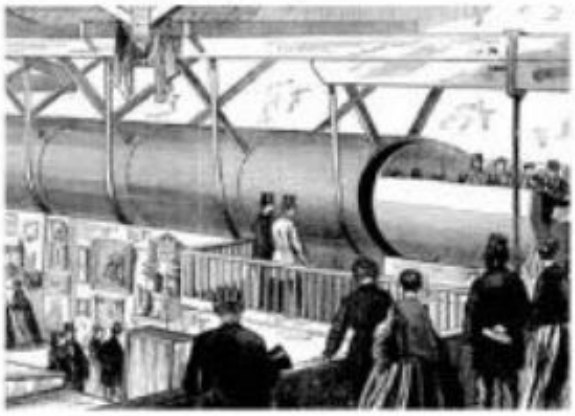
ARTICLES

Innovative young minds on fire

Writing a technical article that can be published in a magazine, conference or journal is a challenging undertaking. Witness our dreamers thinkers and doers trying to share their knowledge of a technology, project or software they are excited about.

HYPERLOOP

Sathyaveer Karmakar (TE Computer)



EVER IMAGINED TRAVELLING WOULD BE SO FAST AND EFFCIENT

PRESENTING HYPERLOOP:- A TRAVELLING EXPERIENCE FROM CAPSULE.

IT IS DESIGNED FOR TRAVELLING AT A VELOCITY OF 900km/hr to 1200km/hr.

IMAGINE TRAVELLING FROM MUMBAI TO PUNE i.e (approx 150 kms) IN JUST 8-10 mins.

OR TRAVELLING FROM KASHMIR TO KANYAKUMARI i.e(approx 3441 kms) in less than 4 hrs.

HYPERLOOP is a proposed mode of Transportation, used to describe an open-source Vactrain Design released by a joint team from Tesla and SpaceX. A vactrain is basically a design drawn by Rocketry pioneer Robert Goddard in 1909 which suggests a very high speed rail transport, basically a maglev line using partly evacuated tubes or tunnels.

Vac means vacuum and train is a pressurized capsule due to which with very less force, you can get a very high speed due to vacuum. Sci-fi writers and dreamers have long envisioned ways to travel at high speeds through low-pressure tubes. In 1972, the RAND Corp. conceived a supersonic underground railway called the Vactrain. The idea was waiting for the right combination of talent, technology, and business case to become a reality.

So basically a HYPERLOOP, is a sealed tube through which capsule will travel free of Air Resistance or Friction.

The founder ELON MUSK'S concept of HYPERLOOP was first publicy mentioned in 2012. Then the HYPERLOOP ALPHA concept was first published in August 2013 which incorporates the travel route from Los Angeles to San Francisco of a hyperloop system that would propel passengers along the 350-mile (560 km) route at a speed of 760 mph (1,200 km/h), allowing for a travel time of 35 minutes, which is considerably faster than current rail or air travel times.

Now if we think of budget for building HYPERLOOP, then it will be considerably low, as the vacuum tubes can be built either on the sides or in the center of exisisting Roads, Rails and aslo below the exisiting bridges. The Chairman of HYPERLOOP TRANSPORTATION TECHNOLOGIES is BIBOP GRESTA.

And yes, if you feel that the ticket for travelling in HYPERLOOP will cost high then the fact that it will be as low as the Railway Ticket will make you happy. Also the proposal suggests that capsules will depart one after another more frequently. Well if you may feel that sitting in an closed capsule will be boring, then here virtual reality glasses help you. You feel as if you are sitting in a Railway and Looking outside the window.

Well get ready for a very new technology which may be first inaugrated between Mumbai to Pune.

MTT Airtech Eco Aladdin Compact E-Nano Technology Air Purifier

Samsung announces the Exynos 9610 SoC with 480 FPS slow-motion video recording

Quantum Computers – An Alternate Way?

Ashwin Shanolikar, Neton Muddalkar (SE Computer)

All of today's computer architectures use the traditional binary system at their core to execute every task. Systems based on current architecture have binary digits always in either one of the states viz. high or low. However, Quantum Computers bypass this state as it does not work with bits, but instead with Quantum Bits (Qubits).

The field of quantum computing was initiated by the work of Paul Benioff and Yuri Manin in 1980, Richard Feynman in 1982, and David Deutsch in 1985. A quantum computer with spins as quantum bits was also formulated for use as a quantum space time in 1968.

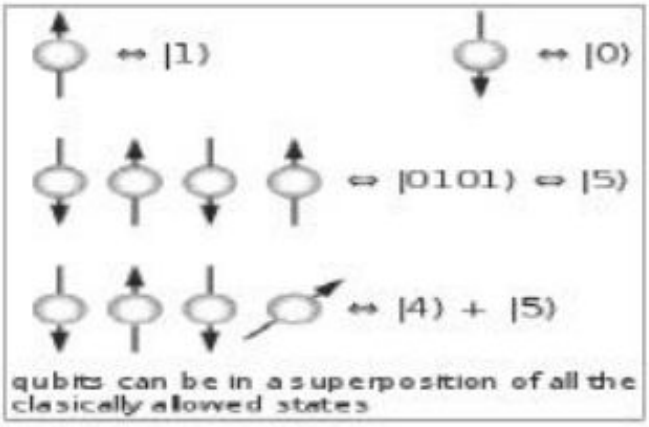
This article aims to bring light to this approach in computing and discuss its feasibility and use in coming years.

Basis of Quantum Computing

Quantum superposition is basically an element being in more than one states simultaneously. While a classical computer holds bits in memory in the form of 1s and 0s, a quantum computer maintains qubits which can hold either a 1, 0, or any quantum superposition of these two states.

If we take 2 classical bits, we know that the can be in one of up to 4 possible states at any given instance of time (00,01,10,11). For 3 bits, we can have one of 8 possibilities. In general, for n available bits, we can have one of 2n possibilities. On the other hand, if we use 2 qubits, superposition allows the simultaneous existence of all the 4 possibilities. So, for n qubits, the system is in 2n states simultaneously. This allows the system to perform multiple operations at the same time thus reducing time complexity drastically.

But how do we form such qubits and what exactly are they? Well, a qubit can be anything from an electron of a phosphorous atom, a neutron, and others such particles. A characteristic of these is that each subatomic particle has its own spin, usually denoted by (up) or (down). This is similar to the binary 0 and 1. We use radiation to agitate these particles in an attempt to change their spin, which can take one of the spin values or a superposition of them. Thus, the state of the system is defined by the spin of the particle. Each state undergoes calculations and the outcome is determined by collapsing all of the states and decomposing into a classical state. Quantum computers are often probabilistic, being that they provide solution the correct solution only with a certain known probability.



qubits can be in a superposition of all the classically allowed states

How Quantum Computing can change our lives – Real World Applications

Consider a problem that has these four properties:

1. The only way to solve it is to guess answers repeatedly and check them,
2. The number of possible answers to check is the same as the number of inputs,
3. Every possible answer takes the same amount of time to check, and
4. There are no clues about which answers might be better: generating possibilities randomly is just as good as checking them in some special order.

The situations given are where a classical computer fails compared to the performance of a quantum computer.

