TECHERA 2018

If people do not believe that mathematics is simple, it is only because they do not realize how complicated life is

\- John Von Neumann

Madanapalle Institute of Technology & Science
(UGC- Autonomous)

Department of Computer Science & Engineering

MESSAGE FROM THE CORRESPONDENT

I feel exhilarated that the Department of Computer Science & Engineering of MITS is bringing out a magazine called TECHERA from the year 2015. This Magazine brings out the intellectual brilliance in various new techniques introduced in Information Technology industry.

``HARD WORK, SINCERITY, DEDICATION AND ENTHUSIASTIC DEVOTION TO WORK WILL FETCH YOU UNBOUND SUCCESS, MAY THE LORD SHOWER HIS BLESSINGS ON YOU``

I heartily congratulate the students and the staffs of CSE Department and Wish them a grand success.

Dr. N. Vijaya Bhaskar Choudary
Correspondent

MESSAGE FROM THE CHAIRMAN

Your blessings be bestowed upon us leading into the right path in organizing Magazine "TECHERA" by the Department of Computer Science& Engineering students and faculty of **MITS** and thereby make this magazine a grand success.

Chairman
Sri. N. Krishna Kumar

MESSAGE FROM THE PRINCIPAL

I feel delighted about the magazine "TECHERA" to be hosted by the Department of Computer Science & Engineering of MITS. On this magnanimous occasion, I congratulate all the students and faculty members of department for their great efforts and coordination in bringing out the magazine a great success.

Principal

Dr. C. Yuvaraj

MESSAGE FROM THE
HEAD OF THE DEPARTMENT

TECHERA is dedicated for addressing the emerging topics and challenges in the area of technology. **TECHERA** is to create great awareness on new innovative ideas and technologies. I wish the readers of **"TECHERA"** for their support and also can provide the useful feedback to improve the standards of magazine.

Dr. R. Kalpana

Head of the Department

EDITORIAL DESK

The annual release of the department magazine **"TECHERA – 2018",** mark the spirit of exploration among students in an environment of erudition.

This year's edition of "**TECHERA - 2018**" focuses on current trends in Computer Science and Information Technology which are the major rays of hope for developing a new world of science. It is a collection of information and facts, featuring the recent developments of fascinating and conceptual communication.

The editorial team owes its gratitude to all who have made "**TECHARA - 2018",** a scintillating event.

Editors

ABOUT MITS

Madanapalle Institute of Technology & Science is established in 1998 in the picturesque and pleasant environs of Madanapalle and is ideally located on a sprawling 26.17 acre campus on Madanapalle - Anantapur Highway (NH-205) near Angallu, about 10km away from Madanapalle.

MITS, originated under the auspices of Ratakonda Ranga Reddy Educational Academy under the proactive leadership of and **Dr. N. Vijaya Bhaskar Choudary, Secretary & Correspondent** and **Sri. N. Krishna Kumar, Chairman** of the Academy.

MITS is governed by a progressive management that never rests on laurels and has been striving conscientiously to develop it as one of the best centers of Academic Excellence in India. The Institution's profile is firmly based on strategies and action plans that match changing demands of the nation and the student's fraternity. MITS enjoys constant support and patronage of NRI's with distinguished academic traditions and vast experience in Engineering & Technology.

ABOUT DEPARTMENT

The Department of Computer Science & Engineering offers 4-year degree, which is established in the year 1998. The course is flexible and has been structured to meet the evolving needs of the IT industry. The Department is offering M. Tech Computer Science & Engineering from the academic year 2007 - 2008. The Department has obtained UGC-Autonomous Status in the year 2014 and is running the Programmes successfully meeting all the requirements. The College Academic Council, Board of Studies of the department strive to provide quality education and most advanced curriculum and syllabus to make the students industry ready and excel in the contemporary business world.

The B.Tech. Programme under Department of Computer Science & Engineering was Accredited by the National Board of Accreditation (NBA) of All India Council for Technical Education (AICTE)

VISION

To excel in technical education and research in area of Computer Science & Engineering and to provide expert, proficient and knowledgeable individuals with high enthusiasm to meet the Societal challenges

MISSION

M1: To provide an open environment to the students and faculty that promotes professional and personal growth.

M2: To impart strong theoretical and practical background across the computer science discipline with an emphasis on software development and research.

M3: To inculcate the skills necessary to continue their education after graduation, as well as for the societal needs.

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

The Program Educational Objectives (PEOs) of the department of CSE are given below:

PEO1: Gain Successful Professional career in IT industry as an efficient software engineer.

PEO2: Succeed in Master/Research programmes to gain knowledge on emerging technologies in Computer Science and Engineering.

PEO3: Grow as a responsible computing professional in their own area of interest with intellectual skills and ethics through lifelong learning approach to meet societal needs.

PROGRAM SPECIFIC OUTCOMES (PSOs)

The Computer Science and Engineering Graduates will be able to:

PSO1: Apply mathematical foundations, algorithmic principles and computing techniques in the modelling and design of computer - based systems

PSO2: Design and develop software in the areas of relevance under realistic constraints.

PSO3: Analyze real world problems and develop computing solutions by applying concepts of Computer Science.

CONTENT

1. ARTIFICIAL INTELLIGENCE

Artificial intelligence (AI) is an area of computer science that emphasizes the creation of intelligent machines that work and reacts like humans. Artificial general intelligence (AGI) is the intelligence of a machine that could successfully perform any task that a human being can. It is a primary goal of some artificial intelligence research.
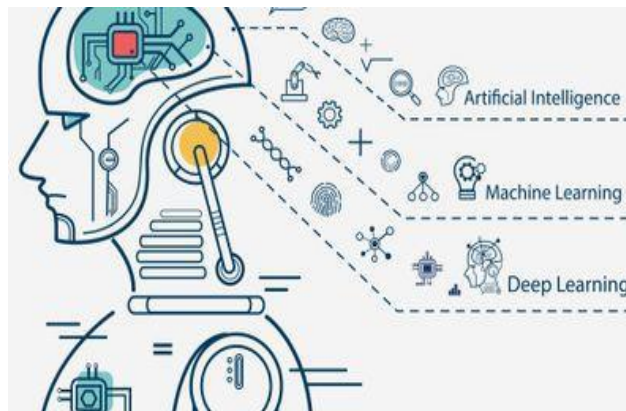

Figure 1.1: Artificial Intelligence and Its variants

It has main 2 working area: **Machine Learning and Robotics.**

Machine Learning: Machine learning enables analysis of massive quantities of data. While it generally delivers faster, more accurate results in order to identify profitable opportunities or dangerous risks, it may also require additional time and resources to train it properly. Combining machine learning with AI and cognitive technologies can make it even more effective in processing large volumes of information.

Machine learning is an application of artificial intelligence (AI) that provides systems the ability to automatically learn and improve from experience without being explicitly programmed. Machine learning focuses on the development of computer programs that can access data and use it learn for themselves.

The process of learning begins with observations or data, such as examples, direct experience, or instruction, in order to look for patterns in data and make better decisions in the future based on the examples that we provide. The primary aim is to allow the computers learn automatically without human intervention or assistance and adjust actions accordingly.

Machine learning methods: categorized as supervised or unsupervised.

- ✓ ***Supervised machine learning algorithms:*** can apply what has been learned in the past to new data using labelled examples to predict future events. Starting from the analysis of a known training dataset, the learning algorithm produces an inferred function to make predictions about the output values.

