Department of

COMPUTER SCIENCE & ENGINEERING

TECH-EXPLORER

Technical Magazine

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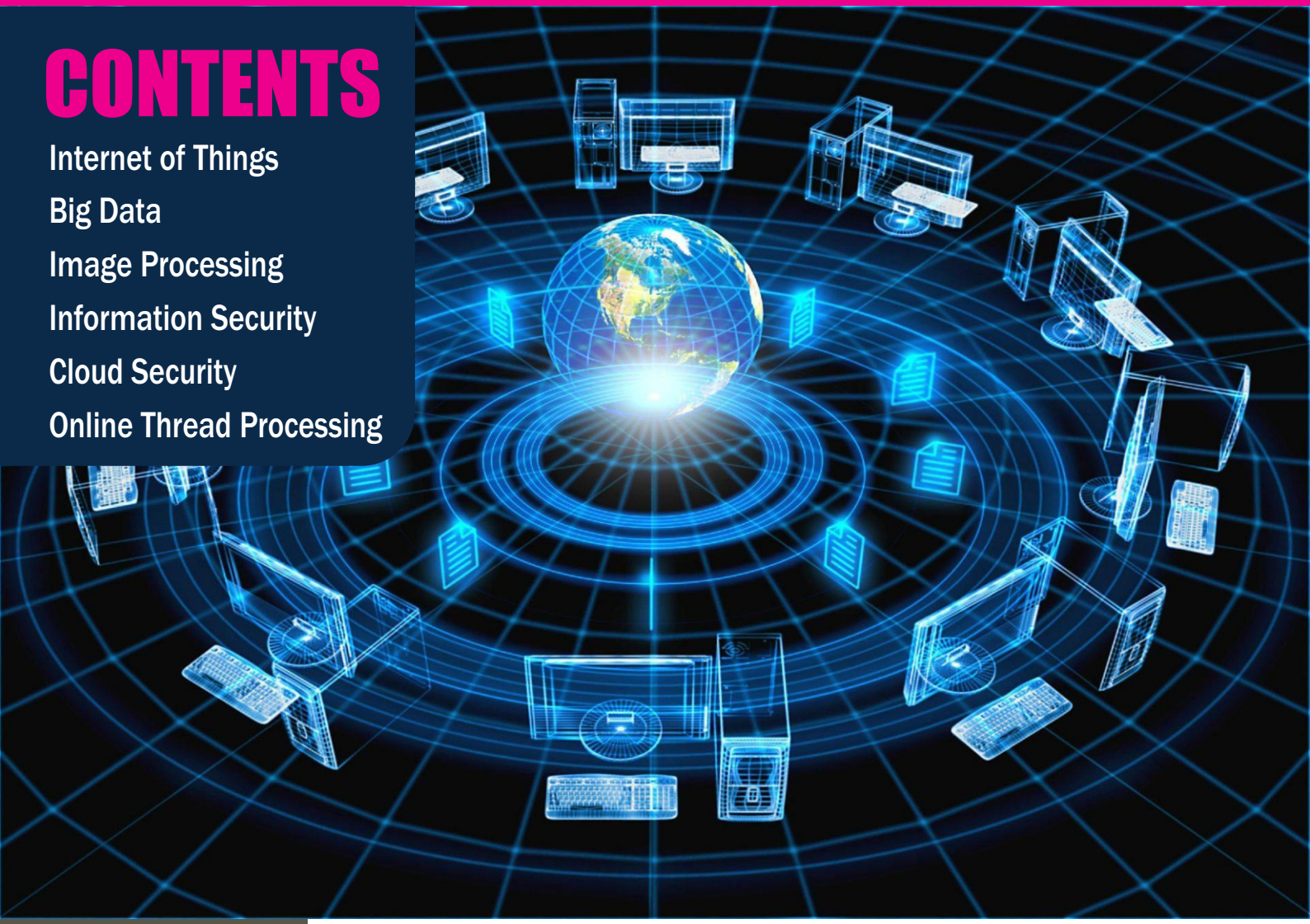

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NARAYANA ENGINEERING COLLEGE :: NELLORE

(APPROVED BY AICTE, NEW DELHI & PERMANENTLY AFFILIATED TO JNTU, ANANTHAPURAMU)

"The computer was born to solve problems that did not exist before".

