based programs like email, data analysis programs and other business applications.

With a remote cloud computer, the local computers in an organization will not have to be packed full of software programs that take up all of the memory and require special installation. The cloud will handle all of the applications and storage so that you, as a local user, only need a computing device that will be able to load the cloud interface where everything is accessed.

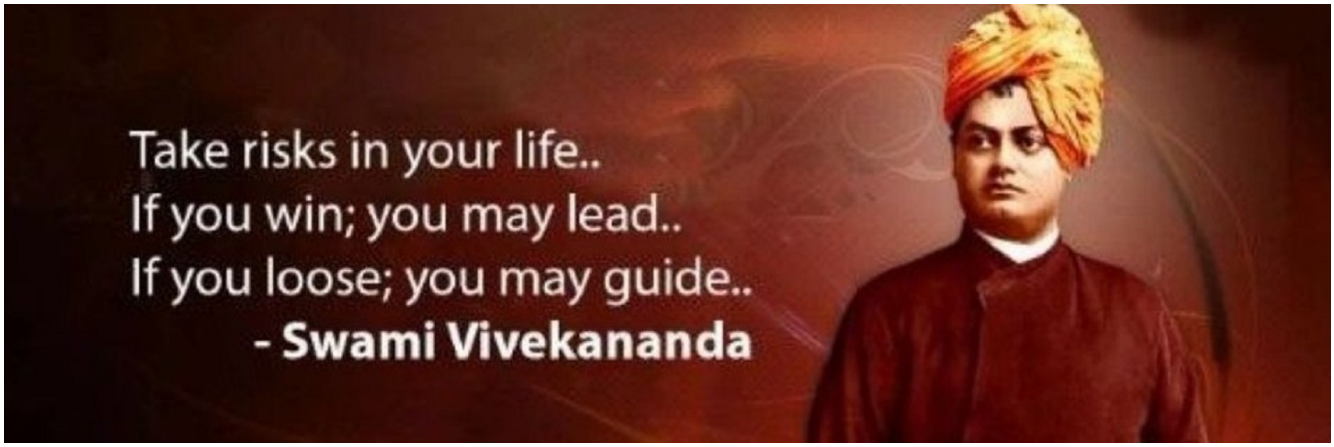
““You cannot change your future but you can change your habbits and your habbits will change your future.”

BIG DATA

Ms Prabhmeet
Assit. Professor,
Dept. of CSc.

Big data is a broad term for data sets so large or complex that traditional data processing applications are inadequate. Challenges include analysis, capture, data curation, search, sharing, storage, transfer, visualization, and information privacy.
The term often refers simply to the use of predictive analytics or other certain advanced methods to extract value from data, and seldom to a particular size of data set. Accuracy in big data may lead to more confident decision making. And better decisions can mean greater operational efficiency, cost reductions and reduced risk. Analysis of data sets can find new correlations, to "spot business trends, prevent diseases, combat crime and so on."
Big data can be described by the following characteristics:
Volume – It is the size of the data which determines the value and potential of the data under consideration and whether it can actually be considered Big Data or not. The name 'Big Data' itself contains a term which is related to size and hence the characteristic.
Variety - This means that the category to which Big Data belongs to is also a very essential fact that needs to be known by the data analysts. This helps the people, who are closely analyzing the data and are associated with it, to effectively use the data to their advantage and thus upholding the importance of the Big Data.
Velocity – It refers to the speed of generation of data or how fast the data is generated and processed to meet the demands and the challenges which lie ahead in the path of growth and development.
Variability - This is a factor which can be a problem for those who analyze the data. This refers to the inconsistency which can be shown by the data at times, thus hampering the process of being able to handle and manage the data effectively.
Veracity - The quality of the data being captured can vary greatly. Accuracy of analysis depends on the veracity of the source data.
Complexity - Data management can become a very complex process, especially when large volumes of data come from multiple sources. These data need to be linked, connected and correlated in order to be able to grasp the information that is supposed to be conveyed by these data. This situation, is therefore, termed as the 'complexity' of Big Data
The availability of Big Data, low-cost commodity hardware, and new information management and analytic software has produced a unique moment in the history of data analysis. The convergence of these trends means that we have the capabilities required to analyze astonishing data sets quickly and cost-effectively for the first time in history. They represent a genuine leap forward and a clear opportunity to realize enormous gains in terms of efficiency, productivity, revenue, and profitability.