- ✓ **Unsupervised machine learning algorithms:** are used when the information used to train is neither classified nor labelled. Unsupervised learning studies how systems can infer a function to describe a hidden structure from unlabelled data. The system doesn't Figure out the right output, but it explores the data and can draw inferences from datasets to describe hidden structures from unlabelled data.
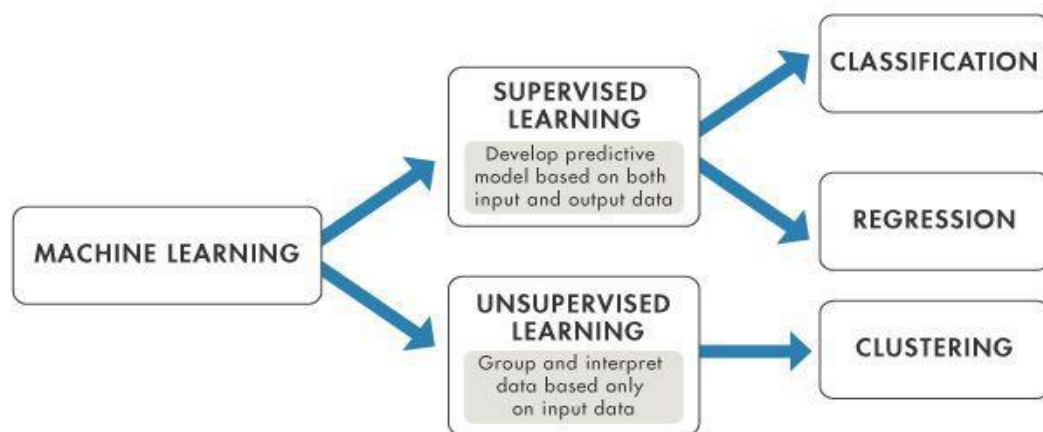

Figure 1.2: Machine Learning Methods

- ✓ **Semi-supervised machine learning algorithms** fall somewhere in between supervised and unsupervised learning, since they use both labelled and unlabelled data for training – typically a small amount of labelled data and a large amount of unlabelled data. The systems that use this method are able to considerably improve learning accuracy.

- ✓ **Reinforcement machine learning algorithms** is a learning method that interacts with its environment by producing actions and discovers errors or rewards. Trial and error search and delayed reward are the most relevant characteristics of reinforcement learning.

What will happen if algorithms of the programs are capable of learning? Machine Learning is a technique in which the machine is built with the capabilities for doing the job which are humans are capable for doing. There

should be perfect analysis of strategies from which one can design perfect machine learning algorithm. It is a capability of the computer program which are capable of learning new things are not needed to program again and again.

It is used in following areas.

- ✓ **Medical**: For cancer cell detection, brain MRI image restoration, gene printing, etc.
- ✓ **Document**: Super-resolving historical document images, segmenting text in document images.
- ✓ **Banks**: Stock prediction, financial decisions.
- ✓ **Natural Language Processing**: Recommendation systems: Netflix uses recommendation system to suggest movies to users based on their interest, sentiment analysis, photo tagging.
- ✓ **Information Retrieval**: Search engines, both text search, and image search like the one used by Google, Amazon, Facebook, LinkedIn, etc.
- ✓ **Robotics**: Nowadays most of the non-technical work is performed with the robotics in almost every sectors. For example if we see car paintings in MNC companies most of the man power is going to be reduced with AI based arm trainers. It increases the accuracy and reduces time to perform work. Robotics is a branch of AI, which is composed of Electrical Engineering, Mechanical Engineering, and Computer Science for designing, construction, and application of robots.

Following are the main working areas:-

- ✓ **Mechanical Engineering**: The robots have mechanical construction, form, or shape designed to accomplish a particular task.
- ✓ **Electrical Engineering**: They are electrical components which are used in power and control of the machinery.
- ✓ **Computer Engineering**: It contains some level of computer program that determines what, when and how a robot does something.
- ✓ **Industries:** Robots are used for handling material, cutting, welding, color coating, drilling, polishing, etc.
- ✓ **Military:** Autonomous robots can reach inaccessible and hazardous zones during war. A robot named Daksh, developed by Defence

Research and Development Organization (DRDO), is in function to destroy life-threatening objects safely.

- ✓ **Medicine**: The robots are capable of carrying out hundreds of clinical tests simultaneously, rehabilitating permanently disabled people, and performing complex surgeries such as brain tumours.
- ✓ **Exploration**: The robot rock climbers used for space exploration, underwater drones used for ocean exploration are to name a few.
- ✓ **Entertainment**: Disney's engineers have created hundreds of robots for movie making.

References:

1. **Foundations of Machine Learning** By Mehryar Mohri, Afshin Rostamizadeh and Ameet Talwalkar
2. **Artificial Intelligence: A Modern Approach** by Stuart Russell and Peter Norvig

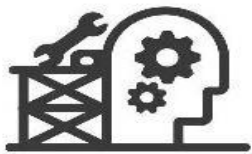*Article by*

K.GAYATHRI

B.HARITHATEJA

2. CYBER SECURITY

Cyber security is the state or process of protecting and recovering networks, devices, and programs from any type of cyber attack. Cyber attacks are an evolving danger to organizations, employees, and consumers. They may be designed to access or destroy sensitive data or extort money. They can, in effect, destroy businesses and damage people's financial and personal lives.

What's the best defence A strong cyber security system has multiple layers of protection spread across computers, networks, and programs. But a strong cyber security system relies not only on cyber defence technology, but also on people making smart cyber defence choices.

The good news? You don't need to be a cyber security specialist to understand and practice cyber defence tactics. This guide can help. You'll learn more about cyber security and how to help defend yourself against cyber threats. It could help you recognize and avoid threats before they're able to infiltrate your network or device.

<u>Types of cyber threats</u>

Social Engineering:
The process of psychologically manipulating people into performing actions or giving away information.

APTs (Advanced Persistent Threats):
Attacks in which an unauthorized user infiltrates a network undetected and stays in the network for a long period of time.

Malware:
Software that is specifically designed to gain access or damage a computer without the knowledge of the owner.

- **Attacks on confidentiality**. These include stealing your personal identifying information and your bank account or credit card information. Many attackers will take your information and sell it on the dark web for others to purchase and use.
- **Attacks on integrity**. These attacks consist of personal or enterprise sabotage, and are often called leaks. A cybercriminal will access and release sensitive information for the purpose of exposing the data and influencing the public to lose trust in that organization.
- **Attacks on availability**. The aim of this type of cyberattack is to block users from accessing their own data until they pay a fee or ransom. Typically, a cybercriminal will infiltrate your network and block you from accessing important data, demanding that you pay a ransom. Companies sometimes pay the ransom and fix the cyber vulnerability afterward so that they can avoid halting business activities.

Here are a few types of cyber threats that fall into the three categories listed above:

Social engineering, a type of attack on confidentiality, is the process of psychologically manipulating people into performing actions or giving away information. Phishing attacks are the most common form of social engineering. Phishing attacks usually come in the form of a deceptive email that tricks the user into giving away personal information.

APTs (Advanced Persistent Threats), a type of attack on integrity, are attacks where an unauthorized user infiltrates a network undetected and stays in the network for a long time. The intent of an APT is to steal data and not harm the network. APTs happen most often in sectors with high-value information, such as national defence, manufacturing, and the finance industry.

Malware, or malicious software, is a type of attack on availability. It refers to software that is designed to gain access or damage a computer without the knowledge of the owner. Several common types of malware include spyware, key loggers, true viruses, and worms.

