



SFC - BYTES

NEWS LETTER



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

FROM THE PRINCIPAL- SR. SANDRA HORTA

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Bytes is back again to showcase the intellectual prowess of the staff and students of the Department of Computer Science. It's in and through this platform the students are able to express themselves. Congratulations for this venture of yours which will definitely spark new ideas in young minds for whom this edition is churned out with lots of efforts of both staff and students. My wish and prayer are that this issue of Bytes

may reach the goals and aims for which it is launched. God bless everyone who is a part of this initiative.



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

Mission

Therefore we strive to help students develop into

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

MESSAGE FROM -SR.SHERLY, VICE PRINCIPAL

Glad to know that the dept. of Computer Science is bringing out the 3.1 issue of their department magazine **sfc-bytes**. I applaud the coordinated efforts of every member of the department under the able guidance of Mrs.Padmashree for your dedicated services to the college and every student entrusted to your care. I wish you success and peace and joy during this beautiful season of Christmas. May God bless you.

**DIAMOND JUBILEE INAUGURAL**

"Technology is just a tool. In terms of getting the kids working together and motivating them, the teacher is the most important".

-Bill Gates

FROM HEAD DEPT OF COMPUTER SCIENCE

WEARABLE TECHNOLOGY

Wearable technology is a category of electronic devices that can be worn as accessories, embedded in clothing, implanted in the user's body, or even tattooed on the skin. The devices are hands-free gadgets with practical uses, powered by microprocessors and enhanced with the ability to send and receive data via the Internet.

The rapid adoption of such devices has placed wearable technology at the forefront of the Internet of things (IoT).

Fitness activity trackers were the first big wave of wearable technology to catch on with consumers. Then, the wristwatch became a screen and more robust mobile applications were added. Bluetooth headsets, smart watches, and web-enabled glasses all allow people to receive data from Wi-Fi networks. The gaming industry adds more wearables, with virtual reality and augmented reality headsets.

The focus in the development of wearable technology now appears to be moving from consumer accessories to more specialized and practical applications. Microchip implants are now being used to replace keys and passwords. Embedded in a fingertip, the chips use near-field communication (NFC) or radio-frequency identification (RFID).



**Ms. Padmashree
Head,
Dept. of CSc.**



*"The machine
does not
isolate man
from the great
problems of
nature but
plunges him
more deeply
into them".
-Antoine
de Saint-
Exupery*

“#HIDDENNOMORE:”

“EMPOWERING WOMEN LEADERS IN STEM”

I am glad to know that I was selected for the International Visitors Leadership Program (IVLP). The IVLP is one of the U.S. government's most prestigious professional exchange programs for foreign opinion leaders. Many key members of the Indian academia, civil society, business and media have participated in this program in the past. I was offered to visit the U.S. on a 3-week group project entitled “#HiddenNoMore: Empowering Women Leaders in STEM”, a Multi-Regional Project from October 28 to November 15, 2019. The 50 international women leaders in science, technology, engineering and math (STEM) participated in United States as part of the U.S. State Department's third-annual Hidden No More IVLP. They are trailblazers in fields such as computer science, robotics and spacecraft engineering etc. Inspired by the 2016 film Hidden Figures, which told the story of the brilliant women who were unsung heroes of the Space Race in the 1960s, whose contributions in mathematics launched the first U.S. astronaut into orbit, the U.S. State Department launched the Hidden No More program three years ago to shine a light on today's innovators in the STEM fields. Hidden No More brings to the U.S. women from across the globe for three weeks of networking, sharing of best practices for fostering “hidden talent” and examining ways to inspire the next generation of women in STEM. This project was sponsored by United States Department of State, Bureau of Educational and Cultural Affairs and was administered by Institute of International Education. Our group was assigned with six International Visitor Liaisons (IVLs) who accompanied the group throughout the program. IVLs are the official administrators of the program and provided insights into the various aspects of the tour, appointments, and the diversity of the U.S.

Participants had chance to examine women's contributions to STEM through research and development, education and teaching, leadership, and public policy formation. This project sought to empower global leaders in STEM who may represent 'hidden talent' in their home communities. Participants could explore best practices in the effective recruitment, training, and development of women and other underrepresented groups in STEM and learnt how they can institutionalize opportunities for women in their own countries. The project focused on the advances of women's employment in STEM fields and address how they are mentoring the next generation.

The Department of State has outlined the following specific objectives for the project:

The Department of State has outlined the following specific objectives for the project:

- Review the evolution and advancement of women in scientific research and innovation in America
- Explore policies of organizations and educational institutions that champion the interest of women in STEM

Cont...



Dr. Sr. Sujatha
Asst. Professor
Dept. of C.Sc.

*Great minds
discuss ideas;
average minds
discuss
events; small
minds discuss
people." –
Eleanor
Roosevelt*

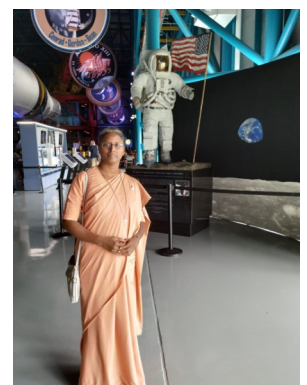


- Provide opportunities for participants to network with professional counterparts at scientific academies, associations, universities, businesses and agencies across the United States
- Share best practices for fostering “hidden talent” through initiatives that support the recruitment, training and development of women in STEM
- Examine public/private partnerships designed to accelerate student learning in STEM subjects, especially for girls from diverse backgrounds

These objectives were realized by visiting 4 different states of U.S. First visited state was Washington, DC from October 26 – November 2, 2019. This visit focused on overview of U.S. Federalism, Women in Science at the National Level, Workshop: Mentoring and Negotiation Techniques and Hidden Figures Screening. Followed by it was visit to Orlando, Florida from November 2 – 6, 2019. **STEM** Education and Youth Engagement was explored in this state. Boston, Massachusetts was the third state visited from November 6 – 10, 2019. Here Research Institutions and Laboratories, Women’s Leadership in Innovation and Technology and Science Communication were the topics covered. Finally we visited Los Angeles, California from November 10 – 16, 2019. This visit had Intragroup Discussion, University-Based Robotics Centers, Women’s Representation in the Media, Disney Studios and Project Closing.

I'M happy to be part of this project representing India. I am grateful to God for His blessings on me, my mother Institute for the prayerful accompaniment and giving me the permission to participate; our Embassy for nominating me to be part of this project; the Program Sponsor United States Department of State, Bureau of Educational and Cultural Affairs, International Visitor Leadership Program; Ms. Anne Grimes, Director; Ms. Sana Abed-Kotob, Ph.D. Division Chief; Ms. Kimberly Jenkins, Program Officer; Ms. Amanda Schoppet, Program Support Specialist; Program Administrator: Institute of International Education (IIE); Mr. Alexander Gorev, Director; Mr. Daniel Labarca, Project Manager; Ms. Erin Amato, Project Coordinator; IVLs: Ms. Leesa Fields, Mr. Brion Johnson, Mr. Frank Kasell, Mr. Marek Kuzma, Ms. Brittany Lynk, Mr. William St. John. Many thanks to all of you for this unique opportunity to connect with women leaders across the globe and the great journey with galaxy of stars. May God’s wisdom be uncovered and replenished in all that we choose to do and live.

Dr.Sr. Sujatha Yeruva



CATIA

What is CATIA?

CATIA is the product design software developed and created by Dassault Systemes, a multinational software company based in France. It is globally and widely used software that delivers 3D design, Computer-aided engineering solutions, PLM and Computer-aided manufacturing solutions. The software is commonly used in manufacturing industries and Original Equipment Manufacturers (OEMs) to increase the process of designing, analyzing and management of new products.

CATIA is mostly used for its disciplined system, sketching and rendering technology, multi-platform development, market compliance, engineering insights, and active collaboration. It is used widely by industries like automotive, aerospace, defense and industrial equipment, plant design, consumer packaged goods, architecture and construction, process power and petroleum and other services.

In the Aerospace industry

- CATIA is used for the development of the Indian Light Combat Aircraft
- CATIA is also used in European aerospace Airbus.
- BAE Systems uses CATIA

P3 Voith is using CATIA V6. It is a powerful software application and it may take some time to master the program. Being a gigantic program it is difficult to use but at the same time very useful for numerous purposes.

Some of the benefits of CATIA are:

Product Design & Styling

This design program offers updated surface modeling abilities to industrial and transportation designers. It also supports a unique 3D sketching technology which helps the designers to import 2D sketches.

3D Atmosphere

It has a built-in mutual 3D environment that allows the users to diligently take part in the design process anytime. The designs of the products can be accessed and viewed from the 3D dashboards. The designs can share their workings and enhance their designs by collaborating with different people around the globe.

Multidisciplinary Approach

It provides multidisciplinary Approach for product designing and creation. It fulfills the specific requirements of several people to upgrade the concept, process, and development of new products.

Market Acceptance

It ensures that the engineers will be adaptive with the marketing rules and fundamentals and demands and on the simultaneously reducing the product development cost. Some of the major pros of using CATIA are –

- It saves time and money. The software has built-in modification management abilities that help in automatic updates without the need to restart the whole process from the beginning.
- The geometric specifications of composite parts can make the creation of these parts complex and it maximizes the risk of errors.
- Predict the behavior of parts with complex surfaces and allowing modifications where needed.



Ms.B.Kavitha
Asst. Professor
Dept. of CSc.