Since quantum computers have a better performance over classical computers in the case of algorithms, it makes them viable to be used in the field of cryptography and security. Quantum computers have also been seen to require quadratically fewer queries in execution of a quantum database search. Help automobiles drive themselves. Google is working on a quantum computer which will help vehicles distinguish between landmarks and cars.

Shor's algorithm is probably the best example of quantum computers: It is an algorithm used to find the prime factors of very large numbers (~2048 bits). A quantum computer has successfully completed this task in around 100 seconds; whereas a classical computer, well, hasn't. The predicted time for a classical computer to complete this task, depending on the input, is anywhere from a good million years, to billions of years, meaning the universe will be twice its current age by the time this computer finds this number's prime factors!

Strengths and Weakness

As we have studied that quantum computers are based on the concepts of quantum mechanics and are fully capable of utilizing those rules at their fullest advantage, there is no doubt of these machines being faster than normal mechanical computers Quantum computers are extremely good at completing very hard calculations faster than a classical computer.

But surely it has some drawbacks doesn't it? True. Even though quantum computers are fast and efficient in computing results, it is difficult to perform these calculation on electrons. So, in a scenario of addition of two 10-bit numbers, a quantum computer may fail to produce result faster than a classical computer.

Quantum Computers are also held back by temperature constraint. The Quantum computers are to be maintained at significantly lower temperature (i.e. 0.02 kelvin to be specific) which is a difficult task. Also, quantum computers, at this point of time, cannot replace your home computer. As our lives do not revolve around heavy calculations and complex algorithms, it will hardly find its way into our homes.

However, with upcoming revolutionary advancements in this field and more and more countries dedicating their resources to research quantum computing, who knows?

Acer launches Predator Orion 9000 gaming desktop in India

IBM Creates World's Smallest Computer for Blockchain Technology

Automation Kill The Jobs – Is it true?

Akshay Pawar (TE Computer)

WHAT IS AUTOMATION?

Automation can be defined as a technology by which a process or procedure is performed without human assistance. Now after reading this line we may feel that people will lose their job. But, is that really true? Yes, to an extent but not completely.

I want to tell you straight off what this story is all about: In the next 40 years, Automation is going to take your job. But they create more jobs opportunities as well. But difference is that the nature of jobs will be different. So right now we focus on how Automation will probably take our job?

Technologies such as digital, big data, Artificial Intelligence, automation and machine learning are increasingly shaping future of work and jobs. I don't care what your job is. If you dig ditches, a robot will dig them better. If you're a doctor, IBM's Watson will no longer "assist" you in finding the right diagnosis from its database of millions of case studies and journal articles. It will just be a better doctor than you. Robots can play chess better than the best grandmaster. They can drive cars around San Francisco—and they're getting better at it every year. They can recognize faces well enough that Welsh police recently made the Kingdom using facial recognition software. After years of plodding progress in voice recognition, Google announced earlier this year that it had reduced its word error rate from 8.5 percent to 4.9 percent in 10 months. These are all about technology trend which are going on.

WHO IS EFFECTED THE MOST?

The effect of automation on jobs really depends on the occupation. A report by the International Institute for Sustainable Development suggests that automation could replace more than half of mining jobs in the next decade.

Assembly line worker, field technician, sorter, data entry, tax preparer, translator, fast food employee, call center worker etc. These types jobs are can be replaced by automated system. Truck, taxi, and delivery drivers also need to worry, as E-Driving came in to the picture. Unfortunately, for those of us worried about Automated system taking away our jobs, these advances mean that mass unemployment is a lot closer than we feared—so close, in fact, that it may be starting already. Hey, hold down story is yet to finish, Technology create great opportunities as well.

MORE JOBS FOR PEOPLE IN TECH

On the flip side, people with technical skills will be needed in every industry to set up and operate the automation systems. However, they'll be hired at a smaller number than the people the machines will ultimately replace, according to Computer World. LinkedIn suggests the jobs of the future will require an IQ of 130 or above—which would include people qualified for positions like data scientist, AI programmer, and mathematician. That covers only a small percentage of the population. The author even suggests we may have to become cyborgs to compete for jobs.

Not necessary that every coal miner will become a coder. But those without some level of technical knowledge likely will be left behind. Even medical professionals and lawyers will have to learn how to use the latest tools to stay up to date in their industry and provide the best services possible.

But there is another path. According to The Economist, jobs that require empathy, communication skills, and close personal interaction are here to stay for now. The author adds that automation raises the value of jobs that do require human connection. These people include nurses, teachers, hairdressers, and personal trainers. And due to customers' frustrations with talking to machines, humans are taking back jobs from automated customer service systems.

Thus at last, the article says that, we cannot predict "whether automation will kill the jobs or not"... as technology is changing day by day, adapting according to the changes will not cause unemployment. If you are not doing something creative and productive with your life, you cannot blame technology for taking over.

SWITCH BOT

Yash Jain Mahendra (TE Computer)

The Switch Bot is a tiny robot which mechanically controls all kinds of switches and buttons no matter where you are. Basically, with the Switch Bot we can control our switches wirelessly. The device functions by activating a mechanical arm which presses down.

To install the Switch Bot we simply have to affix the Switch Bot right where the actuating arm can trigger the switch. It has a 3M adhesive pad which is destined/confined to last for ages. It is built in a way which allows it to work with any kind of switch found all over the world, so we don't have to worry about it not fitting our switch. All we need to do is place it such that the arm can trigger our switch.

The Switch Bot works well with smart home apps and devices as well and can be controlled by the likes of Amazon Echo, SmartThings, WeMo sensors and several others. The Switch Bot comes with a long battery life as well; it's powered by a lithium battery which can be replaced but should sufficient for around 600 days. After all, once the arm is stationary, it will no longer consume any power. All we need to do to get the Switch Bot running after we've attached it to whatever switch we want, simply we can use the free app or whatever smart home device we+ have in your home.

Google Home now works with bluetooth speakers; Clips camera can capture high-resolution images

Google makes Deepmind's AI-Powered Cloud Text-to-Speech Service available to Developers

AUGMENTED REALITY

Aditya Sable (SE Computer)

Reality means everything that exists. So, what is augmented? The root of the word augmented is augment, which means to add or enhance something. In the case of Augmented Reality (also called AR), graphics, sounds, and touch feedback are added into our natural world to create an enhanced user experience.

Augmented Reality Vs Virtual Reality

Virtual reality requires a person to be in an virtual environment, but augmented reality uses the existing natural environment and simply adds virtual information on top of it. While Virtual Reality technology completely immerses the user in a synthetic world without seeing the real world, AR technology augments the sense of reality by superimposing virtual objects upon the real world in real time.

How Does AR work?

In order to understand how augmented reality technology works, we must first understand its objective: to deploy computer generated objects into the real world, which only the user can see. In most augmented reality applications, a user will see both synthetic and natural light. This is done by overlaying projected images on top of a pair of see-through goggles or glasses, which allow the images and interactive virtual objects to layer on top of the user's view of the real world. Augmented Reality devices are often self-contained and untethered which means that unlike the Oculus Rift or HTC Vive VR headsets, do not need a cable or desktop computer to function.

APPLICATIONS

Advertisement and Commercials

AR is used to integrate print and video marketing. Printed marketing material are designed with certain images that, when scanned by an AR-enabled device using image recognition, activate a video version of the promotional material.
AR can enhance product previews such as allowing a customer to view what's inside a product's packaging without opening it. AR can also be used as an aid in selecting products from a catalog or through a kiosk. Scanned images of products can activate views of additional content such as customization options and additional images of the product in its use.