How to help protect against cyber security attacks

Regularly back up your files

Only trust https:// URLs

Don't open attachments or links from unknown senders

Keep your devices updated with the newest software

Follow these steps for cyber safety.

- Only use trusted sites when providing your personal information. A good rule of thumb is to check the URL. If the site includes "https://," then it's a secure site. If the URL includes "http://," — note the missing "s" — avoid entering sensitive information like your credit card data or Social Security number.
- Don't open email attachments or click links in emails from unknown sources. One of the most common ways people are attacked is through emails disguised as being sent by someone you trust.
- Always keep your devices updated. Software updates contain important patches to fix security issues. Cyber attackers thrive on outdated devices because they don't have the most current security software.
- Back up your files regularly to prevent cyber security attacks. If you need to wipe your device clean due to a cyberattack, it will help to have your files stored in a safe, separate place.

Cyber security is constantly evolving, which can make it difficult to stay up to date. Staying informed and being cautious online are two of the best ways to help protect yourself and your business. To learn more about cyber security, visit our centre for the latest cyber security news

Article by

S. MOTHADI MANOJ KUMAR

3. WIRELESS POWER TRANSMISSION

We live in a world of technological advancement. New technologies emerge each and every day to make our life simpler. Despite all these, we still rely on classical and conventional wire system to charge our everyday use low power devices like mobile phones, digital camera, etc. and even mid power devices like laptops. The constant quest for the single device that can charge all these devices simultaneously without use of wires was lead to wireless power transmission(WLPT).extensive research dating back to the 1850's has led to the conclusion that WPT is possible.

History of Wireless Power Transfer (WPT)

The **concept of wireless power transmission** has been around since the mid 17th century. WPT is exactly what the name states; to transfer electrical power from a source to a device without the aid of wires. The founder of AC electricity, Nikola Tesla, was first to conduct experiments dealing with WPT.

Basic Concept of WPT

The three main systems used for WPT are microwaves, resonance, and solar cells. Microwaves would be used to send electromagnetic radiation from a power source to a receiver in an electrical device. The concept of resonance causes electromagnetic radiation at certain frequencies to cause an object to vibrate. This vibration can allow energy to be transmitted between the two vibrating sources. Solar cells, ideally, would use a satellite in space to capture the suns energy and send the energy back to Earth. This concept would help to solve the major energy crisis currently concerning most of the world.

WPT Technology:

Basically, it includes two coils they are a transmitter coil & a receiver coil, where the transmitter coil is powered by AC current to create a magnetic field, which in turn induces a voltage in the receiver coil as shown in Figure 3.1.

The basics of wireless power transmission include the inductive energy that can be transmitted from a transmitter coil to a receiver coil through an oscillating magnetic field. The DC current supplied by a power source is changed into high frequency AC current by particularly designed electronics built into the transmitter.
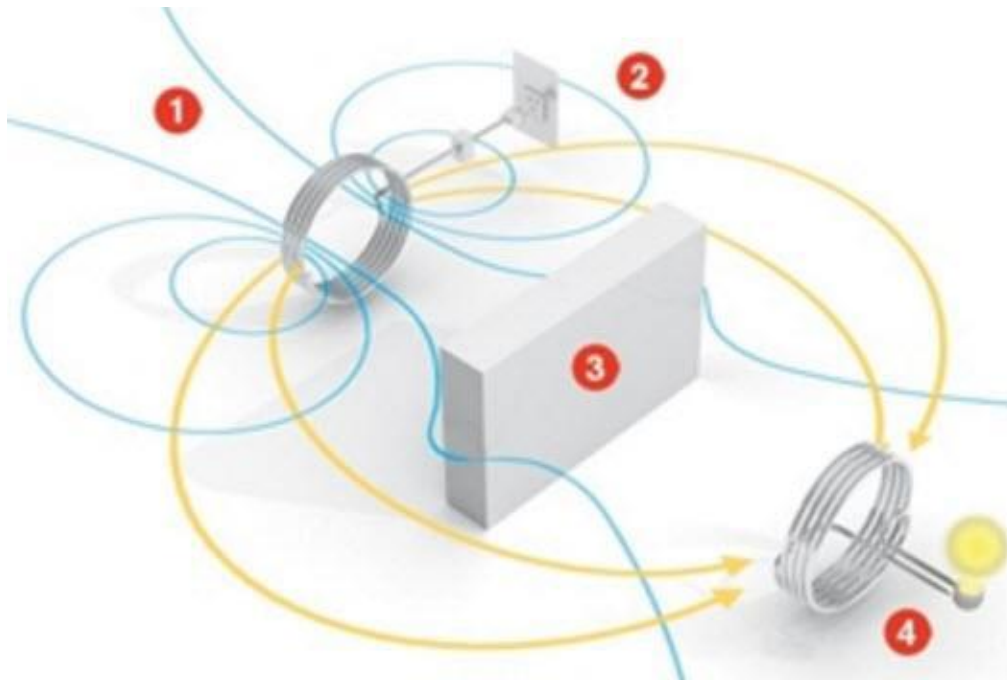
Figure 3.1: WPT Technology

In the TX (transmitter) section, the AC current increases a copper wire, that creates a magnetic field. Once an RX (Receiver) coil is located near to the magnetic field, then the magnetic field can induce an AC current in the receiving coil. Electrons in the receiving device, converts the AC current back into DC current, that becomes working power.

Wireless Power Transfer Circuit

The simple wireless power transmission circuit is shown below. The required components of this circuit mainly include 20-30 magnet wire (gauge copper wire), A battery-1, transistor (2N2222) and LED.The construction of this circuit comprises of a transmitter and a receiver.
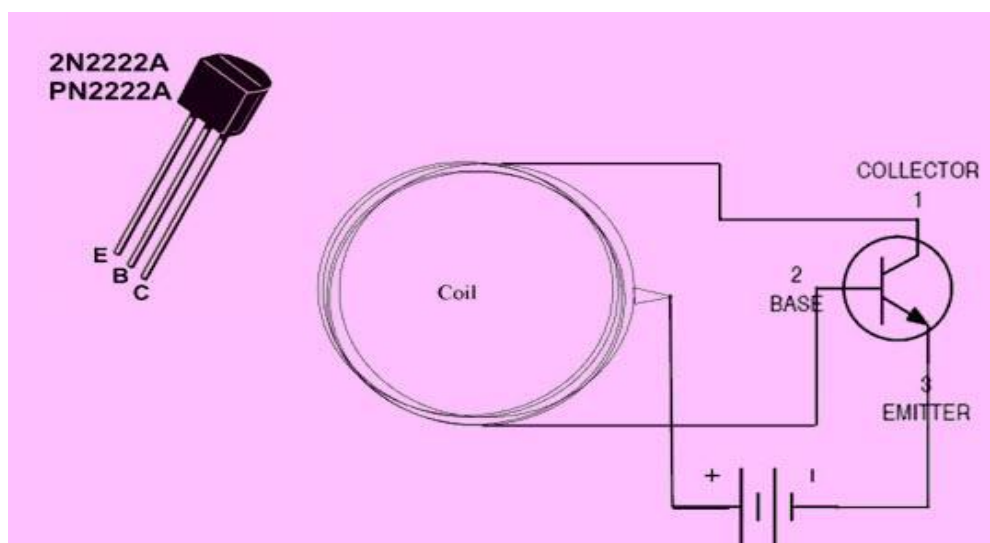

Figure 3.2: WPC Circuit

Advantages of WPT:

1. Non-contact transmitter receiver, only a small power loss.
2. Using nonlinear transmission theory, less input multiple-output power available to greatly.
3. Is not susceptible to electromagnetic propagation material interference, good stability.
4. Distribution, less affected by the weather.
5. Ease of maintenance.