- Bill Gates

Vision of the institute

To be one of the nation's premier Institutions for Technical and Management Education and a key contributor for Technological and Socio-economic Development of the Nation.

Mission of the institute

To produce technically competent Engineers and Managers by maintaining high academic standards, world class infrastructure and core instructions.

To enhance innovative skills and multi disciplinary approach of students through well experienced faculty and industry interactions.

To inculcate global perspective and attitude of students to face real world challenges by developing leadership qualities, lifelong learning abilities and ethical values.

Vision of the Department

To be a choice for education in the area of Computer Science and Engineering, serve as a valuable resource for IT industry & society and exhibit creativity, innovation and ethics to cater the global challenges.

Mission of the Department

M1: To educate learners by adapting innovative pedagogies for enhancing their cognitive skills, technical competence and lifelong learning.

M2: To provide training programs and guidance to learners through industry institute partnerships, social awareness programs, internships, competitions and project works to inculcate research skills toaddress the global challenges.

M3: To provide opportunities for students to practice professional, social and ethical responsibilities using IT expertise with a blend of leadership and entrepreneurial skills.

Program Educational Objectives (PEOs)

PEO-1 : Procure employment/progress towards higher degree and practice successfully in the CS/IT profession. (Successful Career Goals).

PEO-2 : Address complex problems by adapting to rapidly changing IT technologies. (Professional Competency).

PEO-3 : Gain respect and trust of others as effective and ethical team member by demonstrating professionalism and functioning effectively in team-oriented and open-ended activities in industry and society. (Leadership, Ethics and Contribution to Society).

(PROGRAM SPECIFIC OUTCOMES) PSOs

Domain Specific Knowledge: Apply the relevant techniques to develop solutions in the domains of algorithms, system software, computer programming, multimedia, web, data and networking.

Software Product Development: Apply the design and deployment principles to deliver a quality software product for the success of business of varying complexity.

(PROGRAM OUTCOMES) POs

1. Engineering Knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

2. Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

3. Design/Development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

4. Conduct Investigations of Complex Problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

5. Modern Tool Usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

6. The Engineer and Society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

7. Environment and Sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

8. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

9. Individual and Team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multi disciplinary settings.

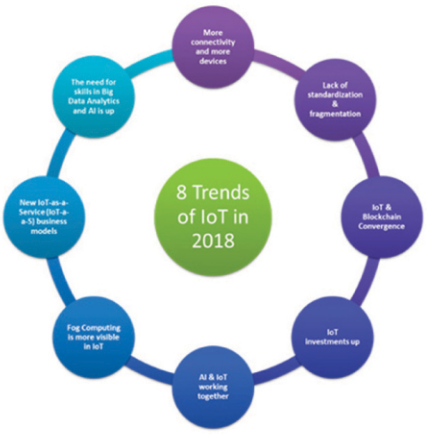
10. Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

11. Project Management and Finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multi disciplinary environments.

12. LIFE-LONG LEARNING: Recognize the need for and have the preparation and ability to engage in independent and lifelong learning in the broadest context of technological change.

TRENDS OF THE INTERNET OF THINGS IN 2018

The Internet of things (IoT) is growing rapidly and 2018 will be a fascinating year for the IoT industry. IoT technology continues to evolve at an incredibly rapid pace. Consumers and businesses alike are anticipating the next big innovation. They are all set to embrace the ground-breaking impact of the Internet of Things on our lives like ATMs that report crimes around them, forks that tell you if you are eating fast, or IP address for each organ of your body for doctors to connect and check.



Digitally connected devices are fast becoming an essential part of our everyday lives. Although the adoption of IoT will be large, it will most likely be slow. The primary reason for this is lack of standardization.

Though industry leaders are trying to develop specified standards and get rid of fragmentation, it will still exist. There will be no clear standards in the near future of IoT. Unless a well-respected organization like IEEE stepped-in and leads the way or the government imposes restrictions on doing business with companies if they are not using unified standards.The hurdles facing IoT standardization can be divided into 3 categories; Platform, Connectivity, and Applications:

Platform: This part includes the form and design of the products (UI/UX), analytics tools used to deal with the massive data streaming from all products in a secure way, and scalability.