Entertainment and Educational

Entertainment and educational application include cultural apps with sightseeing and museum guidance, gaming apps with AR interfaces. In education, it is used in various domains such science, history, mathematics. For example, in cultural application AR is used for virtually reconstructing ancient ruins, or virtually instructing the user about site's history.

Medical

Most of the medical applications deal with guided and robot-assisted surgery. Let's take an example Imagine that we are going in for a surgical procedure. Before the anesthesia takes effect, we notice that the doctor is wearing an augmented reality headset. The doctor will use this throughout the procedure for things such as display of surgical checklists and display of patient vital signs in a dashboard fashion. Augmented reality assisted surgical technologies assist professionals by providing things such interfaces. Significant research has been made to incorporate AR with medical imaging and instruments incorporating the physician's intuitive abilities.

FUTURE OF AUGMENTED REALITY

The future applications of AR are infinite. Advanced Research in AR includes use of head-mounted displays and virtual retinal displays for visualization purposes, and construction of controlled environments. AR also brings the possibility of enhancing missing senses for special users. For example, AR could be used as a sensory substitution device. Hearing-impaired users could receive visual cues informing them of missed audio signals and sightless users could receive audio cues notifying them of unknown visual events. Nevertheless, the developing technology faces issues regarding social acceptance, privacy and ethical concern with the increasing use in the industry.

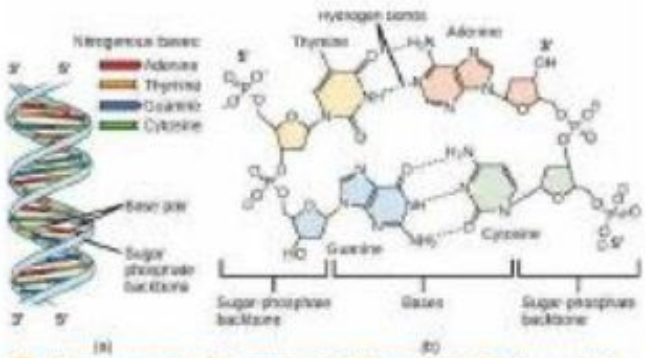
DNA STORAGE AND COMPUTING

Aditya Joshi (SE Computer)

Introduction:

DNA Computing is a branch of computer which deals with implementing DNA instead of normal Silicon based computing systems. The main point of this research is to implement Data Organisation and processing using DNA. The organisation and complexity of Human System is based on four main Nitrogen based molecules in DNA. They are Adenine(A), Guanine(G), Thymine(T) and Cytosine(G). The arrangement of these four determine the DNA's instructions and genetic code. The idea of using DNA as a method of computing was first put forward by Leonard Adleman in university of Southern California, in 1994. Adleman demonstrated a proof of concept use of DNA as a form of computing which solves the seven-point Hamiltonian path problem.

This article aims to bring light upon the approach of using DNA in computing and storage purpose and its applications and uses in future.



This diagram represents the structure of a DNA present inside a human body

Basics of DNA Storage and Computing:

Initial efforts on DNA Computing were focused on solving NP Hard Problems, it was later recognised that it can be used for all types of computing. Problems in NP hard are such that it's time for completion increases exponentially with the complexity of the problem. Adleman's original and subsequent works demonstrated a manageable solution to the directed Hamiltonian path problem, similar to the more familiar travelling salesperson problem. It has since been shown that direct polynomial time solution can be obtained for any NP-complete problem using similar technique of DNA computing.

In 2002, research from the Weizmann Institution of Science created a programmable molecular computer instead of silicon microchip. DNA is also used for storing data. In January 2013, researchers were able to store a jpeg format photograph and an audio clip of Martin Luther King Jr.'s speech on a DNA digital data storage. DNA digital data storage refers to the concept of storing data in DNA, which uses artificially created DNA. This type of storage system is much denser than the current storage types and can store enormous amount of data. Currently it is reported that 1 gram of DNA can store 215 petabytes of data which is equivalent to 215 million gigabytes and also it can be preserved up to 60,000 years.

According to different calculations a DNA computer with 6 grams of DNA can store 3072 Exabyte of data. The data transfer rate is very high due to massive parallelism in calculations. Therefore, about 1000 petaflops can be reached while today's supercomputers can reach only up to 100 petaflops.

For a single process DNA computing is slower than silicon architecture but due to high amount of parallel processing the time taken to solve very large and complex problems is very less in comparison to normal silicon architecture. This is achieved by millions and billions of molecules reacting with each other simultaneously. However it's quite difficult to analyse the output given by DNA computer as compared to a normal one.

Approaches to create DNA computers:

There are multiple methods for creating DNA architecture based computers each having its own advantages and disadvantages. The main task is of making logic gates and logical elements from DNA elements. Some of these are made from DNA bases like DNAzymes, deoxyoligonucleotides, enzymes, toehold exchange, etc. Few elementary methods used are as follows:-

1. DNAzymes

Catalytic DNA catalyse a reaction when it reacts with a matching oligonucleotide. However DNAzymes are limited to 3 input gates and cannot evaluate statements in series. The logic gate changes its structure when combined with oligonucleotide and after that cannot be used for another reaction. Two commonly used DNAzymes are E6 and 8-17.

2. Toehold exchange

In this system, an input DNA strand binds with another strand. This helps in creation of molecular logic components such as AND, OR gates and signal amplifiers which can be implemented in large computers and does not need any enzyme and chemical reaction.

What is the Future for this technology?

Have u considered the point of saving all your thoughts and memories into physical memory? Or saving the data of whole earth in one single device? Well here is the answer. If we could save data in living DNA then in future we could save our thoughts and memories. Even computing large problems will be very fast and effective. In every stream we could use this method very effectively and productively. More than half of the mankind's dreams will come true after using this technology. Robots can be easily made from using DNA architecture and DNA storage which can truly replace Humans.

Who Knows how the world will change in next 100 years but it can be surely said that with research like this at full rate our future generations will be living a life we could hardly imagine.

Xiaomi Mi AI Speaker Mini with Voice-Activated Assistant Launched

Acer Chromebook Tab 10 Launched as first Chrome OS Tablet

Block chain

Shubham Mishra (TE Computer)

Blockchain is not really the buzzword these days due to the excitement around cryptocurrencies. Whenever we hear the word "Blockchain" the first thing we get in our mind is Bitcoin .But the fact is that they both aren't same thing.The technology behind the very famous cryptocurrency Bitcoin is blockchain.

But is the only use of blockchain limited to this?

Answer to this is, No. the potential use of blockchain is far beyond just digital currency.

What is block chain?

* Block chain is defined as a continuous growing list of blocks that are linked and secured using cryptography. Each of these blocks contains a hash pointer , a link to previous block, transaction data and time stamp . It is an open, distributed ledger that records transaction details between two parties efficiently and in a verifiable and permanent way" according to Wikipedia.

Block chain is basically a persistent, transparent ,public , append only ledger.

It is like linked list, in blockchain we can add data without changing any previous data within it. The data added previously remains intact. It does this through the mechanism of creating consensus between scattered or distributed parties that do not need to trust each other, but trust the mechanism by which their consensus has arrived at.