Disadvantages of WPT:

1. It's a bit more difficult to setup properly.
2. Risk of 'outsiders' accessing your network unless robust security protocols are enabled
3. Significantly slower than a wired network (2 – 50 times slower).
4. The network can be less stable

Applications of WPT:

- The largest application of the WPT is the production of power by placing satellites with giant solar arrays in Geosynchronous Earth Orbit and transmitting the power as microwaves to the earth known as Solar Power Satellites (SPS).
- WPT is used in moving targets like fuel-free-electric vehicles, fuel- free airplanes, fuel-free rockets and moving robots.
- The other applications of WPT are Wireless power source or Ubiquitous Power Source, RF Power Adaptive Rectifying Circuits and Wireless sensors.

Design of wireless-power-transfer system for simple electronic devices such as mobile charges, mobile phones which not only reduces the risk of shock, but also the efforts to plug repeatedly into the sockets.

Article by
K.GANITHA
A.KAVYASRI

4. TOUCH LESS TOUCH SCREEN TECHNOLOGY

Contact screen shows found wherever on the planet. The touch screen show gives a more prominent adaptability to client yet after certain years contact screen show turns out to be less touchy which causes disappointment of touch on contact screen show. In the event, that we utilize a screen defender still messy imprints present on the presentation to stay away from this issue a basic UI for contact less control of electrically worked hardware is being created. This paper beats the downside of touch screen show by giving touch less presentation, likewise this paper exhibits an investigation of touch less showcase, history of touch screen working of touch less innovation with application. Catchphrases: Touch screen show, less delicate, disappointment of touch, and contact less control.

INTRODUCTION

Contact less touch screen innovation utilizes finger movements without contacting a screen. It essentially utilizes hand wave toward certain path. In the touch screen show in the event, that the screen is broken, at that point we can't work the gadget by basically contacting a presentation. The motivation behind this touch less innovation is to make life basic and progressively helpful. This framework requires a sensor however the sensor is neither hand mounted nor present on the screen. The sensor can be put either on the table or close to the screen. The equipment setup is compact to the point that it tends to be fitted into a gadget like a cell phone or workstation screen. It perceives the situation of an article from 5 feet.

Contact less touch screen innovation implies without utilizing a finger or without contacting a gadget we can undoubtedly work the framework. It is additionally called as "Don't contact me" innovation. In this innovation we need to just draw an example for choosing instrument or erasing a device. This example we need to store in the database and the presently indicated example is contrasted and the as of now put away pictures in the event, that design matches, at that point the framework work appropriately. Contact less showcase doesn't require any uncommon sensors that we wear on our finger or either on our hand. We need to simply point at the screen (from to

the extent 5 feet away), and we can without much of a stretch work the framework.

Microsoft Company rebranded the innovation as Pixel Sense once Microsoft acquainted its irrelevant Surface tablet with shoppers. The name "Pixel Sense" alludes to the manner in which the innovation really works: a touch-touchy security glass is put over an infrared backdrop illumination. As it hits the glass, the light is reflected back to coordinated sensors, which convert that light into an electrical flag. That flag is alluded to as an "esteem," and those qualities make an image of what's on the showcase. The image is then investigated utilizing picture handling strategies, and that yield is sent to the associated PC. In this paper the working of touch less showcase and its applications is referenced.

HISTORY

1980's: The decade of touch: In 1982, the principal human-controlled multi contact gadget was created at the University of Toronto by Nimish Mehta. It wasn't so much a touch screen as it was a touch-tablet. The Input Research Group at the college made sense of that a pearly glass board with a camera behind it could distinguish activity as it perceived the distinctive "dark spots" appearing on-screen.

Bill Buxton has assumed a colossal job in the advancement of multi contact innovation. The touch surface was a translucent plastic channel mounted over a sheet of glass, side-lit by a fluorescent light. A camcorder was mounted underneath the touch surface, and optically caught the shadows that showed up on the translucent channel. (A mirror in the lodging was utilized to expand the optical way). The yield of the camera was digitized and nourished into a flag processor for investigation.

The first multi contact screen was created at Bell Labs in 1984. [Bill Buxton] reports that the screen, made by Bob Boie, "utilized a straightforward capacitive cluster of touch sensors overlaid on a CRT." It enabled the client to "control graphical items with fingers with phenomenal reaction time". The disclosure made the multi contact innovation that we use today in tablets and advanced cells.

In 1984, Fujitsu discharged a touch cushion for the Micro 16 to oblige the intricacy of kanji characters, which were put away as tiled graphics.[15] In 1985, Sega discharged the TerebiOekaki, otherwise called the Sega Graphic

Board, for the SG-1000video diversion support and SC-3000home PC. It comprised of a plastic pen and a plastic board with a straightforward window where pen presses are recognized.

1990's: Touch screens for everyone: Apple likewise propelled a touch screen PDA gadget that year: the Newton PDA. Despite the fact that the Newton stage had started in 1987, the Message Pad was the first in the arrangement of gadgets from Apple to utilize the stage. As Timenotes, Apple's CEO at the time, John Sculley, really begat the expression "PDA" (or "individual computerized right hand"). Like IBM's Simon Personal Communicator, the Message Pad included penmanship acknowledgment programming and was controlled with stylus.

IGesture Pad: Westerman and his personnel guide, John Elias, in the long run framed an organization called Finger Works. The gathering started delivering a line of multi contact motion based items, including a motion based console called the Touch Stream. This helped the individuals who were experiencing incapacities like dreary strain wounds and other ailments. Finger Works was in in the long run gained by Apple in 2005, and many trait advancements like the multi contact Track cushion or the iPhone's touch screen to this securing.

2000's and beyond: With such a significant number of various advances collecting in the earlier decades, the 2000s were the timefor contact screen innovations to truly thrive. The 2000s were likewise the period when contact screens turned into the most loved device for structure cooperation.

2001: Alias | Wavefront's gesture-based Portfolio Wall: As the new thousand years drew nearer, organizations were emptying more assets into incorporating contact screen innovation into their day by day forms. 3D artists and originators were particularly focused with the appearance of the Portfolio Wall. This was a huge configuration contact screen intended to be a dynamic rendition of the sheets that structure studios use to follow ventures.

In spite of the fact that improvement began in 1999, the Portfolio Wall was uncovered at SIGGRAPH in 2001 and was created to a limited extent by a joint coordinated effort between General Motors and the group atAlias|Wavefront.Buxton, who presently fills in as central research at Microsoft Research, was the main researcher on the task. "We're tearing down individuals the divider and changing the way viably convey in the working environment and work together," he said in those days. "Portfolio Wall's gestural interface enables clients to totally cooperate with a computerized resource. The Portfolio Wall utilized a straightforward, simple to-utilize, signal based interface. It enabled clients to assess and pictures, movements, and 3D records with simply their fingers.. It was additionally simple to scale pictures, bring 3D models, and play back video.

2002: Mutual capacitive sensing in Sony's Smart Skin: In 2002, Sony presented a level info surface that could perceive various hand positions and contact focuses in the meantime. The organization called it Smart Skin. The innovation worked by figuring the separation between the hand and the surface with capacitive detecting and a mesh shaped radio wire. Not at all like the camera-based signal acknowledgment framework in different advances, were the detecting components altogether coordinated into the touch surface.