A STRONG WOMAN knows how to keep her life in order. Even with tears in her eyes, she still manages to say "I'm okay," with a smile. – Joyce Meyer.

Everyone who remembers his own education remembers teachers, not methods and techniques. The teacher is the heart of the educational system.

Sidney Hook



A Container Technology! Hey! that fits your needs... Docker

Storage, Storage, Storage .. It became part of our life. Apart from server storage, Virtual storage via cloud can be used as containers.

Docker is an open platform for developing, shipping, and running applications. Docker enables you to separate your applications from your infrastructure so you can deliver software quickly. Microsoft as usual came with new storage on cloud which was the first to provide choice across the leading open source tools and technologies, including many applications, softwares, Kubernetes, Docker Swarm, and DC/OS—all optimized for Azure with Azure Container Service. They also made us available Azure Service Fabric, which is the proven platform for microservices and container orchestration on which we use for our daily services such as Skype for Business, Dynamics 365 etc. The few Vital components of Docker are as follows:

Docker Engine: It is a client-server application with where a server a long-running program called a daemon process (the dockerd command).

Note: Docker is licensed under the open source Apache 2.0 license.

Ofcourse Docker is used for **very Fast, consistent delivery of your applications**. Containers are great for continuous integration and continuous delivery (CI/CD) workflows. Consider the following example scenario:

Our developers write code locally and share their work with their colleagues using Docker containers. They use Docker to push their applications into a test environment and execute automated and manual tests. When developers find bugs, they can fix, redeploy them to the test environment for testing and validation.

The Docker daemon (dockerd): It listens for Docker API requests and manages Docker objects such as images, containers, networks, and volumes.

The Docker client (docker): It is the path to interact with Docker.

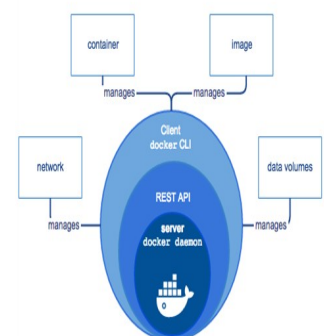
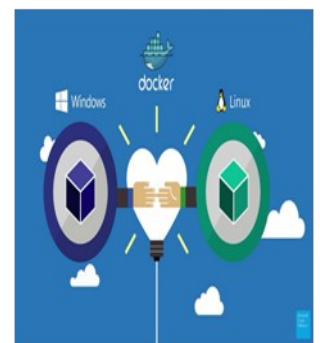
Docker registries: This stores Docker images. Docker Hub is a public registry that anyone can use.

Docker objects: When you use Docker, you are creating and using images, containers, networks, volumes, plugins, and other objects.

Docker registries: This stores Docker images. Docker Hub is a public registry that anyone can use.



Ms. B. Jyothi
Asst. Professor
Dept. of CSc.



TOP 10 PROGRAMMING LANGUAGES

A combination of hardware & software together makes the progress in Technology. The top programming languages are a core part of the modern & emerging technologies. They are Python, JavaScript, Swift, Java, C++, Go, Rust, Kotlin, TypeScript, MatLab.

1. **Python**- Python is general purpose language. It is multiple programming with Robust standard library and a good platform for developers. Python is the best for who is working on data science, artificial intelligence, machine learning and software development .

2. **JavaScript**- JavaScript is the basic building block for any frontend application and it is widely used for website development frameworks. It is needed to fame any frontend application.

3. **Swift**- Swift is a scripting language used in distributed computing .It allows writing scripts that distribute program execution across distributed computing resources, including clusters, clouds, grids, and supercomputers.

4. **Java**- Java is powerful Object Oriented paradigm. Java is most famous for android development, IOT, edge device development. Java with strong OOP concept is used in application developing language.

5. **C++**- C++ is a highly efficient & reliable language. It is on demand due to high performance.

6. **Rust**- Rust is a new system-level (low-level) programing language launched by Mozilla Foundations 2015. It gives better memory safety while maintaining the same performance. It has features such as error handling, parallelism & concurrency, excellent resource management.

7. **Kotlin**- It is android developer's language .Kotlin was launched by the software developing company JetBrains.

8. **TypeScript**- TypeScript is designed with a determination to spread the JavaScript application developments in large scale. It's being used in Angular and has become the language to develop the JavaScript frameworks.

9. **Matlab**- Matlab is mainly used for numerical computing .It is Easy to code, and focus on algorithm with Enriched toolbox

10. **GoLang**- This language is developed by Google with excellent multi-threading support . This is having the feature of both functional & object-oriented programming.



Ms. Sowjenya
Asst. Professor
Dept. of CSc.

**"Success is
the sum of
small
efforts,
repeated
day-in and
day-out." –
Robert
Collier**

THE ELECTRIC BRAIN

As the power of modern computers grows alongside our understanding of the human brain, we move ever closer to making some pretty spectacular science fiction into reality. Imagine transmitting signals directly to someone's brain that would allow them to see, hear or feel specific sensory inputs. Consider the potential to manipulate computers or machinery with nothing more than a thought. It isn't about convenience - for severely disabled people, development of a **brain-computer interface** (BCI) could be the most important technological breakthrough in decades.

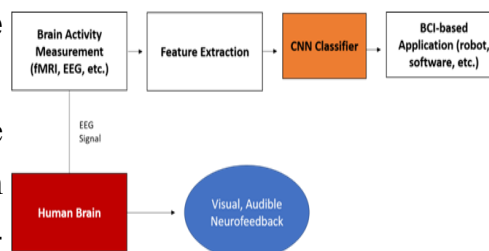
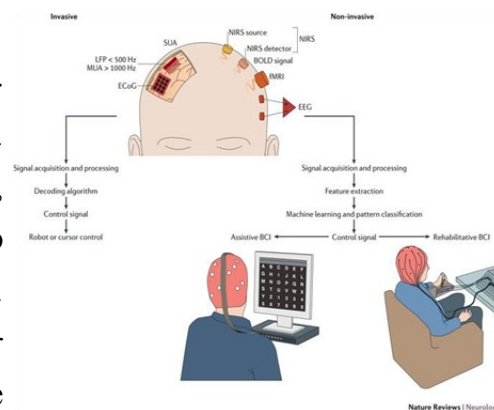


Ms. D. Swetha
Lecturer,
Dept. of CSc.

The Electric Brain

The reason a BCI works at all is because of the way our brains function. Our brains are filled with **neurons**, individual nerve cells connected to one another by dendrites and axons. Every time we think, move, feel or remember something, our neurons are at work. That work is carried out by small electric signals that zip from neuron to neuron as fast as 250. The signals are generated by differences in electric potential carried by ions on the membrane of each neuron. Your brain is divided into two main sections as the limbic system & the neocortex.

Artificial intelligence or Machine learning has received great attention for the development of BCI applications in particular to medical and robotic fields. *Brain computer interfaces can be classified in three into three main groups:* Invasive Semi-invasive, Non-invasive. In invasive techniques, special devices have to be used to capture data these devices are inserted directly into the human brain by a critical surgery. In Semi-invasive, devices are inserted into the skull on the top of the human brain. In general, non invasive are considered the safest and low-cost type of devices.



The way
you treat
yourself
sets the
standard
for others.

ROBOTIC PROCESS AUTOMATION (RPA)

Robotic process automation (RPA) is the use of software with artificial intelligence (AI) and machine learning capabilities to handle high-volume, repeatable tasks that previously required humans to perform. RPA technology consists of software robots (bots) that can mimic a human worker. RPA bots can log into applications, enter data, calculate and complete tasks and then log out. Currently, practitioners divide RPA technologies into three broad categories:

Probots are bots that follow simple, repeatable rules to process data.

Knowbots are bots that search the internet to gather and store user-specified information.

Chatbots are virtual agents who can respond to customer queries in real time.

RPA software is not part of an organization's IT infrastructure. Instead, it sits on top of it, enabling a company to implement the technology quickly and efficiently – all without changing the existing infrastructure and systems. What distinguishes RPA from traditional IT automation is the ability of the RPA software to be aware and adapt to changing circumstances, exceptions and new situations. Once RPA software has been trained to capture and interpret the actions of specific processes in existing software applications, it can then manipulate data, trigger responses, initiate new actions and communicate with other systems autonomously. Benefits of RPA are:

- RPA can help organizations on their digital transformation journeys by:
- Enabling better customer service.
- Ensuring business operations & processes comply with regulations and standards & allowing processes to be completed much more rapidly.
- Providing improved efficiency by digitizing and auditing process data.
- Creating cost savings for manual and repetitive tasks.
- Enabling employees to be more productive.

Applications of RPA :

Customer service: RPA can help companies offer better customer service by automating contact center tasks, including verifying e-signatures, uploading scanned documents etc.

Accounting: Organizations can use for general, operational accounting, transactional reporting and budgeting.

Financial services: Companies in the financial services industry can use for foreign exchange payments, automating account openings and closings, managing audit requests and processing insurance claims.

Healthcare: Medical organizations can use for handling patient records, claims, customer support, account management, billing, reporting and analytics.

Human resources: RPA can automate HR tasks, including onboarding & offboarding, updating employee information.

Supply chain management: RPA can be used for procurement, automating order processing, payments, monitoring inventory levels and tracking shipments.



Ms Navya
Asst. Professor
Dept. of CSc.

"The meaning of life is to find your gift. The purpose of life is to give it away."