Connectivity: This phase includes all parts of the consumer's day and night routine, from using wearables, smart cars, smart homes, and in the big scheme, smart cities. From the business perspective, we have connectivity using IIoT (Industrial Internet of Things) where M2M communications dominating the field.

Applications: In this category, there are three functions needed to have killer applications: control things, collect data, and analyze data . IoT needs killer applications to drive the business model using a unified platform.

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BIG DATA ANALYTICS

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

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

THE IMPORTANCE OF BIG DATA ANALYTICS GRAPHIC

Why is big data analytics important?

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

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

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

New products and services. With the ability to gauge customer needs and satisfaction through analytics comes the power to give customers what they want. Davenport points out that with big data analytics, more companies are creating new products to meet customers' needs.

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ON-LINE THREAD PROCESSING

Image processing technology based on image segmentation about on-line threads images, and describes in detail image processing technology from image preprocessing, image segmentation, and threaded parameter test. Threaded images of on-line processing parts obtained are introduced as the key technology, Target edge extraction proces from the segmented image are also recounted. At last, this article shows a comparison between actual machining parameters of screw thread and the standard parameter, provides the criterion for error compensation.

Aprocess can be described as an application's executing program. A thread is the one that lives inside of a process and executes any part of its process's program. When you start an application, a process is created. The program might create thread(s) to help it do work, but that's optional.

A process can ask the Operating System to spin up another process to run different tasks. When this happens, different parts of the memory are allocated for the new process. If two processes need to talk, they can do so by using Inter Process Communication (IPC). Many applications are designed to work this way so that if a worker process get unresponsive, it can be restarted without stopping other processes which are running different parts of the application.

Which process controls what?

Browser: Controls the applications including address bar, bookmarks, back and forward buttons. Also handles the invisible, privileged parts of a web browser such as network requests and file access.

Renderer: Controls anything inside of the tab where a website is displayed.

Plugin: Controls any plugins used by the website, for example, flash.

GPU: Handles GPU tasks in isolation from other processes. it is separated into different process because GPUs handles requests from multiple apps and draw them in the same surface.

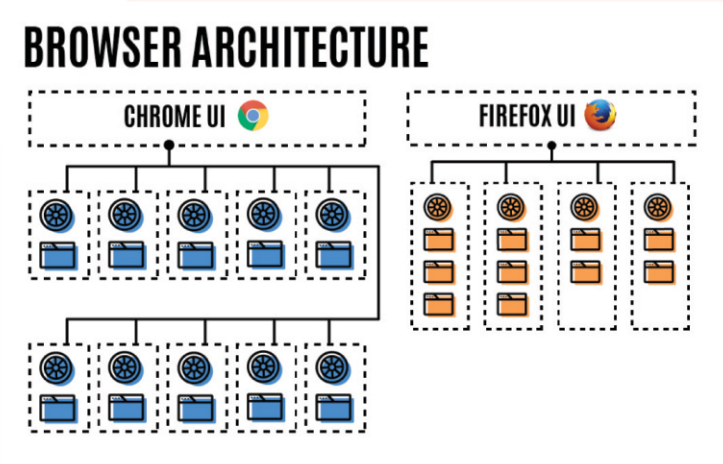

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IMAGE PROCESSING

Image processing is a way to convert an image to a digital aspect and perform certain functions on it, in order to get an enhanced image or extract other useful information from it. It is a type of signal time when the input is an image, such as a video frame or image and output can be an image or features associated with that image. Usually, the Image Processing system includes treating images as two equal symbols while using the set methods used.

It is one of the fastest growing technologies today, with its use in various business sectors. Graphic Design forms the core of the research space within the engineering and computer science industry as well.

Image processing basically involves the following three steps.