This likewise implied it would not breakdown in poor lighting conditions. A definitive objective of the undertaking was to change surfaces that are utilized each day, similar to your normal table or a divider, into an intelligent one with the utilization of a PC close-by. Nonetheless, the innovation helped out capacitive touch innovation than may have been expected, including various contact focuses.

2002-2011: Failed tablets and Microsoft Research's Touch Light : Multi contact innovation battled in the standard, showing up in claim to fame gadgets yet never entirely getting a major break. One nearly came in 2002, when Canada-based DSI Datotech built up the HandGear + GRT gadget (the abbreviation "GRT" alluded to the gadget's Gesture Recognition Technology).

The gadget's multipoint touchpad worked somewhat like the previously mentioned iGesture cushion in that it could perceive different signals and enable clients to utilize it as an info gadget to control their PCs. Hand Gear likewise empowered clients to "snatch" three dimensional items continuously, further broadening that thought of opportunity and efficiency in the structure procedure. The organization even made the API accessible for engineers by means of Auto Desk. Tragically, as Buxton makes reference to in his review of multi contact, the organization came up short on cash before their item delivered and DSI shut its entryways. After two years, Andrew D. Wilson, a worker at Microsoft Research, built up a motion based imaging contact screen and 3D show. The Touch Light utilized a back projection show to change a sheet of acrylic plastic into a surface that was intuitive. The presentation could detect different fingers and hands of more than one client, and in light of its 3D abilities, it could likewise be utilized as a stopgap reflect.

The Touch Light was a slick innovation show, and it was in the end authorized out for generation to Eon Reality before the innovation turned out to be bundled into a customer gadget.

2006 : Multi contact detecting through "disappointed absolute interior reflection". In 2006, Jeff Han gave the principal open showing of his instinctive, without interface, contact screen at a TED Conference in Monterey, CA. In his introduction, Han moved and controlled photographs on a monster light box utilizing just his fingertips. He flicked photographs, extended and squeezed them away, all no sweat. "This is something Google ought to have in their anteroom," he clowned. The demo demonstrated that a high-goals, versatile touch screen was conceivable to work without spending an excessive amount of cash.
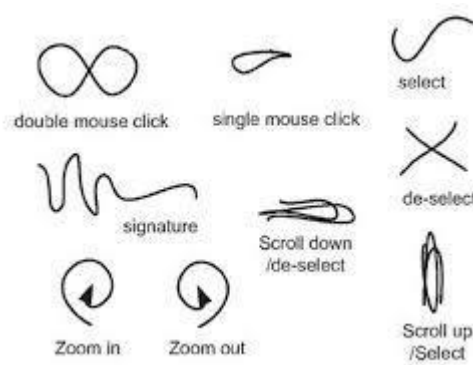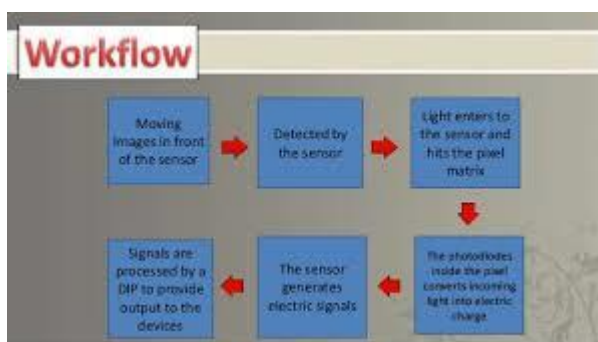
Han had found that the "powerful" multi contact detecting was conceivable utilizing "disappointed all out inside reflection" (FTIR), a system from the biometrics network utilized for unique mark imaging. FTIR works by sparkling light through a bit of acrylic or plexil glass. The light (infrareds' normally utilized) bobs forward and backward between the top and base of the acrylic as it voyages. At the point when a finger contacts down superficially, the bars dissipate around the edge where the finger is put, thus the expression "disappointed." The pictures that are produced look like

white masses and are gotten by an infrared camera. The PC breaks down where the finger is contacting to stamp its position and dole out an organize. The product would then be able to break down the directions to play out a specific undertaking, as resize or pivot objects.

In 2007, the Microsoft Surface was basically a PC implanted into a medium-sized table, with an extensive, level showcase on top. The screen's picture was back anticipated onto the showcase surface from inside the table, and the framework detected where the client contacted the screen through cameras mounted inside the table looking upward toward the client. As fingers and hands interfaced with what's on screen, the Surface's product followed the touch focuses and set off the correct actions. Later in its advancement cycle, Surface additionally picked up the capacity to distinguish gadgets through RFID.

In 2011, Microsoft banded together up with makers like Samsung to create sleeker, fresher tabletop Surface equipment. For instance, the Samsung SUR40 has a 40-inch 1080p LED, and it definitely diminished the measure of inside space required for the touch detecting components. At 22-inches thick, it was more slender than its forerunners, and the size decrease made it conceivable to mount the presentation on a divider instead of requiring a table to house the camera and sensors. It cost around $8,400 at the season of its dispatch and ran Windows 7 and Surface 2.0 programming.

WORKING:-

The gadget depends on optical example acknowledgment utilizing a strong state optical framework sensor with a focal point to identify hand movements. This sensor is then associated with a computerized picture processor, which deciphers the examples of movement and yields the outcomes as signs to control installations, apparatuses, hardware, or any

gadget controllable through electrical signs. The touch less presentation can recognize the 3D movements without putting your fingers on the screen. Sensors are put around the screen. First the moving picture comes like finger or turn before the sensor.

The sensor distinguishes the picture and afterward light enters to the sensor and hits the pixel framework, subsequent to hitting to pixel grid the pixel changes over approaching light into electric accuse of the assistance of photodiode. The sensor at that point creates electric signs and propositions electric signs are prepared to give the yield to client.
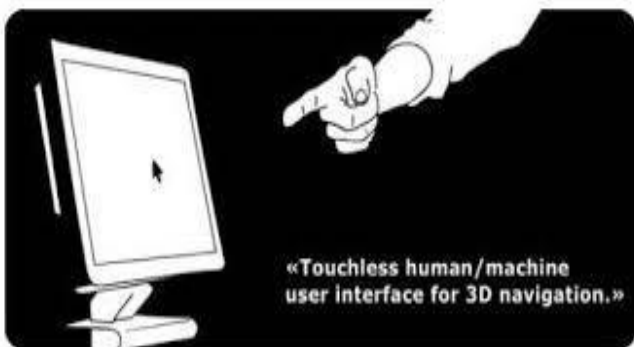
APPLICATION

1. Touch-less Monitor:-

Contact less screen is intended for applications where mouse neglects to work or contact might be troublesome, for example, for specialists who may wear surgical gloves. This screen is made by TouchKo was as of late exhibited by White Electronic Designs.

2. Touch-less UI:-

«Touchless human/machine user interface for 3D navigation.»

The basic idea is sensors arrayed around the perimeter of the device capable of sensing finger movements in 3-D space. The user could use his fingers similarly to a touch phone, but actually without having to touch the screen.

3. Touch-less Demo:-

➢ The touchless demo is an open source application. The demo was created using the toucheless SDK and windows forms with C#. There are 4 fun demos:-

➢ Snake – where you can control a snake with a marker.