MICROSOFT AND OPEN ROBOTICS RELEASE ROBOT OPERATING SYSTEM FOR WINDOWS 10 IOT ENTERPRISE

Microsoft publicized an experimental release for Robot Operating System for Windows 10 at ROSC in year 2018. ROS is an open source robotics framework for writing robot software, built from the ground up to inspire collaborative robotics software development. Earlier today, Open Robotics and the Redmond-based tech corporation officially launched ROS for Windows 10 IoT Enterprise.

This is to add Windows IoT as a supported platform for ROS. The ROS developer community now take benefit of a wide array features in Windows IoT, cloud capabilities such as Azure Cognitive Services and includes hardware-accelerated machine learning, computer vision.

ROS encompasses a wide array of tools, libraries, and conventions that help disentangle the quest of creating complex robots across a vast variety of robotic platforms. With the availability of ROS for Windows 10 IoT, developers will be able to integrate advanced capabilities such as computer vision, Windows Machine Learning, and Azure Cognitive Services while having access to their robots to all the features, tools and security provided by Windows 10 IoT.

ROS on Windows 10 IoT will accredit developers to do a lot more with robots, machine learning capabilities and robotic solutions using Microsoft Azure IoT . For instance, AI solutions that can infuse robots with intelligent algorithms to see, hear, speak, understand and interpret their environments using natural methods of communication and instruction is been provided by Microsoft Azure Cognitive Services. The Microsoft ROS Node for Azure IoT Hub authorize a system administrator to monitor the health of a robot and its exercise by monitoring specific message streams and notifications.



Khushi Agarwal
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121317052022

Education is
the most
powerful
weapon which
you can use to
change the
world.



MANET

MANET (Mobile Ad Hoc Network): A **MANET** is a dynamic, animated, infrastructure-less special wireless network of mobile devices where each device acts as a router.. It can change locations and continuously configure itself. Each device in a MANET is free to move independently in any direction, so links change as there is a need. Because MANETS are mobile, they use wireless connections to connect to various networks such as laptops, smartphones, PDAs or iPads. The initial MANET was called PRNET, the "packet radio" network, and Defense Advanced Research Projects Agency(DARPA) sponsored during 1970s. Mobile ad hoc networks are used in many applications, like in sensors for environment, vehicular ad hoc communications, road safety, health, home, peer-to-peer messaging, disaster rescue operations, defense (air/land/navy), weapons, robots, etc. We can simulate ANETs using various simulation software tools like OPNET, NetSim or ns2. Simulations can be done to find constrained road topology, multi-path fading and roadside obstacles, traffic flow models, trip models, varying vehicular speed and mobility, traffic lights etc. The types of MANETs are Vehicular Ad hoc Network (VANETs), Smart Phone Ad hoc Network (SPANC), Internet based Mobile Ad hoc Network (iMANETs), Hub-Spoke MANET, Military or Tactical MANETs, Flying Ad hoc Network (FANETs). One main advantage to a decentralised network is that they are more robust than centralised networks due to the multi-hop for information relay. The draw backs of MANETs are in network performance with a time evolving, as due to no fixed architecture (no fixed connections).



Ms B. Jyothi
Asst. Professor
Dept. of CSc.

. "Good things come to people who wait, but better things come to those who go out and get them."



WHY ARE WINDOWS VERSIONS NOT IN SEQUENCE?!?

Let's start by knowing windows beyond its definition as an interface. Microsoft Windows, is a group of several graphical operating system families, all of which are developed, marketed and sold by Microsoft. Each family caters to a certain sector of the computing industry.

Now you may ask why do we need so many versions.? Most relevant reasons are:

Updates: We can literally sense the new technologies changing our day to day life rapidly. In case of windows we need the updated versions in order to support the new challenges and make things a lot easier than before. Apparently each windows version is updated and all the versions are unique in their own paths.

Usage: In each windows version we have many divisions from Home to Professional, which are made in a way that the operating system is as user-friendly as possible. Not every user needs a high-end version of windows, similarly not every user needs the low-end versions. The versions give the freedom to choose.

Cost: Based on the versions and divisions the price varies. This again supports user's needs in both occupational and economical and many more ways.

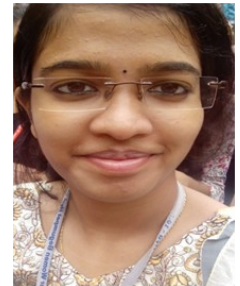


NT1.01 NT3.1 NT3.5.1 NT5.1 NT6.0 NT6.1
NT6.2 NT10.0

The NT 1.01 etc are the "RELEASE VERSION NUMBER" which are technically used by the engineers to denote any window's versions.

The C.E.O of Microsoft Windows said at the launch of windows 10: "We know, based on the product that's coming, and just how different our approach will be overall, it wouldn't be right to call it Windows 9."

The conclusion is that the release version number is in ascending order where as the name by which we know it: depends on the company!!



**Ms Vyshnavi
Lokahnde**
121317052027,
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IT'S NOT THAT WE
USE TECHNOLOGY,
WE LIVE
TECHNOLOGY.

QUOTEHD.COM

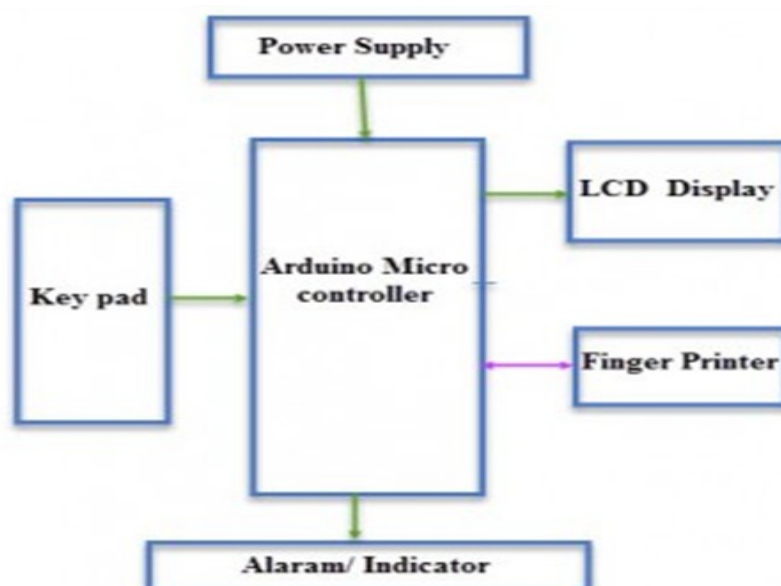
Godfrey Reggio
American Director

BIOMETRIC VOTING

The purpose of voting is to choose their government or political representatives. Around the world the voting system has Authentication and voter identification. The Biometrics is a technology of measuring, science and it analyzes the biological data. It is accessible electronically, uses computer technology and comes with security. Its usage can improve the election system with the help of new technologies in voting process. The human body characteristics like DNA, fingerprints, voice patterns and hand measurements are used for authentication purposes. In this system we use thumb impression for voter identification or authentication. Every person has an individual unique thumb impression and it helps with accuracy to identify them. In a constituency the thumb impressions database is created for all the voters. This database is referred which can help a lot in avoiding rigging during elections. This can lead to fair conduction of elections.

The fingerprint scanner consists of fingerprint sensor, A/D converter, flash ROM and DSP chip. The fingerprint sensor is used for scanning the thumb impression. The scanning data is in the form of analog signals, which are further converted by the A/D converter. The flash ROM is used to store the data temporarily in DSP process and this will work until the data is transferred to the main memory of the HOST. The DSP chip is used for processing and receiving data. The thumb impression is stored in the form of pixels. These pixels are sent to the pattern matching where the fingerprint is compared with the database records. If there is a match, then the vote is accepted otherwise the vote is rejected.

Advantages of using this biometric system are complete elimination of invalid votes, reduces the time of polling and also helps easy and accurate counting of votes.



Ms Renuka
Asst. Professor,
Dept. of CSc.

"The meaning of life is to find your gift. The purpose of life is to give it away."

BLOCK CHAIN AND DATABASE

Block chain is the **technology** the underpins digital currency, The tech allows digital information to be distributed, but not copied, A **block chain** is a decentralized, distributed and public digital ledger that is used to record transactions across many computers so that any involved record cannot be altered retroactively, without the alteration of all subsequent blocks.

Way to handle data in block chain:

Create data shards. The storage system breaks the data into smaller segments, a process called *sharding*. Sharding involves breaking the data into manageable chunks that can be distributed across multiple nodes. The exact approach to sharding depends on the type of data and the application doing the sharding. Sharding a relational database is different from sharding a NoSQL database or sharding files on a file share.

1)Encrypt each shard. The storage system then encrypts each data shard on the local system

2)Generate a hash for each shard. The block chain storage system generates a unique hash – an encrypted output string of a fixed length – based on the shard's data or encryption keys

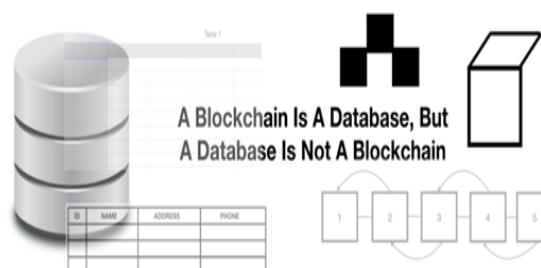
3)Replicate each shard. The storage system replicates each shard so there are enough redundant copies to ensure availability and performance and protect

4)Distribute the replicated shards. A P2P network distributes the replicated shards to geographically dispersed storage nodes, either regionally or globally

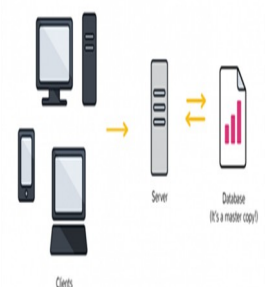
5) Record transactions to the ledger. The storage system records all transactions in the block chain ledger and syncs that information across all nodes.