"Sometimes you win Sometimes you learn "



CRYPTOGRAPHY

Kanaparthi Bhavani,
B.Sc 3D
121317044034

"The enemy knows the system"- Kerckhoffs' principle

Cryptography– Maintains the privacy of data. It operates on binary bit sequences.

The three main objectives of Cryptography are: Confidentiality, Integrity & Authentication.

Cryptography employs two techniques for maintaining the privacy of data:

Encryption – The plain text is converted into cipher text.

Decryption – The converted text i.e., the cipher text is converted back to the

Original text.

Example: Suppose on December 27 , we witness Bob writing his journal . When Bob is done , we discreetly pick up the journal and examine the latest entry:

Date: 235/520

Dear Dairy,

Today was a good day. In 64 days I have a date with Alice, who lives down at number 843. I really think she could be the 26!

Since we are really anxious to stalk Bob during his date(in this scenario we are 15 years old), we are interested in finding out the day of Bob's date, as well as Alice's address.

Happily, we notice that the Cryptosystem Bob is using is vulnerable to an interpolation attack. We may not know MM and NN, but we do know date today, therefore we have two plaintext-ciphertext pairs. To wit, we know that 1212 encrypted is 235235, and furthermore, that 2727 encrypted is 520520. We can therefore write:

M*12+N=235M*12+N=235M*27+N=520M*27+N=520

Now, since we are 15 years old we also know that this is what's called "2 equations with 2 unknowns" , and that in this situation , it is possible to solve for MM and NN without too much trouble . Each plaintext-ciphertext pair created a constraint on Bob's key , and the combined 2 constraints were enough to recover the completely. In the example above, the solution is M=19M and N=7N=7.

"Teachers have a great mission to ignite the minds of the young.
"

PRESS REPORT ON C@NNECT 2.0 WORKSHOP ON CODING FOR A SOCIAL CHANGE

Dr.Sr. Sujatha Yeruva
PG Coordinator,
Dept. of CSC

Press Release

The faculty of Physical Sciences, St Francis College for Women are organizing a three-day workshop designed to educate UG and PG students, particularly girls in the field of STEM in association with American Corner, Hyderabad. The workshop aims to teach students to code quad-copters to capture images using mounted cameras. It includes the basic aspects of evaluating the growing need of security with the help of coding preassembled drones as photography devices and testing them for the same. The workshop will also include a review session on topics on basics of UAV algorithm and coding, electronics, sensors, navigation and communication systems, autopilot systems and other required knowledge.

The dignitaries for the inaugural were, Mr. Drew Giblin, Chief, Public Affairs, US Consulate General, Hyderabad. Ms. Mani Mangala (ISRO's first woman scientist who has spent over 403 days in Antarctica and was the only woman in a 23-member expedition team that went to India's research station in the icy continent in November 2016) could not make to the workshop as chief guest due to an emergency meeting at space department.

Learning about women safety with quad copters

HIMAJAA INDUKURI

AROUND fifty young girls listen intently to the young CEO of Protionix Technologies, Prabhas Raj, as he explains the technicalities and workings of a quad copter, commonly known as a drone and how it can be coded to solve some important social issues.

The three-day 'International Workshop on Coding for a Social Change' organised by St.Francis Degree College in Begumpet is aimed towards educating young aspirants about drone technology and how it can used towards creating a safer environment for women in the society. It has been organised by the Physical Sciences department of St.Francis in collaboration with STEM and the US Consulate in Hyderabad's American Corner for students of Computer Science. This workshop is the continuation of last year's National Quad copter Workshop, where students were introduced to the drone and its working.