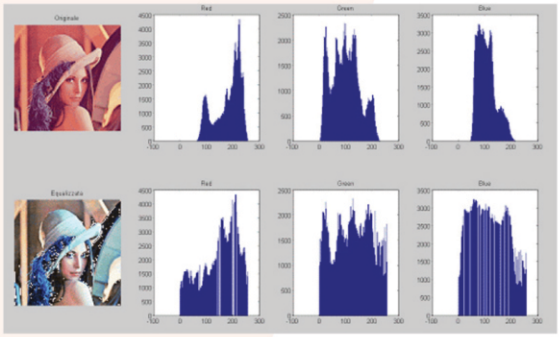
Importing an image with an optical scanner or digital photography.

Analysis and image management including data compression and image enhancement and visual detection patterns such as satellite imagery.

It produces the final stage where the result can be changed to an image or report based on image analysis.

Image processing is a way by which an individual can enhance the quality of an image or gather alerting insights from an image and feed it to an algorithm to predict the later things.

Libraries involved in Image Processing



The following libraries are involved in performing Image processing in python;

- **Scikit-image**
- **OpenCV**
- **Mahotas**
- **SimpleITK**
- **SciPy**
- **Pillow**
- **Matplotlib**

scikit-image is an open-source Python package run by the same NumPy members. It uses algorithms and resources for research, academic and industrial use. It is a simple and straightforward library, even for newcomers to Python's ecosystem. The code is high quality, reviewed by peers, and written by a working community of volunteers.

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INFORMATION SECURITY & THREADS

At the core of information security is information assurance, the act of maintaining the confidentiality, integrity, and availability (CIA) of information, ensuring that information is not compromised in any way when critical issues arise. These issues include but are not limited to natural disasters, computer/server malfunction, and physical theft. While paper-based business operations are still prevalent, requiring their own set of information security practices, enterprise digital initiatives are increasingly being emphasized,with information assurance now typically being dealt with by information technology (IT) security specialists. These specialists apply information security to technology (most often some form of computer system). It is worthwhile to note that a computer does not necessarily mean a home desktop.A computer is any device with a processor and some memory. Such devices can range from non-networked standalone devices as simple as calculators, to networked mobile computing devices such as smartphones and tablet computers.IT security specialists are almost always found in any major enterprise/establishment due to the nature and value of the data within larger businesses.They are responsible for keeping all of the technology within the company secure from malicious cyber attacks that often attempt to acquire critical private information or gain control of the internal systems.

The field of information security has grown and evolved significantly in recent years. It offers many areas for specialization, including securing networks and allied infrastructure, securing applications and databases, security testing, information systems auditing, business continuity planning, electronic record discovery, and digital forensics.[citation needed] Information security professionals are very stable in their employment. As of 2013 more than 80 percent of professionals had no change in employer or employment over a period of a year, and the number of professionals is projected to continuously grow more than 11 percent annually from 2014 to 2019.

Threats

Information security threats come in many different forms.

Some of the most common threats today are software attacks, theft of intellectual property, theft of identity, theft of equipment or information, sabotage, and information extortion. Most people have experienced software attacks of some sort. Viruses, worms, phishing attacks, and Trojan horses are a few common examples of software attacks. The theft of intellectual property has also been an extensive issue for many businesses in the information technology (IT) field.

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CLOUD SECURITY

Cloud security, also known as cloud computing security, consists of a set of policies, controls, procedures and technologies that work together to protect cloud-based systems, data, and infrastructure. These security measures are configured to protect cloud data, support regulatory compliance and protect customers' privacy as well as setting authentication rules for individual users and devices. From authenticating access to filtering traffic, cloud security can be configured to the exact needs of the business.

The way cloud security is delivered will depend on the individual cloud provider or the cloud security solutions in place. However, implementation of cloud security processes should be a joint responsibility between the business owner and solution provider.

Why is cloud security important?

For businesses making the transition to the cloud, robust cloud security is imperative. Security threats are constantly evolving and becoming more sophisticated, and cloud computing is no less at risk than an on-premise environment. For this reason, it is essential to work with a cloud provider that offers best-in-class security that has been customized for your infrastructure.

Cloud security offers many benefits, including:

Centralized security: Just as cloud computing centralizes applications and data, cloud security centralizes protection. Cloud-based business networks consist of numerous devices and endpoints that can be difficult to manage when dealing with shadow IT or BYOD. Managing these entities centrally enhances traffic analysis and web filtering, streamlines the monitoring of network events and results in fewer software and policy updates.