Difference Between a Block chain and a Database:

There is much confusion as to what a block chain is and its dichotomy with a database. A block chain is actually a database because it is a digital ledger that stores information in data structures called blocks. A database likewise stores information in data structures called tables. However, while a block chain is a database, a database is not a block chain. They are not interchangeable in a sense that though they both store information, they differ in design. There is also a difference in purpose between the two, which is perhaps what is not clear to those who want to understand why block chains are needed and why databases are better suited for storing certain data.



Ms Shobana
Assit. Professor,
Dept. of CSc.

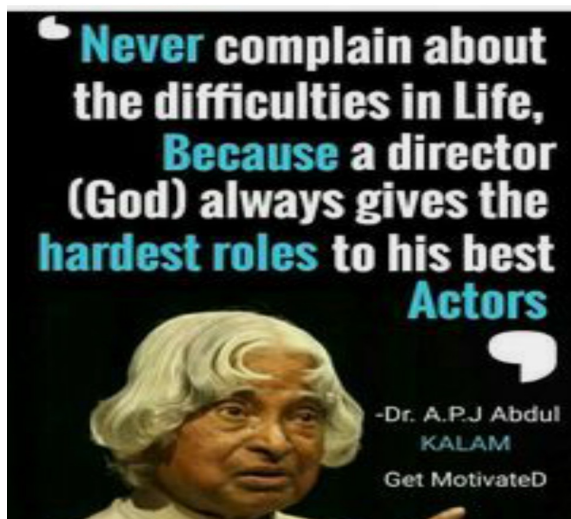


SMART MIRROR FOR SMART LIFE

Smart mirrors are straight from science fiction. They're part of an optimistic vision of the future that imagines a world where screens and data are everywhere, ready to feed you whatever information you need at a moment's notice. Basically, the mirror looks like normal mirror but when someone stand in front of it the scene changes. The mirror provides a functional, user friendly and interactive UI to its user for accessing their social sites, messengers, etc. Internet of Things (IoT) is a concept where an object having the ability to transfer data over a network without the need for human interaction to human or human to computer. IoT is known for its advantage that can help simplify people's everyday routine. Hence, Smart mirror concept evolved, a concept of smart home-based Internet of Things (IoT). This system allows users to access information and also control the lights in the house. Relevant information can be traced such as time and date, weather, warning, traffic, and location map. With Smart Mirror system, users can manage their daily activities at ease as well as solving many problems in managing some house chores. It has widgets for displaying the current whether conditions, Time, Events, Latest news headlines The Smart Mirror would help in developing smart houses with embedded artificial intelligence, as well as finding its applications in industries. Switching home appliances becomes easy with mirror. Virtual dressing, a smart way of having trials with your fashion sense make things quite easy in malls. Having such intellectual mirror will only surge the beauty of home. The basic design of a smart mirror starts with the glass that is to be used. A smart mirror is a two-way mirror with an electronic display behind the glass. The display can show the viewer different kinds of information. This product would be useful for busy individuals who want to multitask and stay informed while on the go. The designed intelligent mirror has the advantages of small size, simple operation, low cost, and is suitable for families, and has broad application prospects.



Ms Kalpana
Asst. Professor
Dept of CSc



7 RULES OF LIFE:

1. Make peace with your past
so it won't screw up the present
2. What others think of you
is none of your business
3. Time heals almost everything,
give it time.
4. Don't compare your life to others and don't judge
them. You have no idea what their journey is all about.
5. Stop thinking too much.
It's alright not to know the answers. They will
come when you least expect it.
6. No one is in charge
of your happiness, except you.
7. Smile. You don't own
all the problems in the world. 😊

ARTIFICIAL INTELLIGENCE IN TEACHING & LEARNING

AI systems have the ability to execute tasks naturally associated with human **intelligence**, like speech recognition, decision-making, visual perception, and translating languages. AI has already been applied to education primarily in some tools that help develop skills and testing systems.

Since the students of today will need to work in a future where AI is the reality, it's important that our educational institutions expose students to and use the technology.

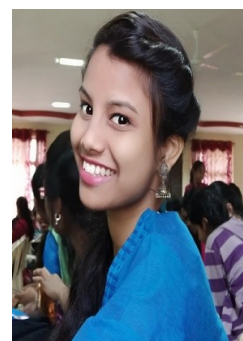
Artificial intelligence tools can help make global classrooms available to all including those who speak different languages or who might have visual or hearing impairments. Presentation Translator is a free plug-in for PowerPoint that creates subtitles in real time for what the teacher is saying this also opens up possibilities for students who might not be able to attend school due to illness or who require learning at a different level or on a particular subject that isn't available in their own school. AI can help break down silos between schools and between traditional grade levels.



Ms .Preethi
Lecturer,
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AUGUMENTED REALITY

Augmented Reality uses technology to “virtually” change a real physical space. Unlike virtual which throw you into a fully artificial/simulated world, augmented reality adds to an existing space. Augmented Reality is a combination of actual reality, virtual reality and real world surroundings. As the name suggests Augmented Reality adds or augments additional stuff to the real world around us. It makes surrounding world more interactive which can also be manipulated digitally. The enhanced zones can be showed on any type of the displays, monitors, handed appliances Google Glass, in particular, input the Augmented Reality glasses ahead before the human face. When the reality methods go on improving, the Augmented Reality gadgets will regularly call for less hardware becoming used to objects as eye lenses and artificial retinal monitors. The primary components of the Augmented Reality are Sensory arrangements and cameras, Projection, Converting, and Reflection. The main advantage of Augmented Reality is it reduces the line between real world and virtual world. It is highly interactive in nature and operates simultaneously with real time environment. It can improve the learning environment by making the entire learning experience more immersive. Due to its use in medical industry, life of patients has become safer, it helps in efficient diagnosis of diseases and in early detection of them.



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NEAR FIELD COMMUNICATION (NFC)

Near Field Communication (NFC) Technology represents short range (practically up to 4 cm) wireless communication offering safe yet simple and intuitive communication between electronic devices that we use on a daily basis. Users of devices having NFC application in it can simply touch their devices to other similar elements having NFC application to communicate with them, making application and data usage easy and convenient.

NFC can be called as the next generation of **Radio Frequency Identification (RFID)** as technically its working principal is based on RFID however from application point of view it is similar to Bluetooth in some ways since it allows communication between two active devices. **RFID** is used mainly for applications like indicating or identifying goods or persons without a line of sight while **NFC** on the other hand is used for more sophisticated and secure transactions like contactless access or payment.

Applications:

- Pay for your goods with a tap of your NFC phone
- Get on bus by waving your NFC phone
- Get information by touching Smart Poster
- Pay for your parking ticket by tapping your NFC phone
- Set up your wireless home office with a touch
- Use your NFC phone as Event Ticket
- Print from your camera by holding it close to the camera
- Share business cards with a touch

NFC though very useful and simple technology but when compared to other technologies however presently it is less popular but with the increasing android applications, soon it will become a need. In the present world where digital transaction are so common, there exist people who try to manipulate, disrupt or misuse the data that is transmitted and so users will no doubt initially be concerned about the security of their personal data that is stored on the NFC devices. Still besides this, it is a must application for smart phones and people need to be made aware about how it works.



*Ms Prabhmeet
Assit. Professor,
Dept. of CSc.*

**"Great teachers
emanate
out of
knowledge,
passion and
compassion
"**

ROLE OF INFORMATION TECHNOLOGY IN RETAIL & LATEST TRENDS ADOPTED

With the increasing globalization of retailing, both in terms of points-of-sale and points-of-supply, the use of Information Technology (IT) in the retail sector has increased significantly. IT plays an increasingly important role in the management of complex retail operations.

Today, retailers are transforming their IT capabilities for multiple reasons. Firstly, to increase the company's ability to respond to the evolving marketplace through enhanced speed and flexibility. Secondly, to collect and analyze the customer data, retailers have adopted, Automated generation of gift vouchers while billing at POS. The gift vouchers generated through POS systems are based on customer data which focuses on billing history of the customer. Lastly, to work effectively, retailers need a single system working across stores to make the most effective use of stock and improve business processes.

Advancements in technology have been true gamechangers for the retail industry. The old means of selling products have been taken over by modern processes. New trends in the industry have pushed brands to utilize [Artificial Intelligence](#) based (AI) software and tools to maintain their solid standing in today's dynamic retail market structure.

Retailers have adopted Augmented Reality (AR) apps to market products that allow a shopper to pick an ideal product, as it fully renders 3D models of products in the shopper's own home environment. Utilizing augmented reality technology has helped retailers gain a high market share in their niche segment, engage a diverse customer base, and ultimately offer high levels of customer satisfaction. Retailers use social media to thrive on the increase in social media users around the world and it has increasingly allowed brands to reach new and expanded target markets. Apps like Facebook Live and Instagram stories allow retailers to connect and interact with shoppers and potential buyers much more easily.