Consider if we want to make a transaction most of us will use the middleware as Bank.

Consider an example where a person X wants to transfer an amount to person Y. Person X uses the middleware as bank and transferred the amount successfully to Person Y. The Middleware (Bank) will make the transfer successfully but will however charge a fee and generally the transaction time amounts to an hour or more (consider the scenario of doing NEFT in a bank)

Blockchain aims to achieve three things:

1. To transfer money without middleware.
2. To transfer money faster.
Transaction time few min/Sec
3. Making the cost of transferring amount cheaper.

Blockchain works on the fundamental idea of distributed and open ledgers. Whenever a new block is added to the blockchain, it is shared with each node on the peer-to-peer network and each node verifies the authenticity of the block. Since it is distributed and not centralized (no central hub),all the details of the transaction is retained on the entire network ,thereby ensuring that history is not controlled by a single person. This ensures completes ecurity.

In case of traditional method(eg Bank) , we have a trusted middle party ensuring the authenticity of data just like a centralized ledger.Therefore we can say that blockchain allows safer, faster and cheaper transfer of money as compared to bank.

Twitter to Ban Cryptocurrency Ads from Tuesday as Online Crackdown Widens

Sony G Series CFast Memory Cars with write speeds of up to 510MBps launched in India

The Blue Brain

Jasmine Mehta (TE Computer)

The Blue Brain is the project founded in May 2005 by the Brain and Mind Institute of the École Polytechnique Fédérale de Lausanne (EPFL) in Switzerland.

This project is headed by the founding director Henry Markram and co-director Felix Schürmann and Sean Hill.

Goals-

The main mission of this project is to create digital reconstruction and simulation of the mammalian brain to identify the fundamental principles of brain structure and function in health and disease.

Progress-

Between 1995 and 2005, Markram mapped the types of neurons and their connections in such a column.

The initial goal was achieved in December 2006 which was the simulation of a rat neocortical column. A human neocortical column is about 2 mm in length, has a diameter of 0.5 mm and contains about 60,000 neurons; rat neocortical columns are very similar in structure but contain only 10,000 neurons.

In November 2007, the project reported the end of the first phase, delivering a data- driven process for creating, validating, and researching the neocortical column.

In 2015, scientists at École Polytechnique Fédérale de Lausanne (EPFL) developed a quantitative model of the previously unknown relationship between the glial cell astrocytes and neurons. This model describes the energy management of the brain through the function of the neuro-glial vascular unit (NGV). The additional layer of neuron-glial cells is being added to Blue Brain Project models to improve functionality of the system.

Funding-

The project is funded primarily by the Swiss government and the Future and Emerging Technologies (FET) and secondarily by grants and some donations from private individuals.

Documentary-

Film Director Noah Hutton is making a 10-part documetary on this project. Having started filming in 2009, the documentary is planned to be released in 2020.

Cajal Blue Brain (Spain)-

The Cajal Blue Brain is coordinated by the Technical University of Madrid and uses the facilities of the Supercomputing and Visualization Center of Madrid and its supercomputer Magerit. The Cajal Institute also participates in this collaboration. The main lines of research currently being pursued at Cajal Blue Brain include neurological experimentation and computer simulations. Nanotechnology, in the form of a newly designed brain microscope, plays an important role in its research plans.

Wonders of Embedded Systems !

Rahul Bhiwande (TE Computer)

Ever thought how your life would have been,if not for the machines,helping you selflessly, always putting you first,Caring when not a single human would be there for you!

YES! these machines never do shy away from a challenge and here I am explaining you the importance and the miracles which have been brought into effect by these lovely little guys which has made the world a better place.

The first question which comes into our mind is , what do you mean by Embedded Systems ? , According to the definition , Embedded system is , "An embedded system is a computer system with a dedicated function within a larger mechanical or electrical system, often with real-time computing constraints. It is embedded as part of a complete device often including hardware and mechanical parts". The best example of Embedded Systems are the Mobile phones , a near perfect blend of electrical and computer technology and contains Embedded systems like modem core and single chip WIFI + BT + GPS solution.

Embedded systems removed the parochial way by combining different technologies to bring forward a system able to perform various tasks.One of the very first recognizably modern embedded systems was the Apollo Guidance Computer, developed 1965 by 'Charles Stark Draper' at the MIT Instrumentation Laboratory.When the project started, the Apollo guidance computer was considered the riskiest item in the Apollo project as it implemented the then newly developed monolithic integrated circuits to reduce the size and weight.

Now in the modern world, Embedded systems range from portable devices such as digital watches and MP3 players, to large stationary installations like traffic lights, factory controllers, and largely complex systems like hybrid vehicles, MRI, and avionics. Complexity varies from low, with a single microcontroller chip, to very high with multiple units, peripherals and networks mounted inside a large chassis or enclosure.

An early mass-produced embedded system, which was the Autonetics D-17 guidance computer for the Minuteman missile, released in 1961. When the Minuteman II went into production in 1966, the D-17 was replaced with a new computer that was the first high-volume use of integrated circuits.

Embedded systems are widespread in the world, in consumer, industrial, commercial and military applications. Microprocessors are fast becoming the new trend and are found everywhere, our surrounding is the most common place to find it. After studying the embedded systems you might be able to become a system developer in a well-sought company.

These technology has brought many wonders and miraculous moments for the people to cherish.

" Life is an embedded system designed by god and our brains are the neural networks surrounded by neurons each neuron has its individual function but they are controlled by microcontroller ic's called our minds "

Huawei to Launch a Blockchain-Ready' Smartphone; Mate 11 to get In-display Fingerprint Sensor

Google Assistant can now send money using Google Pay

Smart Home

Yash Jain Pradip (TE Computer)

WHAT IS A SMART HOME?