Reduced costs: One of the benefits of utilizing cloud storage and security is that it eliminates the need to invest in dedicated hardware. Not only does this reduce capital expenditure, but it also reduces administrative overheads. Where once IT teams were firefighting security issues reactively, cloud security delivers proactive security features that offer protection 24/7 with little or no human intervention.

Reduced Administration: When you choose a reputable cloud services provider or cloud security platform, you can kiss goodbye to manual security configurations and almost constant security updates. These tasks can have a massive drain on resources, but when you move them to the cloud, all security administration happens in one place and is fully managed on your behalf.

Reliability: Cloud computing services offer the ultimate in dependability. With the right cloud security measures in place, users can safely access data and applications within the cloud no matter where they are or what device they are using.

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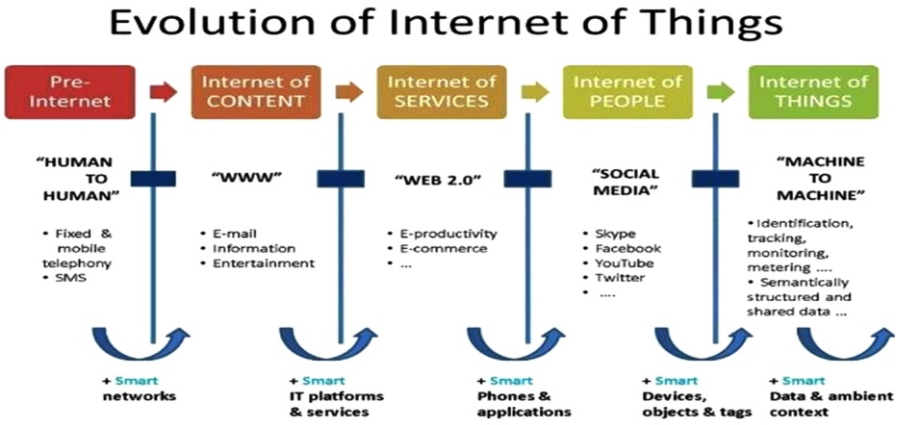
"The Creative process is a process of Surrender, not Control"

INTERNET OF THINGS (IOT)

IOT trending technology and that is Internet of things. The most important characteristic of humans is that we can work with each other as a team and gain knowledge from each other. What if this was true for machines as well? What if they could interact with each other and share information and data. That would lead to a truly connected world! And that is the central concept of the Internet of Things. This concept just means a connected network of various devices that can collect data and share it with each other to obtain meaningful insights from the data.



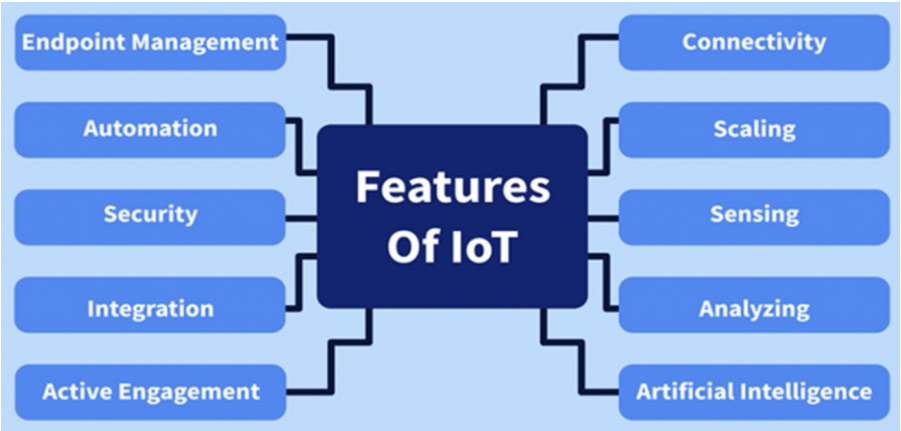
Why IOT?

- IOT - Connects potential objects.
- Addressees Real - world issues.
- Ability to track and monitor things.
- Lighten the workload with automation.
- Increases efficiency by saving moneyand resources.
- Better quality of life.

How does it work?