Cognitive computing is a technology that analyzes and processes information faster than the human brain. This technology stores a huge amount of data and allows real people to naturally interact with computers and suggest different options and solutions. This allows them to improve their customer engagement initiatives.

The retail industry will keep evolving, and brands will proactively adapt to the needs of shoppers. Understanding shoppers needs and quickly changing to technology trends of the industry will allow retailers to grow. It is essential that companies stay up-to-date with changing technology and ensure that they are utilizing all technology that is available to them. Technology is not only making jobs easier, customers happier and businesses more accurate, it is also saving companies' time and money.



Dr. Subi Varghese ,
HOD, B. Voc (RM & IT).

G. Tanishka.
B. Voc. (RM & IT)
3rd Year

"One of the important characteristics of a student is to question. Let the students ask questions".

PREDICTING STOCK MARKET TRENDS USING MACHINE LEARNING TECHNIQUES

The movement in the stock market is usually determined by the sentiments of thousands of investors. Stock market prediction, calls for an ability to predict the effect of recent events on the investors. These can be political events such as a statement by a political leader or a snippet of news on scams. It can also be an international event like a sharp movement in currency. These kinds of events affect the corporate earnings, which in turn affects the sentiment of investors. Thus, stock market trend prediction is very difficult. It is beyond the scope of almost all investors to predict these hyper-parameters correctly and consistently. Machines are being developed to determine and analyse trends in stock market to make it easier for investors. Once the right data is collected, it can then be used to train a machine and generate a predictive result. Stock market analysis is separated into two parts – Fundamental Analysis and Technical Analysis.

- Fundamental Analysis involves analysing the company's future profitability on the basis of its current business environment and financial performance.

Technical Analysis, on the other hand, includes reading the charts and using statistical figures to identify the trends in the stock market.

Another important thing to note is that the market is closed on weekends and public holidays. The profit or loss calculation is usually determined by the closing price of a stock for the day. Machine learning algorithms like k-Nearest Neighbour, Support Vector Machine (SVM) and Long Short-Term Memory (LSTM) are used to predict the future stock price of any company using multiple variables in the dataset like date of trading, the high and low price of the stock in a day, stock opening and closing price and turnover.

FACT

The size of your social circle is related to the size of your brain.

A scientist at Oxford discovered that the size of a person's "orbitomedial prefrontal cortex" (the part of a brain that identifies other people's moods and personalities) can predict the size of that person's social circle. The average prefrontal cortex averages out to around 147.8 friends in a social network.



**Ms.K.S.Padma
priya,**

**Asst. professor
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*"They know enough
who know how to
learn" - J. Adams*

3D INTERNET

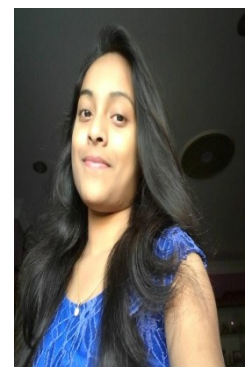
3D Internet, also known as virtual worlds, is a powerful new way for you to reach consumers, business customers, co-workers, partners, and students. It combines the immediacy of television, the versatile content of the Web, and the relationship-building strengths of social networking sites like Facebook. 3D Internet is the next generation after the current 2d web. 3D Internet consists of interconnected services, presented as virtual worlds. Imagine a set-up of interconnected virtual worlds inhabited by users who can visit and consume services through "teleporting" from one world to another. 3D Internet will rely on the same basic technology and components as that of a traditional browser, and it will interact with the same search engines and servers. Aside from the use of 3D computer graphics and personalized avatars, the important difference lies in a much more social experience compared to the two-dimensional Internet of today. 3D Internet is incredibly social. If you're reading a document, you can see other people reading the same document. You connect organically with other people that share your interests and consume the same services that you do.



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EDGE COMPUTING

Edge Computing is a distributed computing which brings computation and data storage closer to the location where it is needed, to improve response times and save bandwidth. Cloud Computing has become mainstream, with major players AWS (Amazon Web Services), Microsoft Azure and Google Cloud dominating the market. The adoption of cloud computing is still growing, as more and more businesses migrate to a cloud solution. But it's no longer the emerging technology. Edge is. Move over, cloud computing, and make way for the edge. As the quantity of data we're dealing with continues to increase, we've realized the shortcomings of cloud computing in some situations. Edge computing is designed to help solve some of those problems as a way to bypass the latency caused by cloud computing and getting data to a data center for processing. It can exist "on the edge," if you will, closer to where computing needs to happen. For this reason, edge computing can be used to process time-sensitive data in remote locations with limited or no connectivity to a centralized location. In those situations, edge computing can act like mini data centers. Edge computing enables data to be processed closer to where it's created i.e. motors, pumps, generators or other sensors, reducing the need to transfer data back and forth between the cloud. Edge computing will increase as use of the Internet of Things (IoT) devices increases. By 2022, the global edge computing market is expected to reach \$6.72 billion. As with any growing market, this will create job demand, primarily for software engineers. Advantages are Real time or faster Data Processing and Analysis, Lower Cost, Less Network Traffic, Increases Application Efficiency.



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ARTIFICIAL INTELLIGENCE IN CYBER SECURITY

Artificial Intelligence helps us in quickly identifying and analyzing new exploits and weaknesses to help ease further attacks and is an integral part of our solutions.

Artificial Intelligence practices are the key to Interference detection and make it possible to respond even to anonymous threats before spreading itself. Artificial Intelligence systems that are intended to learn and adapt, and are proficient of identifying even the minutes of changes in the settings, have the potential to act much earlier and based on vast trove of data than humans when it comes to analyzing novel types of cyber-attacks.

ARTIFICIAL INTELLIGENCE (AI) TECHNIQUES FOR CYBER SECURITY

Expert Systems

An Expert System is a computer system that copies the decision-making ability of a human, an example of Knowledge based system. These systems are composed of two sub-systems: The Knowledge Base and the Inference Engine. The knowledge base represents the illustrations and assertions in the real world. The Inference Engine is an automatic reasoning system. It evaluates the current situation of the knowledge base and applies the rules relevant to that, then asserts new knowledge in to it. CSIA -Cyber Security Artificial Intelligence Expert System has the following components in Knowledge base and Inference Engine .

Neural Nets Neural Nets is also known as deep learning. It is inspired by the functions and working of the human brain. Our brain has several neurons, which are largely general purpose and domain-independent. It can learn any type of data. In 1957 Frank Rosenblatt created an artificial neuron (Perceptron) which paved the way for neural networks.

Intelligent Agents

Intelligent Agent (IA) is an independent entity which recognizes movement through sensors and follows up on an environment using actuators (i.e. it is an agent) and directs its activity towards accomplishing objectives.

Components of Expert Systems

Knowledge Base	Malicious IP Address
	Known Malware
	Known Virus
Inference Engine	IP Address Geographical Location
	Connection Attempts
	Connection Patterns
	Login Timestamps
	Login Attempts
	Port Communication
	Folder Access Patterns



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Tabassum,
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THE INTERNET : A BRIEF, DEEPER INSIGHT

The Internet has evolved in ways that we could never have imagined. In the beginning, advancements occurred slowly. Today, innovation and communication developments are happening at a remarkable rate. From its humble beginning as the Advanced Research Projects Agency Network (ARPANET) in 1969, when it interconnected a few sites, it is now predicted that the Internet will interconnect 50 billion things by 2020. The Internet now provides global connections that make web surfing, social media, and smart mobile devices possible. Normally, when people use the term Internet, they are not referring to the physical connections in the real world. Rather, they tend to think of it as a formless collection of connections. It is the “place” people go to find or share information, watch videos and movies, or just waste time. It is the 21st century library, video store, and personal photo album. In actuality, the Internet is essentially a network of networks. Each of us connects to the Internet using a physical cable or through wireless media. Underneath this network of networks lies a very real backbone of connections that bring the world to our personal computing devices. In a very short time, the Internet has dramatically changed how we work, live, play, and learn. Yet, we have barely scratched the surface. Using existing and new technologies, we are connecting the physical world to the Internet. It is by connecting the unconnected that we transition from the Internet to the Internet of Things .



**Meghan Lilly
Wong**
121318061015
BSc 2F

LIFE BEFORE THE COMPUTER



a **memory** was something that you lost with age
an **application** was for employment
a **program** was a TV show
a **cursor** used profanity
a **keyboard** was a piano
a **web** was a spider's home
a **virus** was the flu
a **cd** was a bank account
a hard drive was a long trip on the road
a **mouse pad** was where a mouse lived
and if you had a **3-1/2 floppy**
... you just hoped nobody found out

"Opportunities
don't happen,
you create
them." –Chris
Grosser

COMPUTER VIRUSES

A computer virus is a relatively small program that attaches itself to data and program files before it delivers its malicious act. There are many distinct types of viruses and each one has a unique characteristics. Viruses are broken up into to main classes, file infectors and system or boot-record infectors. A file infector attaches to ordinary programs usually affecting .COM and .EXE files. These two files are subject to infection though some can infect any program from which executions requested. On the other spectrum, system or boot-record infectors infect executable codes found in certain system areas on a disk, which are not ordinary files. Not only are there are two main classes of viruses, but there are also many different types.

A virus can be classified as a “boot sector virus, a program virus, a Trojan horse virus, a macro virus, a memory resident virus, a stealth virus, or a polymorphic virus.”