"This year, we are teaching the students how to manoeuver the drone with a camera mounted on it. On the first day, they learn the working of the hardware equipment and software basics. The second day involves practical learning where students fly the drones and the third day is entirely about trial runs," says the department head of Computer Science, Padmasri. "Our motto is to make the students aware of the technological advances happening across the world. The usage of quad copters has greatly increased and now this technology can now be used as vigilantes for women's safety. We have conducted many workshops across the city," says Prabhas Raj.

The college has not only extended its hospitality to students from other colleges from Hyderabad but also those from Bangalore. "It's not a typical workshop where we only learn. It's a very interactive session and the lecturers are making sure we understand the basics."

CSC DEPT. ACTIVITIES GALLERY

C@NNECT 2.0 GALLERY

SR. SUJATHA VISIT TO USA –STEM

C@NNECT 2.0 GALLERY

REPORT ON C@NNECT 2.0

THREE DAY INTERNATIONAL WORKSHOP ON CODING FOR A SOCIAL CHANGE

Faculty of physical sciences in collaboration with the American Corner organized a three day international workshop 'Coding for a Social Change' from 9th to 11th January, 2020. This workshop represents CONNECT 2.0 an initiative taken by the department of computer science.The workshop is proudly celebrated in the diamond jubilee year of St. Francis College for Women.

On 9th January the workshop was inaugurated at 8.30 A.M and was graced by the Chief Guest of the day Mr. Drew Giblin (Chief Public Affairs for US Consulate General in Hyd.), Mr. Joe Christopher Cultural Affairs Assistant,Mr.Prabhas Raj CEO protonix Technologies and Principal Sr. Sandra Horta, among other dignitaries.

Dr.Sr.Sujatha Yeruva ,workshop convener addressed the gathering with the workshop theme.The chief guest Mr. Drew Giblin,college principal Sr. Sandra Horta,Mr.Prabhas Raj CEO Protonix Technologies shared their valuable opinions and wished success towards the event followed by panel discussion on various aspects of coding and social change with the international panel members Ms.Lafifa Jamal from Bangladesh,Ms.Claudia Olemedo from El Salvador,Ms.Vasilika Fiska from Greece,Ms.Lenuta Albaoe from Romania,Ms.Paola Wong Hidalgo from Peru.Dr.Sr.Sujatha Yeruva workshop convener along with being a panel member was also the moderator of this panel discussion

Workshop Session Highlights

On day 1 the session began with the brief introduction of the aircraft and history of the evolution of aircraft. Participants were explained the hardware of the multicopter and other equipments required to assemble the drones. Programming language Raspberry PI which is employed to monitor the drones was introduced to the students and they further proceeded to code in the same.

On day 2 the session started with the review of the day 1 session. Then, the participants were taught various concepts like

Coding in Raspberry pi.

Python programming language, assembly language.

Assembling the hardware parts to fly the drone.

On day 3 the outcome of the workshop was seen by flying drones which participants themselves fabricated and coded during the workshop followed by this session participants had briefing on advancement of the technology and invitation for the participant's internships with protonix technology.

The time has come to draw curtain as we come to the close of a three day International Workshop on 'Coding for a Social Change'

The Valedictory Ceremony of a Three day International Workshop on 'Coding for a Social Change' was held on January 11, 2020 at 12.00 P.M in the capitanio hall Mr. Joe Christopher gave a motivational message to participants about studies and career opportunities in abroad.

Our beloved principal -Sr. Sandra Horta, Mr.Joe Christopher- cultural Affairs Assistant, Mr.Prabhas Raj-CEO of Protonix Technology congratulated all the participants and organizers .

Participants were very enthusiastic and appreciative about the workshop theme and also its conduct. Acknowledging the efforts of the participants , certificates were rewarded.

C@NNECT 2.0


St. Francis College For Women
Begumpet, Hyderabad – 16
(Autonomous & Affiliated to Osmania University)
Faculty of Physical Sciences
Welcome you to
C@nnect 2.0
Three Day International Workshop
on
Coding for Social Change

DEPARTMENT OF COMPUTER SCIENCE

Students of St. Francis Degree College take part in a workshop in Hyderabad on Friday | S SENBAGAPANDIYAN