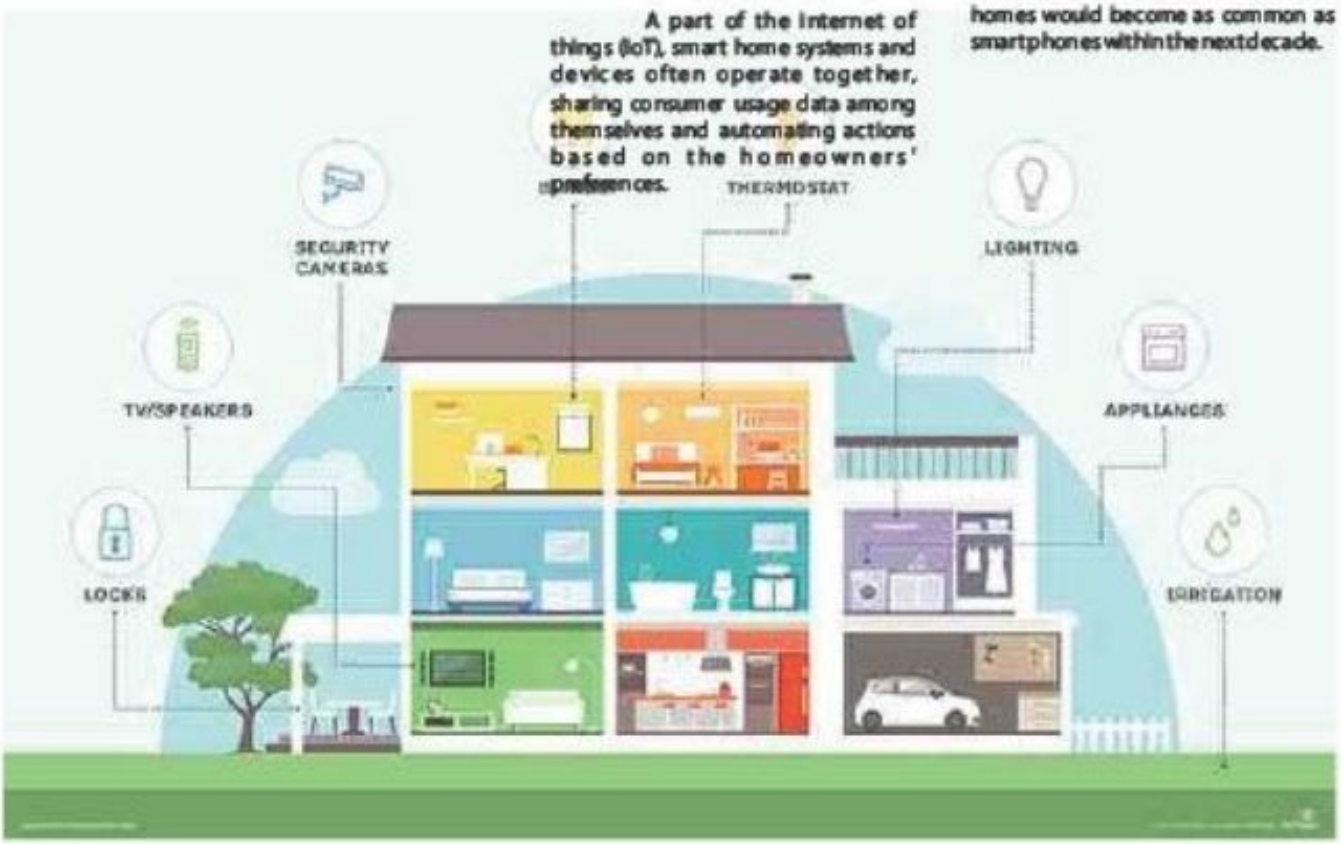
A Smart Home is one that provides its home owners comfort, security, energy eSmart Home efficiency (low operating costs) and convenience at all times, regardless of whether anyone is home.

"Smart Home" is the term commonly used to define a residence that has appliances, lighting, heating, air conditioning, TVs, computers, entertainment audio & video systems, security, and camera systems that are capable of communicating with one another and can be controlled remotely by a time schedule, from any room in the home, as well as remotely from any location in the world by phone or internet.

A part of the Internet of things (IoT), smart home systems and devices often operate together, sharing consumer usage data among themselves and automating actions based on the homeowners' preferences.

The Change...

Imagine a world where everything in our lives is connected to the internet and each other, from smart phones and computers to our home's lights, windows, thermostats, water system and more. A world where all of these devices can be in constant communication and controlled by users remotely via voice command or the simple push of a button. With the rapid growth of the internet of things (IoT), this level of home automation has become a reality. We are on the brink of a smart-home boon, with a growing number of consumers, 71%, expecting to see at least one smart-home device in every home by 2025, according to a recent study by Intel Corporation. About 68% of those interviewed were confident that smart homes would become as common as smartphones within the next decade.



Trendy Smart Home Technologies

Amazon Echo

Where: Kitchen

Why: "You can talk to it and control your Hue lights. My family asks it questions: 'How long is The Land Before Time? Where can I stream it from?' We use it all the time at dinner so that we don't have to pull out our smartphones."

Belkin WeMo Switch

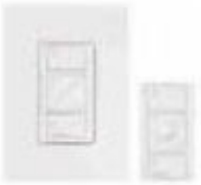
Where: Bathrooms, Kitchen

Why: "This is a Wi-Fi-connected electrical outlet. It's useful for controlling the humidifier in a child's bedroom—you can turn it on and off with your phone—or appliances like a curling iron or coffeemaker."

Lutron Dimmer Light Switches

Where: Dining room, entrance hallway

Why: "They work amazingly well. I replaced two switches in my house with these so I can dim a too-bright light and control an outdoor light, since there aren't any weatherproof connected bulbs yet."



Kwikset Z-Wave Locks

Where: Outside doors

Why: "Lock and unlock doors with the tap of a finger. What more is there to say?"

Best Smart Home Hub

Where: Anywhere

Why: Searching or reaching for that elusive garage door opener remote while trying to navigate a dark suburban street, toppled garbage cans or your kids' toys – or your kids – often proves awkward and dangerous. Chamberlain's garage door opener lets you tap your device's screen to open or close your garage from anywhere.

Google Home

Where: Any Room where you require it.

Why: Google Home is a powerful speaker and voice Assistant. Play your music. Call your friends. As kit questions. Control your home.

Wink Hub 2

Where: Centre of all your devices

Why: Slim and sleek, Wink's second-generation smart home hub connects to a large number of smart home gadgets: Alexa, Google Home, Z-Wave, Zigbee, Lutron Clear Connect, and Kidde devices. It will also connect to Bluetooth LE and has built-in support for Google's Thread interface.

Philips Hue White LED

Where: Anywhere

Why: The Philips Hue White LED Starter Kit lets you enjoy all of the benefits of Hue's well-connected platform and, for just $15 each, you can add extras to your set up. The bulbs are also pretty good looking and have easy-to-use smart controls.

Lifx Color 1000

Where: Anywhere

Why: Lifx's second-gen smart bulbs are brighter and more efficient than you-know-Hue -- and the colors look better, too. We also like the easy-to-use app, the integrations with IFTTT and Alexa, and the fact that Lifx bulbs don't need a hub.

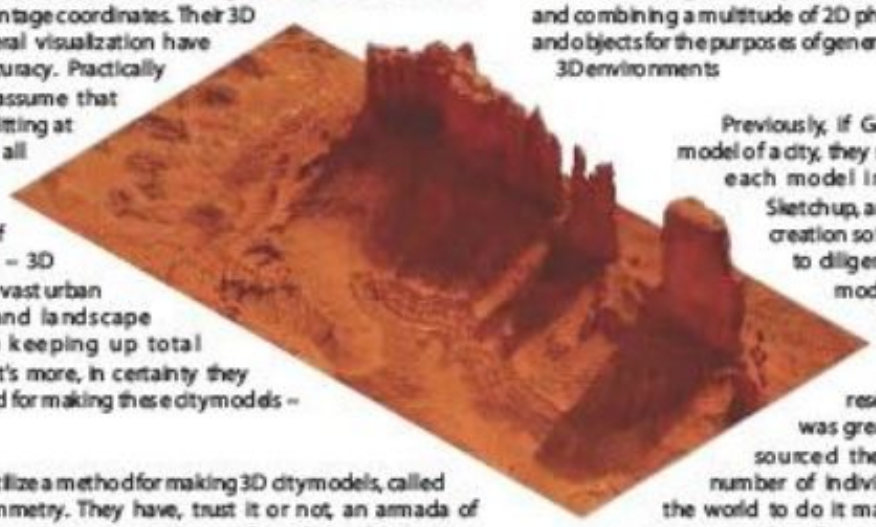
BlackBerry to provide software for Jaguar Land Rover Vehicles

Microsoft's Kaizala App to Get Digital Payments Feature

Google Earth's Incredible 3D Imagery, Explained

Pratik Deoolwadlikar (BE Computer)

The previous decade has seen a quick increment in the utilization of high-resolution imagery and geographic-based frameworks over each fragment of society from security knowledge, advertising to logical research. Google Earth has positioned itself at the bleeding edge of this spatial data wave, especially inside the setting of 3D imagery, it has been abused over the earth sciences for spatial perception, training, and place-based pursuits etc and from its many use cases and features provided it certainly captivates your fascination and let you appreciate earth right from your own latitude and longitude vantage coordinates. Their 3D models for general visualization have near perfect accuracy. Practically it's difficult to assume that somebody was sitting at a PC and making all these singular models of a huge number of structures, trees – 3D models of whole vast urban communities and landscape surfaces while keeping up total irregularity. What's more, in certainty they do have a method for making these city models – naturally.