“A boot sector virus replaces the startup code on disk with a modified version, which is loaded into the memory when the computer is started.” “ Program viruses attach to legitimate program files. After attachment the program file will then intercept the programs execution and take control of the computer system.”

“ Trojan horse viruses are also legitimate programs that are advertised as something desirable, but are actually something that is undesirable. They received their name from the mythical Trojan horse that was delivered to the gates of the city troy.”

“ Macro viruses are written in macro language of specific computer programs, such as word or excel.” “A stealth virus hides their presence. They can infected file. It then subtracts the directory entry of the infected file by the same number of bytes.” “polymorphic viruses modify their appearance and scramble their code periodically. This allows them to replicate so that none of its copies are the same.”

“There are three main characteristics that a virus may have. This includes a time bomb, a logic bomb, worm characteristics. It has been said that more than fifteen new viruses are created each day.”



By DARA ANNA,
B.Sc-II yr

There are two
days in
the year
that we
cannot do
anything,
yesterday
and
tomorrow

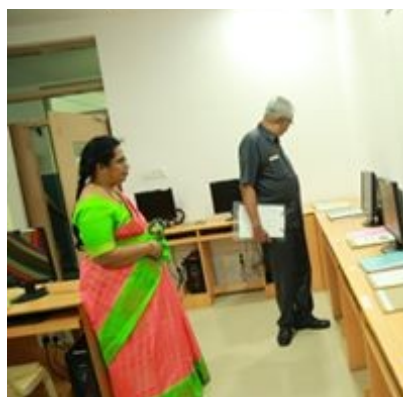
OUT REACH PROGRAM PHOTOS



AWARDS



NAAC PEER TEAM VISIT



CAROL SINGING



PEGASUS

Pretty confident that “What’s App” is safe?? Read along... Pegasus has been around in Android and ios virtual mobiles for more than 3 years. The spyware was identified in September 2018, by the Canada based digital watchdog “CITIZEN LAB”. These infections are associated with 33 out of 36 Pegasus operators identified in 45 countries including India. The mobile espionage software can enter by clicking some links and the malware will be installed without any user permissions or acknowledgement of the user. Once it is installed all the text messages, calls, location any images or videos can be tracked effortlessly. This malware can be purchased by the governments on license basis. It was used by Saudi Arabia to spy on murdered journalist Jamal Khashoggi. Data was enormously collected during the Indian elections 2019. The Ministry of Electronics and Information Broadcasting said that 121 Whats App users had been impacted in India. Whats App wrote to the Indian Computer Emergency Response Team (CERT-In) on September 5th 2019 that the full extent of this attack may never be known, Whats app continued to review the available information. The government of India is preparing to bring a Personal Data Protection Bill during the winter session of Parliament.



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*If you fail, never give up
because **F.A.I.L** means,
“**First Attempt In Learning**”.
End is not the end, in fact **E.N.D**
means, “**Effort Never Dies**”.
If you get **NO** as an answer,
remember **N.O** means,
“**Next Opportunity**”.
So let's be positive.*

CLOUD COMPUTING

Cloud computing is the on-demand delivery of compute power, database, storage, applications, and other IT resources via the internet with pay-as-you-go pricing. Cloud computing is the use of various services, such as software development platforms, servers, storage and software, over the internet, often referred to as the "cloud".

In the Cloud Computing environment, there are mainly 4 types of clouds. Public Cloud is nothing but whole computing infrastructure is located on the premises of a cloud computing company that offers the cloud service. Private Cloud means hosting all computing infrastructure in their own company premises and is not shared. Hybrid Cloud is nothing but it uses both private and public clouds, depending on their purpose. Community Cloud means a community cloud is shared between organizations with a specific community. In the Cloud Computing environment, the Service Provider can provide only 3 types of services.

IAAS (Infrastructure as a Service): Iaas is the most basic category of cloud computing services that allows us to rent IT infrastructure (servers or VM's) from a cloud provider on a pay-as-you-go basis.

PAAS (Platform as a Service): It refers to the supply an on-demand environment for developing, testing, delivering and managing software applications.

SAAS (Software as a Service): It is a method for delivering software applications over the Internet as per the demand and on a subscription basis.

However, Cloud Computing is the emerging technology which helps for both Service Providers and Service Consumers. This technology reduces the efforts required to publish, maintenance, storing and managing the resources.



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BSC (3B)

"All Birds find shelter during a rain. But Eagle avoids rain by flying above the Clouds"



NETWORK SECURITY

Network security refers to the practice of preventing and protecting against unauthorized invasion of corporate networks. It aims at complementing end-point security, which focuses on separate devices; network security, on the other hand, focuses on how those devices interact, and on the connective tissue between them.

Network security is any activity designed to protect the usability and integrity of your network and data.

It includes both hardware and software technologies

It targets a variety of threats

It stops them from entering or spreading on your network

Effective network security manages access to the net

These factors are described below:

Vulnerability – these are the weaknesses that we may have in the network.

They may be as a result of the technology in use, the configuration on our devices or poor or weak security policies. In our networks, we need to plan for security carefully and consider these factors, a comprehensive security policy would be crucial in ensuring that data in our network is not accessed due to weak security on our devices.

Threats – in network security, anyone who has the skill and the interest to manipulate any of the vulnerabilities, is known as a threat. These individuals or groups may be motivated by many factors such as money, power, and thrill seeking among others. Whatever the motive may be, threats to network security pose a major challenge for administrators since they may access information that is sensitive or even cripple the network.

Attacks – these are the methods that are used by the threats to access the network. There are a number of attacks that can be used to access our network. They may be aimed at the network infrastructure through methods such as dumpster diving, or aimed at users using methods such as social engineering.

TYPES OF NETWORK SECURITY DEVICES:

There are few types of network security devices:

- **Active devices** - firewalls, antivirus scanning devices, content filtering devices, which block the surplus traffic.
- **Passive devices**—such as intrusion detection appliances, which identify and report on unwanted traffic.

Preventative devices - penetration testing devices and vulnerability assessment appliances, which scan the networks and identify potential security problems.



**LAKAJIGARI
AKHILA,
121318043029**



EDGE COMPUTING

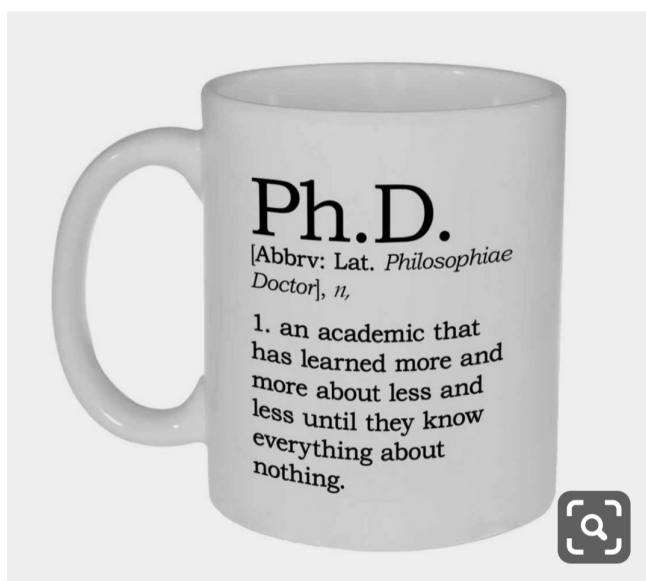
Edge Computing is a distributed computing which brings computation and data storage closer to the location where it is needed, to improve response times and save bandwidth. Cloud Computing has become mainstream, with major players AWS (Amazon Web Services), Microsoft Azure and Google Cloud dominating the market. The adoption of cloud computing is still growing, as more and more businesses migrate to a cloud solution. But it's no longer the emerging technology. Edge is. Move over, cloud computing, and make way for the edge. As the quantity of data we're dealing with continues to increase, we've realized the shortcomings of cloud computing in some situations. Edge computing is designed to help solve some of those problems as a way to bypass the latency caused by cloud computing and getting data to a data center for processing. It can exist "on the edge," if you will, closer to where computing needs to happen. For this reason, edge computing can be used to process time-sensitive data in remote locations with limited or no connectivity to a centralized location. In those situations, edge computing can act like mini data centers. Edge computing enables data to be processed closer to where it's created i.e. motors, pumps, generators or other sensors, reducing the need to transfer data back and forth between the cloud. Edge computing will increase as use of the Internet of Things (IoT) devices increases. By 2022, the global edge computing market is expected to reach \$6.72 billion. As with any growing market, this will create job demand, pri-



PT.Rekha

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**M.Sc Computer
Science**



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

NEW DEVICE ENABLES BATTERY-FREE COMPUTER INPUT AT THE TIP OF YOUR FINGER

Computer scientists at the University of Waterloo have created a device for wearable computer input suitable for many situations, just by touching your fingertips together in different ways.

The device, called Tip-Tap, is inexpensive and battery-free through the use of radio frequency identification (RFID) tags to sense when fingertips touch. The device could, therefore, be added to disposable surgical gloves, allowing surgeons to access preoperative planning diagrams in an operating room.

"One of the many possible applications of the device is in surgeries. What typically happens now with operation digital preplanning is that an assistant is responsible for navigating the computer and communicating with the surgeon, but this is slow and difficult," said Daniel Vogel, a professor in Waterloo's David R. Cheriton School of Computer Science. "If the surgeon tries to navigate it themselves using a touch screen or a mouse, it's problematic because it would require constant sterilization, and current alternatives such as big gestures tracked by computer vision can get very tiring.