- ➤ Defender – up to 4 players version of a pong-like game.
- ➤ Map – where you can rotate, zoom, and move a map using 2 markers.
- ➤ Draw – the marker is used to draw.

Advantages:-

- Easier and satisfactory experience.
- Gestures are much richer than traditional input methodologies.
- Creative interaction
- Operated using a stylus or a gloved finger
- More wear resistant
- Clearer and mechanically stronger
- Mostly used in manufacturing and medical applications, since it can be completely sealed.

Disadvantages:-

- Proper ambience is required
- Public interaction has been monitored
- Initial cost is very high
- Used in sophisticated environment
- Low resolution and parallax problems
- It is very sensitive and can be activated by stray touches.

Article by
S.FIZA
G.GOWTHAMI

5. SNIFFER FOR DETECTING LOST MOBILES

INTRODUCTION

A cell phone is considered to be a better method of communication system that is being used for day by day communication. Today, the great use of mobile phones has increased the problem of getting it misplaced or lost. As a solution, Sniffer for Mobile Phones has been made into existence. The IMEI number which is embedded to the mobile phones will block the calls and helps in the detection purpose.

Sniffer is a transceiver device which works in a frequency range that is designed to operate. Each mobile phone will have an IMEI number associated with it. IMEI is defined as International Mobile Equipment Identity. IMEI is a 15 digit unique code used to detect the mobile phones. The IMEI number can be identified by using the code *#06#. When a mobile phone gets switched ON, the IMEI number will get transmitted and later the number will get checked with the database of the grey or black listed phones in the EIR register. EIR is defined as equipment ID register which will help the mobile phone to log on to the network to receive and make phone calls.

WHAT IS INSIDE A SNIFFER?

Sniffer device also known as Mobile base station consists of the components like: Unidirectional Antenna, Tracking Software.

Sniffer base station (SBS)

The sniffer is a small base station, it includes transceiver section. It should operate at a frequency that is much different from the frequency of the current cell in which the operation of detection is being carried out. Some of the main important things are the frequency that has to be generated by the transceiver section is around 900MHz range which is a VHF range and it is necessarily to design the oscillator circuit for that frequency range .Another important is the cooling that has to be provided to the circuit while designing the circuit that is to be operated at 900MHz range of frequency.

Hence proper design of base station is an important thing in the design of the sniffer. Mobile phones as well as the base station has low power transmitter is also transmitting at low power. The transmitter of the sniffer

has to be a low power transmitter. This helps in the process of reducing the interference of the device with the devices that are in the other cells.

Unidirectional Antenna

Though the transceiver in a sniffer plays an important role in the detection of the mobile phone but however it is the directional antenna that has a major role in the design of the transmitter. The directional antenna acts as the eyes for the sniffer for the purpose of the detecting the lost mobile phones. Hence the proper design of the directional antenna is required. Antenna is a device which works at specified frequencies range for transmitting or receiving the data signal. In general, antennas transmit power depending on lobe pattern which varies from one antenna to the other. The lobe pattern is a two dimensional diagrams that is used to show radiation pattern. Radiation pattern of directional antenna

In addition to this it is necessary that the transmitter should be a low power transmitter. The Gain and directivity are intimately related in antennas. The directivity of an antenna is a statement of how the RF energy is focused in one or two directions. Because the amount of RF energy remains the same, but is distributed over less area, the apparent signal strength is higher. This apparent increase in signal strength is the antenna gain. The gain is measured in decibels over either a dipole (dBd) or a theoretical construct called an Isotropic radiator (dBi). The isotropic radiator is a spherical signal source that radiates equally well in all directions. One way to view the omni directional pattern is that it is a slice taken horizontally through the three dimensional sphere.

The graphical representation of Radiation pattern of the unidirectional antenna is shown in Figure 5.1. The spherical co-ordination system has three main components for the pattern representation and they are (R, _ , _) .The shape of the radiation system is independent of R, as long R is chosen to be sufficiently large and much greater than the wavelength as the largest dimension of the antenna. The magnitude of the field strength in any direction varies inversely with R. A complete radiation pattern requires the three dimensional representation. The other factors that are to be taken into account during the development of the antenna for the sniffer should be the

gain and the directivity .As these features have a greater effect while designing the antenna.

The gain of the antenna is defined as the ability of the antenna to radiate the power in a particular direction. The power radiated per unit area in sany direction is given by the pointing vector and is equivalent to E2/_2 W/m2.
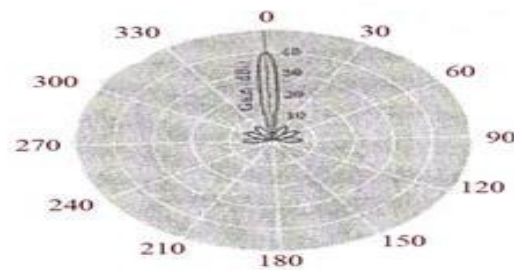

Figure 5.1: Unidirectional Antenna Radiation Pattern

TRACKING SOFTWARE

The software part plays a major role in the tracking of the lost mobile phone It is the base for the antenna to track the lost mobile the main feature of this software is that it helps in the process of creation of the data base and this is mainly done using a Random Access Memory. The mobile phone that is lost has certain IMEI number that is embedded in the chip. This RAM of the sniffer device stores the IMEI number of the lost mobile phone. Thus this acts as a data base or the directory of the lost mobile phone number/The software that is to be designed in such a way that the software has the input as the IMEI number of the lost mobile phone from the RAM and this ID done using the SQL query that fetches the IMEI number.

After getting the input of the lost mobile phones IMEI number it checks the comport for getting the information whether it obtains any signaling information from the lost device that might respond to the signal sent by the sniffer The programming is done with C or Java. However the C is most preferred as it is easily embedded with the chips. With VB the front end is designed. The oracle SQL is the back end as it helps in retrieving the input data from the RAM using the query. But however the sample program that we have designed does not use the oracle it takes the input directly from the keyboard and this is an example and a dummy program that has been created that helps in the understanding of how the device would work.
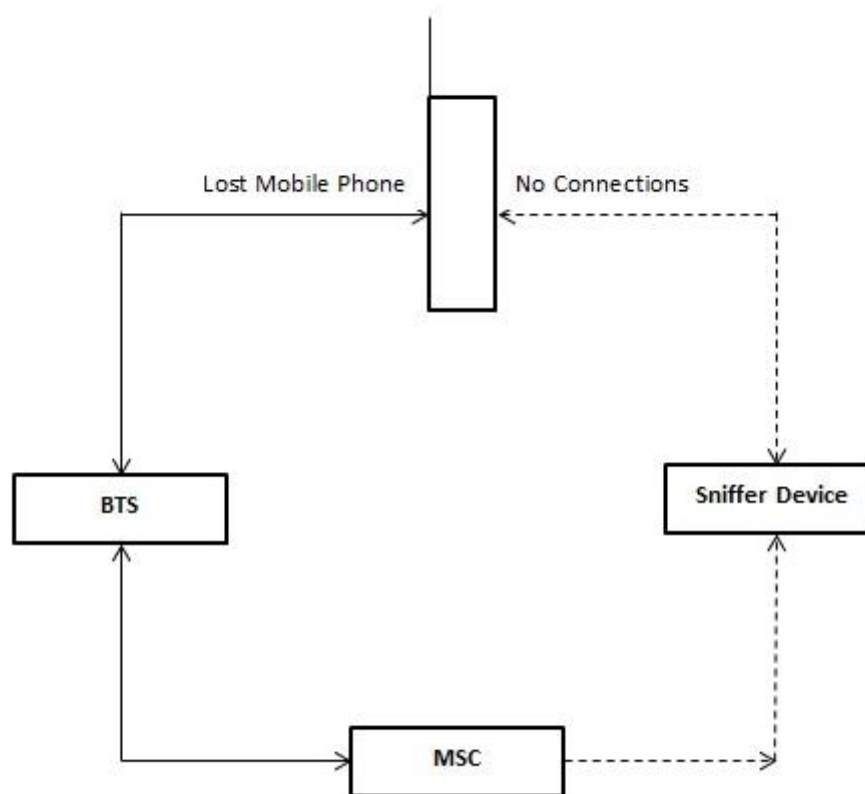
WORKING OF SNIFFER

Figure 5.2 Working of Sniffer

Figure 5.2 shows the sniffer working. In the Figure 5.3 it shows the operation of the mobile with the base station. Here the BTS acts as the station for the communication between the mobile phone and the Mobile Switching Center.