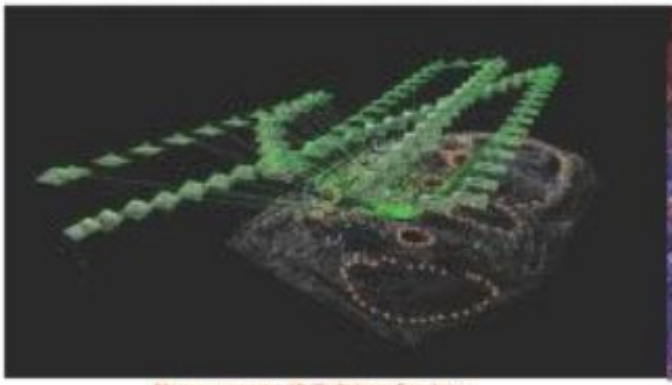


They utilize a method for making 3D city models, called Stereophotogrammetry. They have, trust it or not, an armada of planes that fly over urban areas, similar to a flying form of their street view cars! A portion of these planes are claimed by Google, and the rest are under selective contract, yet all are available to Google no matter what. Cameras are mounted on the planes shooting photographs at 45-degrees point, overhead, and from various directions. The Stereophotogrammetry procedure at that point consequently thinks about the different aerial photographs to compute the geometry of the structures, terrains and landmark points and make a finished 3D Mesh of the whole city, including the structures, as well as trees, intricate terrains and even autos and trucks!

What is Photogrammetry?

Photogrammetry is the method of acquiring, measuring, and combining a multitude of 2D photographs of real-world places and objects for the purposes of generating photorealistic, explorable 3D environments

Previously, if Google needed to make a 3D model of a city, they needed to exclusively structure each model in a program called Google Sketchup, an exceptionally basic 3D model creation software. Someone was assigned to diligently and carefully structure the model, referring outside photos of the building and map them onto the sides of those structures from photo so it resembled the genuine building. It was greatly tedious, so Google crowd-sourced the activity, enrolling a large number of individuals everywhere throughout the world to do it mainly hobbyists. The outcomes were spotty and conflicting. Some looked practical, others were cartoony. The lighting was uneven. Arrangement of the structures was frequently off base, and not all structures were demonstrated – often there were only a couple of structures popping up amidst a generally flat city.



Photogrammetry 3D Tie Points of an Area

Generating Depth map from location results and overlapped images obtained earlier

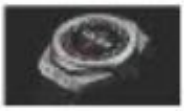
While it might be difficult to believe, the model generated by Google Earth, in actual is a blend of numerous 2D photos, taken from thousands of points, computed actual positions for each point, edited, and sewed together by a software to make a completely explorable 3D model. While this fundamental hypothesis of photogrammetry is moderately straightforward, practically speaking it is arduously challenging and tedious task, particularly if your intent is to generate an explorable model from just images.

Photogrammetry's most prominent potential lies in its capacity to restrict patterns and reiteration by effectively catching huge distortions or fluctuations of true shapes and surfaces, thus contributing to natural realism.

New developments

This strategy can remove the designing stages for many parts, enabling cameras and processing to take the necessary steps, Researchers strongly admit that Photogrammetry can possibly influence the quality control to process quicker, more affordable and more effective. The measure of information will still be limited by our PC and its compute power, the general consideration is that software innovations always lead the race and place concerns on hardware requirement, whereas advances in hardware results in further scope exploration while filling those previously generated limitation gaps.

Apple Watch will unlock when you and only you look at it



Hublot's Big Bang is an Android watch with a big price tag.

CYBERSECURITY : Cryptojacking

Urvi Aryamane (TE Computer)

The best defence is a good offense"

This quote very adroitly explains that we should not pulls ourselves back, but rather be on the forefront and take actions in our own hands to provide ourselves the best form of security.

Cybersecurity does this , by opening our mind to various forms of networks , what exactly we can do with the knowledge of networking infrastructure. How the Internet works ! And especially with Internet of things and the modern world embracing the internet as it's own first born, we should really be careful and try not to indulge ourselves in to bad activities which can really be harmful to us and to the people using it.

As the name suggests , cryptojacking is what and will be plaguing the modern world in a short period of time. It is the practice of using a computer's processing power to mine for crypto currencies without the owner's permission or knowledge, this has recently gained more traction in the crypto sphere as browser-based crypto mining has once again become possible and profitable.

BITCOIN , you may have heard this name. This is the most popular form of cryptocurrency out there which is worth millions and is increasing it's worth day-by-day. It became harder and harder to mine for cryptocurrencies on a personal computer, given the increasingly high amount of energy needed to make a profit. More efficient mining hardware like ASIC chips slowly became the norm, ending the era when one person sitting at home with a PC could make money mining Bitcoin.

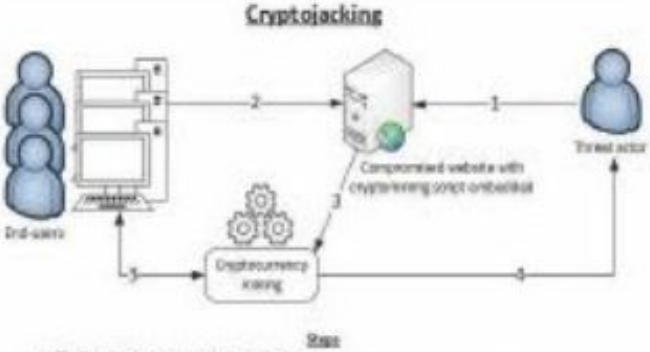
Coinhive is the most popularly used script for cryptojacking. Jackers i.e the people who use such scripts, pick so many pockets at once that the cost per victim is minimal: a fraction of a rupee in electricity and only a slight dip in computer performance and browser-based mining isn't all bad. This script was created by the company as a revenue alternative to ads on websites.

We as computer engineers should maintain extensive knowledge regarding how this is increasing and what should be done to prevent this ! Also No one knows for certain how much cryptocurrency is mined through cryptojacking, but there's no question that the practice is evergrowing. Browser-based cryptojacking is growing fast. Last November, Adguard reported a 31 percent growth rate for in-browser cryptojacking. Its research found 33,000 websites running crypto mining scripts. Adguard estimated that those site had a billion combined monthly visitors.