- IOT - giant network with connected devices.
- Potential devices gather and share data.
- IOT is a common Platform for different devices to communicate.
- The data is shared/emitted through sensors to the IOT platforms
- Sensors- Continuously emit data about the working state of the device.
- IOT platforms- Integrate this dataand further analysis is performed on it and valuable information is
- extracted as per the requirement
- This information is then shared to other devices for better user experience automation and improving efficiencies.

Features of IOT



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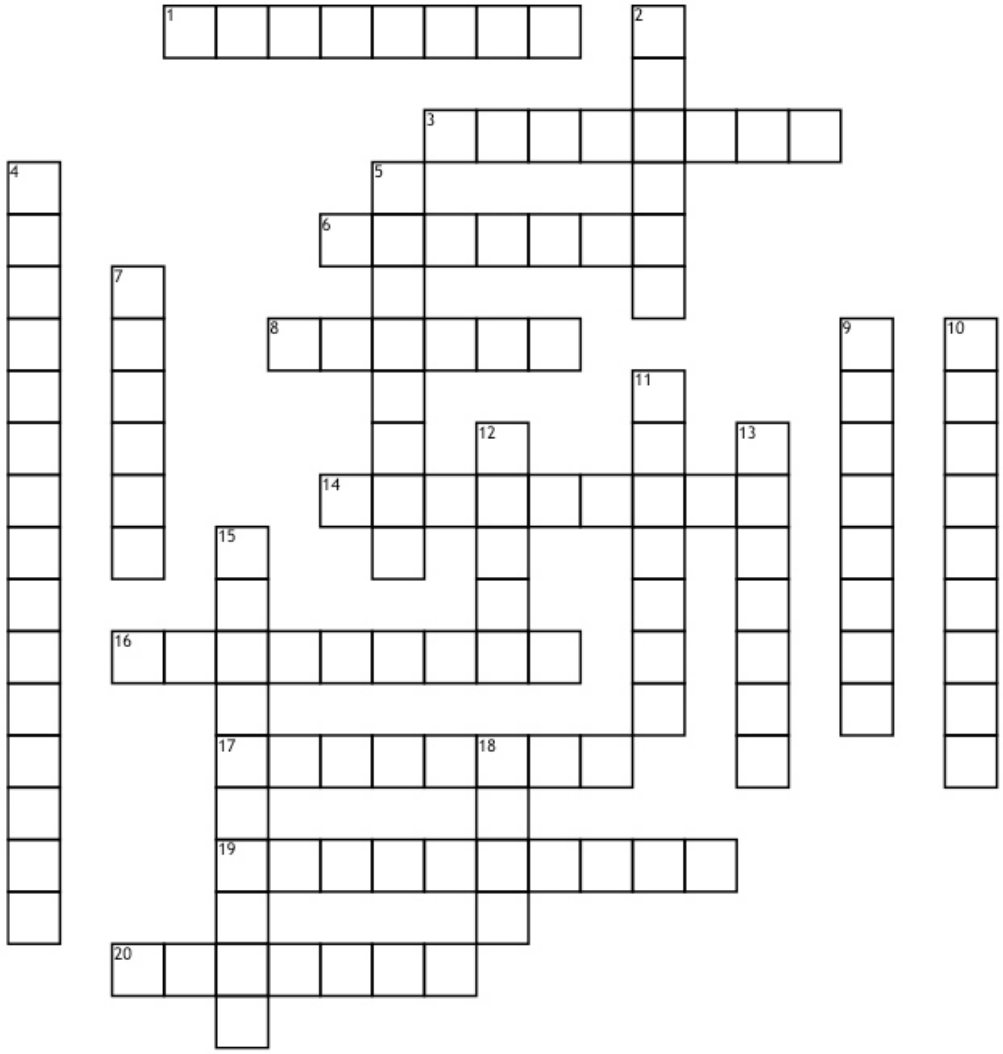
CODING CROSSWORD PUZZLE



Across

1. translate
3. publish
6. audience
8. review
14. photographer
16. news
17. explain
19. investigate
20. headline

Down

2. editor
4. cartoons
5. issue
7. access
9. describe
10. present
11. graphic
12. donate
13. column
15. interview
18. quote