IMEI number provides the authorization of the user. Next, authentication of the mobile phone is done within the Equipment Identifier Register. This register is located at the MSC and it contains the IMEI number of the lost mobile phone and if the signal is obtained from the normal one then the two way communication is established. The IMEI of the lost mobile phone number once has been reported to the service provider, who keeps in track of the record of lost mobile phones.

The MSC keeps the information of all the mobile phones with IMEI number and the IMEI number has the information of the lost mobile phones

location. Due to the two way communication, BTS of the lost device is known to MSC.

After the information regarding the IMEI number of the lost device is provided by the MSC. This is then fed into the sniffers main memory. The sniffer located in particular cell detects the lost device. The sniffer uses a frequency that is different from the one being used by the base station and the located nearby cells .The base station disconnects the connection with the lost mobile phone, as there is a request regarding this action from the EIR part of the MSC. This causes the lost device to search the BTS to get locked since each base station does not have authorization capability. The lost device sends the appropriate connection request signal. Now when the sniffer device is being deployed and this device has in built authorization capability, the lost device will find the sniffer to get itself locked to the frequency of the sniffer.

ADVANTAGES

- ✓ Cost effective.
- ✓ Low power consumption.
- ✓ Easy design.

DISADVANTAGES

- ✓ The only disadvantage is-it might not be just your phone it finds!

Article by

P CHAITANYA YADAV

K ABHISHEK REDDY

6. CLOUD COMPUTING

Before personal computers took off in the early 1980s, if your company needed sales or payroll Figures calculating in a hurry, you'd most likely have bought in "data-processing" services from another company, with its own expensive computer systems, that specialized in number crunching; these days, you can do the job just as easily on your desktop with off-the-shelf software. Or can you? In a striking throwback to the 1970s, many companies are finding, once again, that buying in computer services makes more business sense than do-it-yourself. This new trend is called cloud computing.

Cloud: The term cloud refers to network or internet. In other words, we can say that cloud is something, which is present at remote location. Cloud can provide services over network, i.e. on public networks or on private networks.

Cloud in two basic flavors, public and private, which are the cloud equivalents of the Internet and Intranets. Web-based email and free services like the ones Google provides are the most familiar examples of public clouds. The world's biggest online retailer, Amazon, became the world's largest provider of public cloud computing in early 2006. When it found it was using only a fraction of its huge, global, computing power, it started renting out its spare capacity over the Net through a new entity called Amazon Web Services (AWS). Private cloud computing works in much the same way but you access the resources you use through secure network connections, much like an Intranet. Companies such as Amazon also let you use their publicly accessible cloud to make your own secure private cloud, known as a Virtual Private Cloud (VPC), using virtual private network (VPN) connections.

CLOUD COMPUTING

Cloud computing refers to manipulating, configuring and accessing the applications online it offers online data storage, infrastructure and application. Cloud computing is both a combination of software and hardware based computing resources delivered as a network services.

Computing is a buzzword that means different things to different people. For some, it's just another way of describing IT (information technology)

"outsourcing"; others use it to mean any computing service provided over the Internet or a similar network.

What makes cloud computing different?

Most importantly, the service you use is provided by someone else and managed on your behalf. If you're using Google Documents, you don't have to worry about buying umpteen licenses for word-processing software or keeping them up-to-date. Nor do you have to worry about viruses that might affect your computer or about backing up the files you create. Google does all that for you. One basic principle of cloud computing is that you no longer need to worry how the service you're buying is provided: with Web-based services, you simply concentrate on whatever your job is and leave the problem of providing dependable computing to someone else.

Types of Cloud Computing:

IT people talk about three different kinds of cloud computing.

Infrastructure as a Service (IaaS): means you're buying access to raw computing hardware over the Net, such as servers or storage. Since you buy what you need and pay-as-you-go, this is often referred to as utility computing. Ordinary web hosting is a simple example of IaaS: you pay a monthly subscription or a per-megabyte/gigabyte fee to have a hosting company serve up files for your website from their servers.

Software as a Service (SaaS): means you use a complete application running on someone else's system. Web-based email and Google Documents are perhaps the best-known examples. Zoho is another well-known SaaS provider offering a variety of office applications online.

Platform as a Service (PaaS): means you develop applications using Web-based tools so they run on systems software and hardware provided by another company. So, for example, you might develop your own ecommerce website but have the whole thing, including the shopping cart, checkout, and payment mechanism running on a merchant's server. App Cloud (from salesforce.com) and the Google App Engine are examples of PaaS.

Pros:

 ➢ Lower upfront costs and reduced infrastructure costs.
 ➢ Easy to grow your applications.
 ➢ Scale up or down at short notice.
 ➢ Only pay for what you use.

- Everything managed under SLAs.
- Overall environmental benefit (lower carbon emissions) of many users efficiently sharing large systems.

Cons:

- Higher ongoing operating costs. Could cloud systems work out more expensive?
- Greater dependency on service providers. Can you get problems resolved quickly, even with SLAs?
- Risk of being locked into proprietary or vendor-recommended systems? How easily can you migrate to another system or service provider if you need to?
- What happens if your supplier suddenly decides to stop supporting a product or system you've come to depend on?
- Potential privacy and security risks of putting valuable data on someone else's system in an unknown location?
- If lots of people migrate to the cloud, where they're no longer free to develop neat and whizzy new things, what does that imply for the future development of the Internet?
- Dependency on a reliable Internet connection.
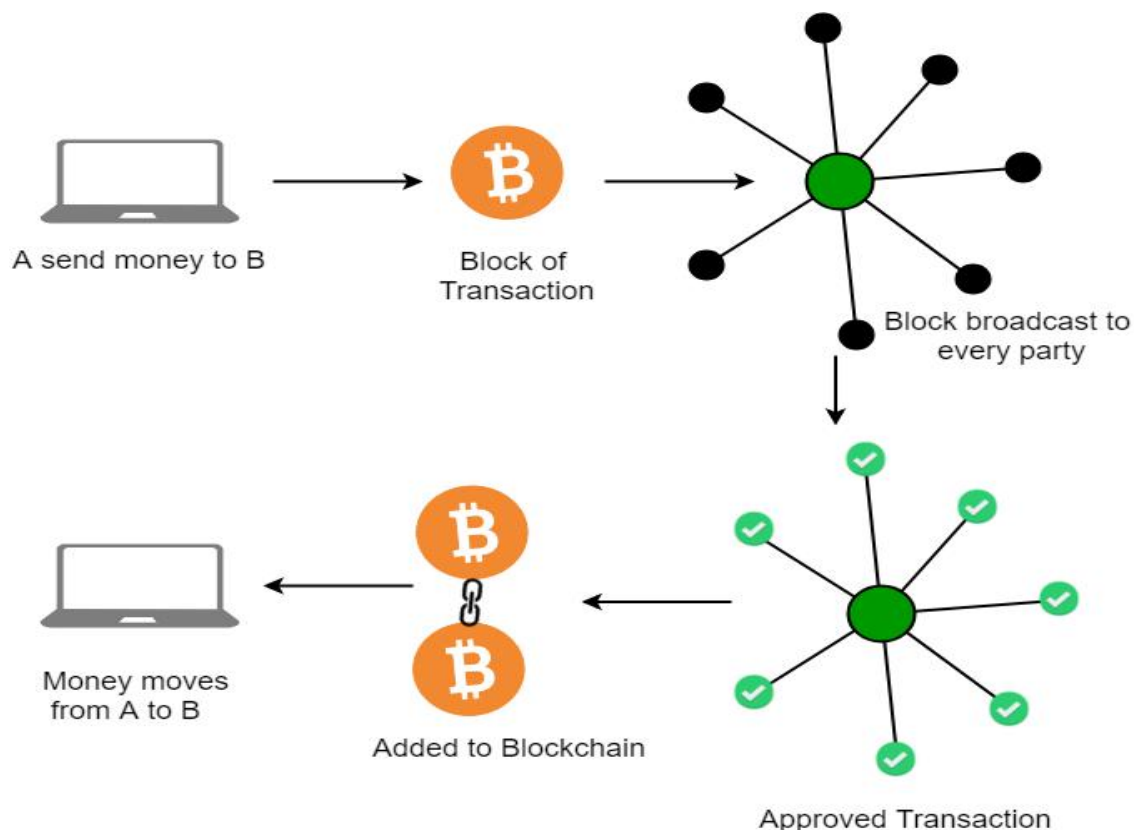
Article by

V.VAISHNAVI

P.MANASA

7. BLOCKCHAIN TECHNOLOGY

Blockchain is the backbone Technology of Digital CryptoCurrency BitCoin. The blockchain is a distributed database of records of all transactions or digital event that have been executed and shared among participating parties. Each transaction verified by the majority of participants of the system. It contains every single record of each transaction. BitCoin is the most popular cryptocurrency an example of the blockchain. Blockchain Technology first came to light when a person or Group of individuals name 'Satoshi Nakamoto' published a white paper on "BitCoin: A peer to peer electronic cash system" in 2008. Blockchain Technology Records Transaction in Digital Ledger which is distributed over the Network thus making it incorruptible. Anything of value like Land Assets, Cars, etc. can be recorded on Blockchain as a Transaction.

How Blockchain Technology works?

One of the famous use of Blockchain is Bitcoin. The bitcoin is a cryptocurrency and is used to exchange digital assets online. Bitcoin uses cryptographic proof instead of third-party trust for two parties to execute transactions over the internet. Each transaction protects through digital signature

A send money to B — Block of Transaction — Block broadcast to every party — Approved Transaction — Added to Blockchain — Money moves from A to B

Distribution Database:

There is no Central Server or System which keeps the data of Blockchain. The data is distributed over Millions of computers around the world which are connected with the Blockchain. This system allows Notarization of Data as it is present on every Node and is publicly verifiable.
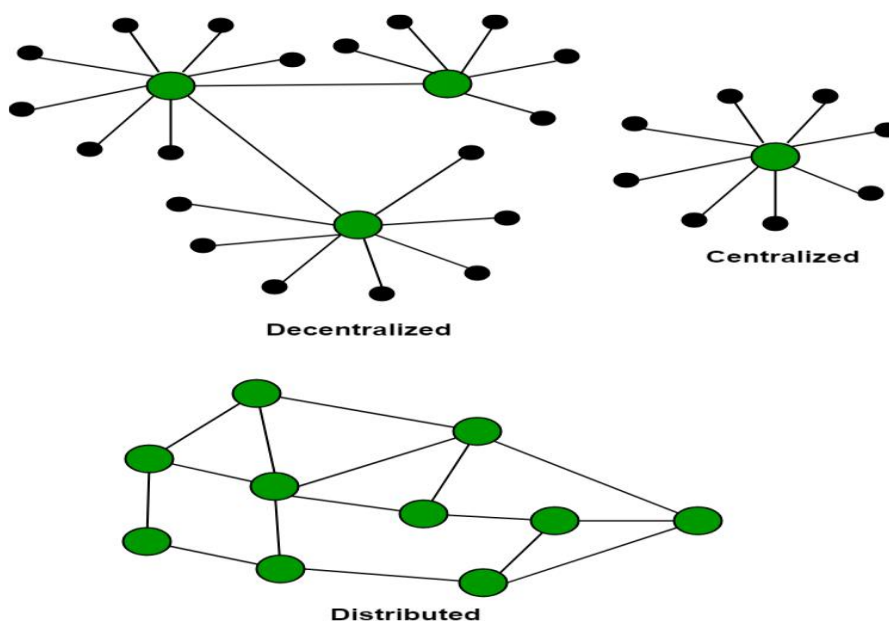
A network of nodes:

A node is a computer connected to the Blockchain Network. Node gets connected with Blockchain using the client. Client helps in validating and propagates transaction on to the Blockchain. When a computer connects to the Blockchain, a copy of the Blockchain data gets downloaded into the system and the node comes in sync with the latest block of data on Blockchain. The Node connected to the Blockchain which helps in the execution of a Transaction in return for an incentive is called Miners.

Disadvantages of current transaction system

> Cash can only be used in low amount transaction locally.
> Huge waiting time in the processing of transactions.
> Need to third party for verification and execution of Transaction make the process complex.
> If the Central Server like Banks is compromised, whole System is affected including the participants.
> Organization doing validation charge high process thus making the process expensive.

Building trust with Blockchain:

Decentralized

Centralized

Distributed

Blockchain enhances trust across a business network. It's not that you can't trust those who you conduct business with its that you don't need to when operating on a Blockchain network.

Blockchain builds trust through the following five attributes:

➢ **Distributed:**

The distributed ledger is shared and updated with every incoming transaction among the nodes connected to the Blockchain. All this is done in real-time as there is no central server controlling the data.

➢ **Secure:**

There is no unauthorized access to Blockchain made possible through Permissions and Cryptography.

➢ **Transparent:**

Because every node or participant in Blockchain has a copy of the Blockchain data, they have access to all transaction data. They themselves can verify the identities without the need for mediators.

➢ **Consensus-based:**

All relevant network participants must agree that a transaction is valid. This is achieved through the use of consensus algorithms.

➢ **Flexible:**

Smart Contracts which are executed based on certain conditions can be written into the platform. Blockchain Network can evolve in pace with business processes.

Benefits of Blockchain Technology

➢ Time-saving

➢ Cost-saving

➢ Tighter security

Article By

C.MANOOSHA

B.MOHANAPRIYA

Magazine Editors

Students

C. J. Tejasai
IV CSE
Mohammed Taufeeq
III CSE
Swetha K, Himabindhu K
II CSE

ACE

Association of Computer Engineers

Faculty

Dr. R. Kalpana

Professor & HOD

Ms. S. Kusuma

Assistant professor

Contact: ace_cse@mits.ac.in

Visit us: www.mits.ac.in/cse