TO KNOW, "A CRYPTOJACK STARTS WHEN A JAVASCRIPT MINER FILE IS UPLOADED TO A WEBSITE. THIS FILE CAN EITHER BE KNOWINGLY PLACED BY THE WEBSITE OWNER OR SNUCK IN AFTER A SECURITY BREACH BY A HACKER. WHEN SOMEONE VISITS THE WEBSITE, THE JAVASCRIPT FILE IS RUN, WHICH USES THE USER'S COMPUTER TO MINE CRYPTOCURRENCY. THIS MEANS AS LONG AS THE USER IS STILL ON THE SITE, THEY'LL BE USING THEIR COMPUTER TO DO WORK FOR WHOEVER PLACED THE FILE".

Be careful and conscious when scrolling the web.

"Hardware is easy to protect: lock it in a room, chain it to a desk, or buy a spare. Information poses more of a problem. It can exist in more than one place; be transported halfway across the planet in seconds; and be stolen without your knowledge."



Western Digital launches hybrid-cloud backup, recovery solution

Microsoft and Nvidia Tech to bring Photorealistic Games with Ray Tracing

GRAPHICS DESIGN TRENDS IN 2018

Prathamesh Bhosale (BE Computer)

Trends come and go, even though we can't clue in exactly when, it's for sure that they don't start up one year and fade out the next, instead they shift until they evolve or the new one replaces them.

Designers have been hunting through a number of websites like Dribbble, Behance for design styles that are trending this year and will be prominent throughout the year in design space.

Here we'll take a look at 10 Design Trends that will take over the graphic designing space in 2018.

1.MINIMALISM

"The ability to simplify means to eliminate the unnecessary so that the necessary may speak"-Hans Hofmann.

'Less is more' is a principle that has gained more importance in the creative world. UI and UX are getting more minimal than ever removing as many unnecessary elements as possible to let the content speak and connecton it's own.

2.BIG AND BOLD TYPOGRAPHY

Designers should focus on using typography to make their designs stand out. With BIG and BOLD fonts you can easily call people's attention. Extra-bold font family members will dominate the digital spaces.

3.BRIGHT, POPPING, BOLD COLORS

It's finally time to add loud, bright and vibrant colors to your designs. The Bright, Popping, Bold Colors will help the design to stand out easily grasping eyes attention, considering the fact that 1,36,000 photos are posted every 60 seconds on Facebook, and 95 million photos are posted on Instagram every day.

4.HAND-DRAWN DESIGNS

This trend is making a big comeback this year.

The "all things hand-drawn" trend includes modern script typography and photos being replaced with hand-drawn illustrations and infographics.

5.CINEMAGRAPHS

Cinemagraphs or living photos are images that contain parts which move, creating visually appealing content that's much more likely to become viral. This is a unique approach to tell a story or bring life to the message by creating the center of attraction where the creator wants us to focus the most, important part of the design.

6.RESPONSIVE LOGOS

We are all aware of the benefits of responsive web design including higher conversion rates, lower bounce rates, improved SEO, increased traffic and much more. The use of responsive logos will complement and enhance the importance of responsive web design in 2018.

7.GRADIENTS

Popularity of gradients increases continuously and we can examine color transitions implemented in logos, websites, buttons, backgrounds, and typography. In 2018 we are expecting designers to develop a unique approach to this trend and introduce modern gradients in various styles or forms with bright and vivid colors.

8.CROPPED TYPOGRAPHY

Erasing parts of the letters while still keeping the readability of the text, and letting your imagination run wild with it creates incredible results.

The art of cropped typography being integrated with the other design elements and photography requires a lot of creative thinking.

9.SEMI FLAT DESIGN

Semi-flat designs add soft shading to a flat design creating more depth which is used as an invaluable way to create visual hierarchy and call to action.

Dimension and depth created through shadows highlight one element of the design while establishing strong visual impact.

10.DUOTONE

Duotones have gained maximum popularity when Spotify started using them in their playlist images, app, and promotional microsites. Again, impacted by industry leader, it is believed this trend is and will continue to spread, develop and emerge in various modern looks.

Dimension and depth created through subtle shadows highlight one element of the design while establishing strong visual impact giving designs much simpler pallets, easy to grasp yet attractive enough.

So the above-discussed trends are just a few gaining popularity this coming year, yet room for more to emerge or even grow bigger enough to fade one of them away. The basic idea of creating a trend is to be experimental, thinking out of the box without focusing on limitations and just following the instincts.

"I strive for two things in design: simplicity and clarity. Great design is born of those two things."-Lindon Leader.

Building a Website with Drupal

Prof. Mayuri Jain

Introduction

Drupal is a popular content management system (CMS) used to run some of the largest blogs and websites across the internet. Due to the stability of the base, the adaptability of the platform, and its active community, Drupal remains a popular choice.

We will be using Apache to serve our site, since this is the configuration recommended by the Drupal team.

Prerequisites

Before you gets started with this article, you will need an Ubuntu 14.04 server with some basic configuration completed.

You will need to have Apache, PHP, and MySQL configured on your server. You can learn how to set this up by following the steps on get LAMP installed on Ubuntu 14.04. (https://www.digitalocean.com/community/tutorials/how-to-install-linux-apache-mysql-php-lamp-stack-on-ubuntu-14-04)

Once you have fulfilled the above requirements, we need to configure and install DRUPAL on our machines.

You can configure and setup Drupal on your system by following the guide on How To Install Drupal on an Ubuntu 14.04 Server with Apache. (https://www.digitalocean.com/community/tutorials/how-to-install-drupal-on-an-ubuntu-14-04-server-with-apache)

Now that the Drupal installation is completed(assumed!!), we will talk about building an actual Drupal website. You will learn just about the initial stages of creating some webpages, so grab on to your system and get ready to create some webpages using Drupal.

In order to start using Drupal in its full capacity, you need to login to the administrator dashboard. You can access it by adding user/login at the end of your Drupal URL.

Once logged in, you will be presented with the administrator dashboard. Here you will have all the tools and the authority to start building and/or customizing your website. The following sections will be shown:

1. **Content**: This section allows you to add and administer content and/or comments and/or files.
2. **Structure**: From here, you can administer block layouts, comment types, contact forms, content types, display modes, menus, taxonomies, and views.
3. **Appearance**: The appearance section allows you to install or uninstall themes.
4. **Extend**: From the extend tab, you can download and install modules to enhance your website's functionality.
5. **Configuration**: This section allows you to tweak configurations and settings.
6. **People**: You can manage user accounts, permissions, and roles from the People section.
7. **Reports**: Get status reports or see log messages etc. from the Reports section.
8. **Help**: The help section will contain all the help that you might need during the installation process.

Creating Articles and Basic Pages

By default in Drupal, there are the following content types:

- **Articles**: The content type article was previously known as story. Articles are used to display information that can get altered from time to time and is normally categorized as well.
- **Basic page**: Basic pages can be used to display static content that's not expected to change as frequently as articles.