"The idea is if you mount Tip-Tap in surgical gloves, surgeons could navigate the computer themselves from where they are, and it won't affect their other actions like picking up the scalpel."

Researchers created the prototype of Tip-Tap as part of a new partnership with the National Research Council of Canada (NRC).

In developing the method, the researchers mapped the most comfortable areas on the index finger for people to touch with their thumb, and tested different designs for the input points, such as smooth, bumps, or magnets. Following user tests with an early "wired" prototype to benchmark performance, they tackled the problem of making it "battery-free."

The researchers were able to make Tip-Tap battery-free by splitting the antenna of an RFID tag in two, and equipping each side with three chips to enable two-dimensions of fingertip input, the first time this had ever been done. The new RFID tag can be integrated into a glove or attached directly on the skin as a temporary tattoo.

"We used this design in two prototype Tip-Tap devices, a glove with a range of four meters, and an on-skin tattoo," said Vogel. "Such devices are useful for issuing simple commands when a user cannot easily hold an input device, and the usage context is a defined area – for example, factory workers, surgeons, or people exercising in a gym." "This is the only device of its kind that we're aware of that doesn't require a battery or cumbersome wires to make it work.



P.Niharika

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Bsc-3E

**4 THINGS WE CAN
NOT RECOVER IN
LIFE:**

▪ **WORDS AFTER
THEY'RE SAID.**

▪ **MOMENTS AFTER
THEY'RE MISSED.**

▪ **ACTIONS AFTER
THEY'RE DONE.**

▪ **TIME AFTER
IT'S GONE.**



Why is it that when you window-shop for shoes on Amazon, they later seem to follow you all around the internet? How does Facebook and Instagram personalize your feed? How does Netflix and Amazon Prime recommend you shows and movies to watch next? Cookies apart, your answer is: Big data is huge amounts of data, complex in nature and exponentially expanding with every second. Thus, no traditional data management tools such as relational databases, SQL, can process or even handle its velocity. Although originated in the 1960s, the term 'Big data' was coined in 2005. Speaking of its size, although big data does not equate to any specific volume, its implementation often involves Terabytes (TB), Petabytes (PB), and even Exabytes (EB) of data captured over time. Few examples of big data generation include- Stock Exchanges (about one TB of new trade data/day), Social media(500+ TB of new data on Facebook everyday), flights(10+ TB of data every 30 minutes), online shopping, streaming platforms, etc. Big data can be structured, unstructured, or semi-structured. Characteristics of this data can be simply described by 5 Vs: Volume, Velocity, Variety, Value and Veracity of data generated. Not only humans, IoT, machine learning and advanced AI are contributors to this database too. Since "data is the new oil", big data has remarkably revolutionized several industries- from technology and business to fashion and entertainment. Big data is stored and processed in a clustered architecture based on technologies like Hadoop and Apache Spark which avail cheaper data storage. These open-source frameworks provide massive storage in the form of data lakes, and enormous processing power to all its users. NoSQL and Kafka also deal with big data. Since big data holds all your information, it is important that you share your information cautiously. Meanwhile, I'm off to look at some shoes online.



***Ms Ananya Pandey.,
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B.Sc ID***



If you stand for a reason,
be prepared to stand
alone like a tree, and if
you fall on the ground,
fall like a seed that grows
back to fight again.

ETHICAL HACKING

The rapid growth of the Internet has brought many constructive and valued solutions for our lives such as e-commerce, electronic communication, and new areas for research and information sharing. Businesses are scared of computer experts who will penetrate into their web server and change their logo, steal their private emails or credit card numbers, or put in software that will quietly transmit their organization's data to somebody in another country.

The need is to train our computer science students with ethical hacking techniques, so that they can fight against criminal hackers. Call them hackers, crackers, intruders, or attackers, they are all interlopers who are trying to break into your networks and systems. Some do it for fun, some do it for profit, or some simply do it to disrupt your operations and perhaps gain some recognition.

In Stolen laptop computer test, the laptop computer of a key employee, such as an upper-level manager or strategist, is taken by the client without warning and given to the ethical hackers. They examine the computer for passwords stored in dial-up software, corporate information assets, personnel information, and the like. Since many busy users will store their passwords on their machine, it is common for the ethical hackers to be able to use this laptop. Social engineering test evaluates the target organization's staff as to whether it would leak information to someone. A typical example of this would be an intruder calling the organization's computer help line and asking for the external telephone numbers of the modem pool. Defending against this kind of attack is the hardest, because people and personalities are involved.

White Hat Hackers are authorized and paid person by the companies, with good intends and moral standing. They are also known as "IT Technicians". Their job is to safeguard Internet, businesses, computer networks and systems from crackers.

Some companies pay IT professionals to attempt to hack their own servers and computers to test their security. They do hacking for the benefit of the company. They break security to test their own security system. The white Hat Hacker is also called as an Ethical Hacker .



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GREEN COMPUTING

Green Computing:

Designing, manufacturing, using, and disposing of computers efficiently with minimal or no net impact on the environment.

Design

- In 2005, Intel announces a new computing paradigm: low power hardware. This includes the use of low power processors, on-board graphics cards, passive cooling, and solid state drives.
- In 2007 the Climate Savers Computing Initiative begins, attempting to increase the energy efficiency of all computers and cut CO2 emissions by 54 million tons per year.
- Efficient coding could cut the energy consumption of data centers by 25-30%.
- 85% of the electricity that power PCs goes to waste as it lies idle.
- Almost a third of servers are doing nothing except consuming power.

Manufacture

- It takes ten times the weight of a PC in chemicals and fossil fuels to make one.
- Which is equivalent to approximately 1.8 tons of chemicals, fossil fuels, and water to produce a typical desktop computer.
- Lead, mercury, cadmium, brominated flame retardants, and polyvinyl chloride are just some of the dangerous chemicals that make up a computer.
- 15 billion batteries are made and sold across the globe every year.

Use

- The global information and communications (ICT) industry accounts for 2% of global CO2 emissions (roughly equivalent to 4 million cars).
- Corporate data centers use about 1.5% of the energy output of the United States.
- In 2005, the power used by servers and other infrastructure accounted for 1.2% of the United State's electrical usage.
- US organizations pay \$2.8 billion a year to power unused machines, emitting 20 million tons of CO2 (roughly equivalent to 4 million cars).
- A typical desktop PC with a 17" LCD monitor left on 24/7 for one year will consume 874 kilowatt hours of electricity, which is equivalent to 750 pounds of CO2 or driving 820 miles in an average car.
- Even when a computer is shut down, it consumes 8 watts per hour as long as it's plugged in.
- For a company with 10,000 PCs, simply shutting down all PCs at night can save over \$260,000 a year and 1,871 tons of CO2 emissions.

Disposal

- It takes between 60 and 300 trees to absorb the yearly CO2 emissions generated by a single PC left on 24 hours a day.
- The National Resource Defense Council reports that Americans threw away 100 million cell phones in 2006.
- Which equates to approximately 130,000 computers and 273,973 cell phones improperly disposed of every day.
- As much as one million tons of electric equipment becomes obsolete each year.
- The energy saved by recycling one plastic bottle will power a computer for nearly 25 minutes.

Sources: <http://www.explainingcomputers.com/green.html>, <http://www.slideshare.net/stephen8-10-surprising-facts>, <http://techmeetseed.com/2012/04/13/green-computing-part-3-a-few-facts/>, <http://www2.hp.com/jr/sgm/carepack/pdf/steps.pdf>, <http://www.com.org/investives/greencomputing/interesting/facts.html#4539d4faulk.aspx>, http://usatoday/30.usatoday.com/tech/science/environment/2009-03-25-pc-power-company-costs_11.html?pos=HPMostPopular, <http://www.upenn.edu/computing/green/facts.html>, <http://www.brightstar.com>



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***“They know enough
who know how to
learn” - J. Adams***

STORING DATA IN EVERYDAY OBJECTS

Researchers have discovered a new method for turning nearly any object into a data storage unit. This makes it possible to save extensive data in, say, shirt buttons, water bottles or even the lenses of glasses, and then retrieve it years later. The technique also allows users to hide information and store it for later generations. It uses DNA as the storage medium.

Researchers developed a means of storing extensive information in almost any object. With this method, we can integrate 3D-printing instructions into an object, so that after decades or even centuries, it will be possible to obtain those instructions directly from the object itself. The way of storing this information is the same as for living things: in DNA molecules.