Let's now talk about adding an article in Drupal (Spoiler: it's simple). Follow these steps:

1. From the dashboard, click on **Content**.
2. Now click on **Add content**.
3. From the displayed window, click on **Article**. You will be presented with a screen that prompts you to add the title, tags, body, text format, and image for the article.
4. If you want to link the article to a menu, click on **Menu Settings** and then on the checkbox that says provide a menu link. Here you can add the link, title, description, parent item and weight for the menu.
5. You can also add revision information, URL path settings, comment settings, authoring information and publishing options for your article.
6. Now click on the **preview** to view the article or just click on **Save and publish** to make it live.
7. Your article is up!

Microsoft Updates Services Agreement to Restrict Offensive Language on Xbox, Skype, Other Products

India gains 67th position in Ookla's Speedtest Global Index for fixed broadband speed in February

Let's now look at making a simple **About Us** page:

1. Click on **Content** and then on **Add content**.
2. Now click on **Basic page**.
3. ow enter the title and the body for the page. As this is an about us page, you can put "About us" in the title and put pertinent information in the body.
4. Select the Text format and toggle the menu settings if necessary.
5. To link the page to a menu, click on Provide a menu link. Enter the title, description, weight and parent item (As this is an about us page, it can be put under a section like "Company history") for the menu.
6. You can also add revision information, URL path settings, comment settings, authoring information and publishing options for your page.
7. You can click on the preview to view the page or just click on **Save and publish** to make it live.
8. Your page is now live!

Creating Menus

Menus are very important regardless of the type of website you are building. They help in categorizing and structuring the overall website. With Drupal, you can add, delete and rename menus and their constituent items. Follow these instructions to add a menu:

1. Click on Structure and choose Menus.
2. Some of the default menus like tools, administration and footer etc. will already be present and can be edited.
3. Click on Add menu.
4. Add the title and the description for the menu and click on Save.
5. Click on Add link to add a menu link.
6. On the presented window, you will be asked to add link title, path, description, parent link, weight for the link. You can also select whether you want to enable the menu and whether you want to show it as expanded using the Enabled and Show as expanded checkboxes. In the path, you can add links to pages. If you are creating a main menu, you can add a link to the about us page here. Drupal Add New Menu Link.

1. Once all selections/entries are made, click on **Save**.
2. You can repeat step 7 to add multiple links to the menu.

The RED Smartphone Provides A Holographic Screen, Allowing You To View Videos From Multiple Angles

Nutale Is A Tiny GPS Tracker Will Keep You From Losing Your Most Precious Belongings

Wireless charging roads

Shubham Mishra (TE Computer)

The biggest drawback to owning an electric vehicle right now is that it is quite expensive and the issue of very limited charge batteries and of course limited charging points. The Israeli government is working with ElectRoad (an Israeli startup), to try out under-pavment wireless charging technology, so that the roads can charge the cars! With constant charging available, there would be no need for heavy, high-capacity batteries that have to sustain the vehicle over long distances. Instead we could switch to cheaper, lighter batteries even on heavier vehicles.

Guaranteed ,setting this up would be a huge one time investment, but it would eventually pay off in the long run. As a mater of fact, this can only be implemented in smaller countries, and not in a country like India with massive road networks. Maybe some day?

BIG DATA

Shreya Salgia (TE Computer)

Big data analytics examines large amounts of data to uncover hidden patterns, correlations and other insights. With today's technology, it's possible to analyse your data and get answers from it almost immediately – an effort that's slower and less efficient with more traditional business intelligence solutions.

The concept of big data has been around for years; most organizations now understand that if they capture all the data that streams into their businesses, they can apply analytics and get significant value from it. But even in the 1950s, decades before anyone uttered the term "big data," businesses were using basic analytics (essentially numbers in a spreadsheet that were manually examined) to uncover insights and trends.

The new benefits that big data analytics brings to the table, however, are speed and efficiency. Whereas a few years ago a business would have gathered information, run analytics and unearthed information that could be used for future decisions, today that business can identify insights for immediate decisions. The ability to work faster – and stay agile – gives organizations a competitive edge they didn't have before.

Big data analytics helps organizations harness their data and use it to identify new opportunities. That, in turn, leads to smarter business moves, more efficient operations, higher profits and happier customers. In his report Big Data in Big Companies, IIA Director of Research Tom Davenport interviewed more than 50 businesses to understand how they used big data. He found they got value in the following ways:

Cost reduction

Big data technologies such as Hadoop and cloud-based analytics bring significant cost advantages when it comes to storing large amounts of data – plus they can identify more efficient ways of doing business.

Faster, better decision making

With the speed of Hadoop and in-memory analytics, combined with the ability to analyse new sources of data, businesses are able to analyse information immediately – and make decisions based on what they've learned.

Apple's Homepod Aims To Revolutionize Smart Speakers

Drone scapable of reading human heart rate developed

New products and services

With the ability to gauge customer needs and satisfaction through analytics comes the power to give customers what they want.

TYPES

1.DESCRIPTIVE: explains what happened in the past based on the data presented by graphics.

2.DIAGNOSTIC: using reports generated by the previous type creates an understanding why certain event took place in the past.

3.PREDICTIVE: Most useful for companies because using the data and calculations we can predict what could happen in the future.

4.PRESCRIPTIVE: The system decides how to proceed by recommending, for example..the best location on your site to place a banner or most near by gas station..etc.

APPLICATIONS

1.TRAVEL AND HOSPITALITY
2.HEALTH CARE
3.GOVERNMENT
4.RETAIL

There's no single technology that encompasses big data analytics. Of course, there's advanced analytics that can be applied to big data, but in reality several types of technology work together to help you get the most value from your information. Here are the biggest players:

Data management.

Data needs to be high quality and well-governed before it can be reliably analyzed. With data constantly flowing in and out of an organization, it's important to establish repeatable processes to build and maintain standards for data quality. Once data is reliable, organizations should establish a master data management program that gets the entire enterprise on the same page.

Data mining.

Data mining technology helps you examine large amounts of data to discover patterns in the data – and this information can be used for further analysis to help answer complex business questions. With data mining software, you can sift through all the chaotic and repetitive noise in data, pinpoint what's relevant, use that information to assess likely outcomes, and then accelerate the pace of making informed decisions.

Hadoop.

This open source software framework can store large amounts of data and run applications on clusters of commodity hardware. It has become a key technology to doing business due to the constant increase of data volumes and varieties, and its distributed computing model processes big data fast. An additional benefit is that Hadoop's open source framework is free and uses commodity hardware to store large quantities of data.

In-memory analytics

By analysing data from system memory (instead of from your hard disk drive), you can derive immediate insights from your data and act on them quickly. This technology is able to remove data prep and analytical processing latencies to test new scenarios and create models; it's not only an easy way for organizations to stay agile and make better business decisions, it also enables them to run iterative and interactive analytics scenarios.

Predictive analytics.

Predictive analytics technology uses data, statistical algorithms and machine-learning techniques to identify the likelihood of future outcomes based on historical data. It's all about providing a best assessment on what will happen in the future, so organizations can feel more confident that they're making the best possible business decision. Some of the most common applications of predictive analytics include fraud detection, risk, operations and marketing.

Text mining.

With text mining technology, you can analyze text data from the web, comment fields, books and other text-based sources to uncover insights you hadn't noticed before. Text mining uses machine learning or natural language processing technology to comb through documents – emails, blogs, Twitter feeds, surveys, competitive intelligence and more – to help you analyze large amounts of information and discover new topics and term relationships.