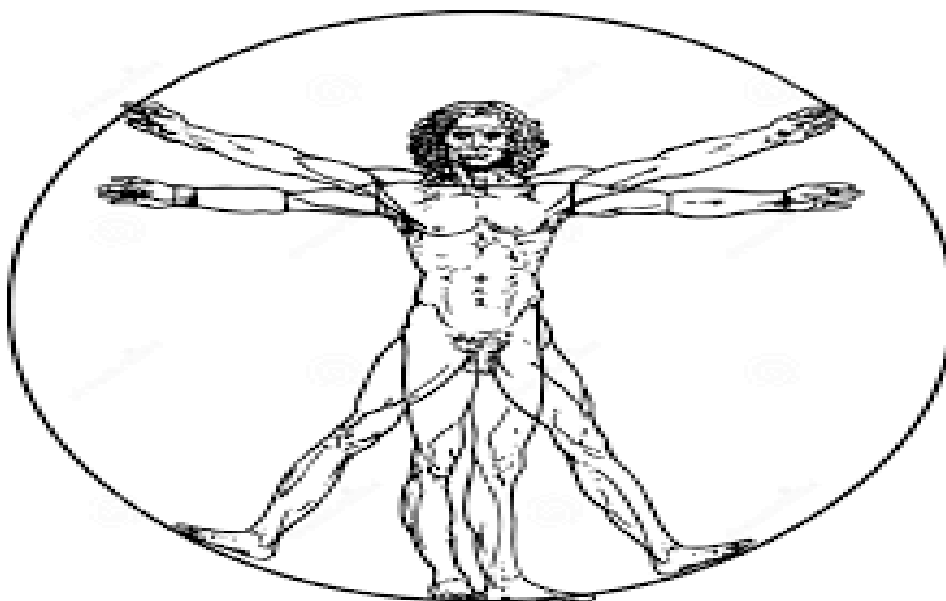
At the same time, it has become possible to store enormous data volumes in DNA. Grass's colleague Yaniv Erlich, an Israeli computer scientist, developed a method that theoretically makes it possible to store 215,000 terabytes of data in a single gram of DNA. And Grass himself was able to store an entire music album in DNA – the equivalent of 15 megabytes of data.

They call the storage form "DNA of Things," a take-off on the Internet of Things, in which objects are connected with information via the internet.

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HUMAN GENOME PROJECT

The Human Genome Project (HGP) was an international scientific research project with the goal of determining the base pairs that make up human DNA, and of identifying and mapping all of the genes of the human genome from both a physical and a functional standpoint. It remains the world's largest collaborative biological project. After the idea was picked up in 1984 by the US government when the planning started, the project formally launched in 1990 and was declared complete on April 14, 2003. Funding came from the US government through the National Institutes of Health (NIH) as well as numerous other groups from around the world. A parallel project was conducted outside the government by the Celera Corporation, or Celera Genomics, which was formally launched in 1998. Most of the government-sponsored sequencing was performed in twenty universities and research centers in the United States, the United Kingdom, Japan, France, Germany and China. The Human Genome Project originally aimed to map the nucleotides contained in a human haploid reference genome (more than three billion). The "genome" of any given individual is unique; mapping the "human genome" involved sequencing a small number of individuals and then assembling these together to get a complete sequence for each chromosome. Therefore, the finished human genome is a mosaic, not representing any one individual.



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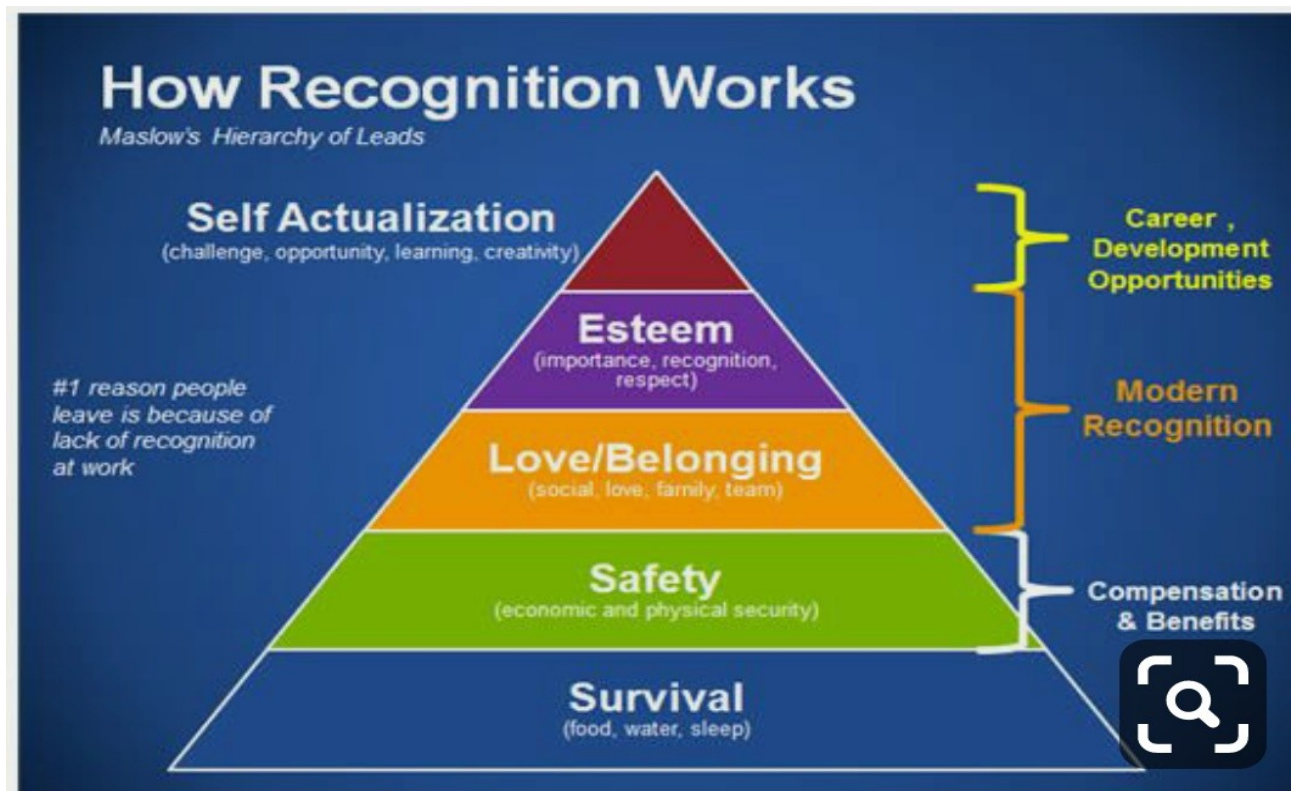
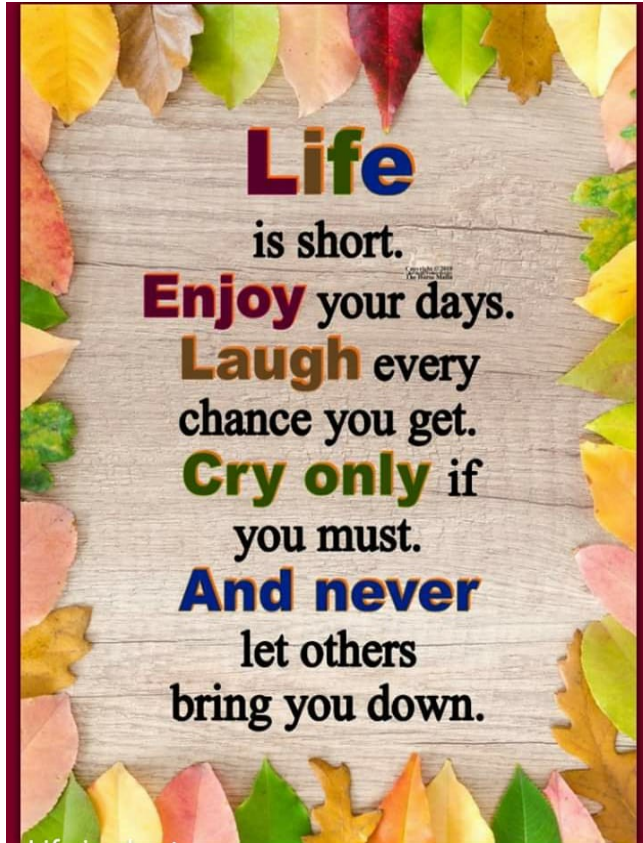
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. "Good things come to people who wait, but better things come to those who go out and get them."

QUOTES



SOUL IN COMPUTER SCIENCE

The good news is that computer science has a soul. If we could miss to see the soul in computer science, it is since we have not been trained to look for it. Viewing computer science as soulless is the result of a kind of perceptual myopia. Computer science's intellectual roots are in the fields of mathematics, science and engineering which definitely have soul. Computer science is viewed as having a special soulfulness because the language that is emerging in our discipline has a strong implication with spiritual concepts that have been exist for several millennia. It is based on the concept of viewing work as work on the soul.

It is proved that there is beauty and elegance in our machines, languages and algorithms. Computer science is said to have a special soulfulness due to the manner in which it is built. It is said that some of the most important spiritual conflicts in future, will relate to computer technology and its use. Moore, the clinical psychologist, has proved that when the soulfulness of work is not accredited to the information technology workplace, the symptoms of alienation, boredom and depression arise to express its unhappiness.



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FACT

TECHNOLOGY FACTS AND STATS



. "Good things come to people who wait, but better things come to those who go out and get them."

THE AMAZING BIG DATA

Big data is extremely large or complex set of data and its so large that its difficult to process it using traditional database and software techniques .Everyday we are creating approximately 2.5 quintillion bytes of data, so where is this huge amount of data getting generated from? Earlier we had mobile phones with functionality of calling and text messages or clicking some pictures but with new technologies like smart phone ,we have lot of applications for music ,sports social media like Facebook,twitter LinkedIn and many more also data is getting generated many more when

So why does it need attention

By 2020 1.7 megabytes will be created second for each human

Digital universe of data will grow from 4.4 zettabytes to 44 zettabytes

1.2 trillion searches in Google every year

1 trillion photos will be shared online

By 2020 atleast 1/3rd of data will be passed through a cloud server



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**"A woman is like
a tea bag –
you never
know how
strong she is
until she gets
in hot water."**

DIAMOND JUBILEE YEAR 2019-20 PHOTOS





