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DEPARTMENT OF ELECTRONICS & INSTRUMENTATION ENGINEERING

DR. MAHALINGAM COLLEGE OF ENGINEERING AND TECHNOLOGY
DEPARTMENT OF ELECTRONICS AND INSTRUMENTATION ENGINEERING

Dr. Mahalingam College of Engineering and Technology (MCET) is a self – financing educational institution situated in Pollachi, Coimbatore District. MCET is the vision of Arutchelvar Dr. N. Mahalingam, whose determination and dynamism made possible the realization of this institution of excellence. MCET was established in 1998 to commemorate the 75th Birthday of this great visionary.

VISION:

We develop a globally competitive workforce and entrepreneurs.

MISSION:

Dr. Mahalingam College of Engineering and Technology, Pollachi endeavors to impart high quality, competency based technical education in Engineering and Technology to the younger generation with the required skills and abilities to face the challenging needs of the industry around the globe. This institution is also striving hard to attain a unique status in the international level by means of infrastructure, state-of-the-art computer facilities and techniques

CORE VALUES:

The Institution is driven by its core values of

- Equity
- Transparency
- Creativity
- Team Work
- Environment Sustainability
- Staff Development
- Women in Development.

NIA INSTITUTIONS:

The society's solicitation made him the Chairman of NIA to expand education right from schooling to engineering. Within a short span of 50 years the bud- NIA- has blossomed in lot many avenues and has spread its fragrance in

AMISHA

industrialization, education, finance, transportation, synthetic gems, textiles, agriculture and automobiles.

Nachimuthu Industrial Association not only shelters the society by offering jobs in which it flourishes but also been a preamble for rural students to gain knowledge and explore the fast-paced world. Having made the institution a banyan tree in which entire society can shelter. The Chairman after rendering his tireless work, he has become the Emeritus.

The Himalayan achievement in education and developing society, the industrial genius has been recognized by Government of India and had conferred Padma Bhusan on him in 2007

DEPTARMENT OF ELECTRONICS AND INSTRUMENTATION ENGINEERING

Department of Electronics and Instrumentation Engineering in the year 2011 with an annual intake of 60 students. This course provides students with sound theoretical knowledge & practical training in the operation and design of electronic instruments, digital logic systems, microprocessor and microcontroller system design, etc.
To meet the industrial requirements of future, students are given theoretical and practical knowledge on industrial instrumentation, process control systems design, PLCs, DCS, industrial drives and controls and embedded systems.

DEPARTMENT VISION:

To develop globally competent instrumentation engineers and entrepreneurs with societal, environmental and human values

DEPARTMENT

MISSION:

Supportive Learning Environment: Provide suitable learning environment to the graduates with innovative learning resources and adequate infrastructure.

Engineering Skills: Enhance electronic, instrumentation and automation skills of the engineering graduates to fulfill the industrial requirements.

AVISHA

Sustainable and Eco-Friendly: Create awareness among the graduates for sustainable, eco friendly products and safety standards.

Ethical and Professional Responsibility: Enrich continuous learning, communicative, collaborative and administrative skills of the engineering graduates to become ethical,social responsible engineers and entrepreneurs

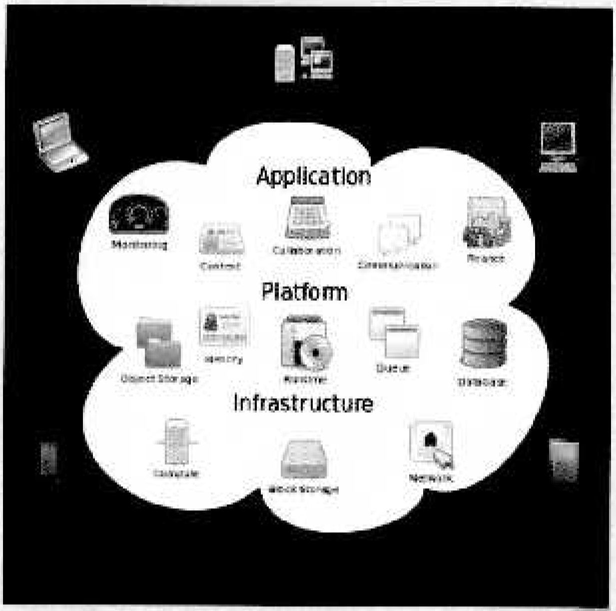
Programme Outcomes :

PO	Description
PO.1. Engineering Knowledge	Apply the knowledge of Mathematics, Science and engineering to solve problems in the field of Electronics & Instrumentation Engineering.
PO.2. Problem Analysis	Identify, formulate/model, analyse and solve complex problems in the field of Electronics & Instrumentation Engineering.
PO.3. Design and Development	Design an electronic system/component, or process to meet specific purpose with due consideration for economic, environmental, social, political, ethical, health and safety issues.
PO.4. Conduct Investigations	Design and conduct experiment, analyse and interpret data to provide valid conclusions in the field of Electronics and Instrumentation Engineering.
PO.5. Modern Tool Usage	Apply appropriate techniques and modern software tools for design and analysis of Electronic systems with specified constraints.
PO.6. Engineer and Society	Apply contextual knowledge to provide engineering solutions with societal, professional & environmental responsibilities

PO.7. Environment and Sustainability	Provide sustainable solutions within societal and environmental contexts for problems related to Electronics & Instrumentation Engineering.
PO.8. Ethics	Comply with code of conduct and professional ethics in engineering practices
PO.9. Individual and Team work	Perform effectively as a member/leader in multidisciplinary teams.
PO.10. Communication	Communicate effectively to engineering community and society with proper aids and documents.
PO.11. Project Management & Finance	Demonstrate knowledge and understanding of the engineering and management principles to manage projects in multidisciplinary environment.
PO.12. Lifelong Learning	Recognise the need for, and have the ability to engage in independent and lifelong learning.

Programme Specific Outcomes :

PSO.1.Instrument Analysis	Analyze and monitor the characteristics of electronic measuring instruments to ensure performance, safety and quality of the processes
PSO.2.Controller Selection	Select the suitable instruments, control schemes and controllers as per the requirements



Cloud computing

By
J.SANGEETHA
18BEI014

- Cloud computing metaphor: the group of networked elements providing services need not be individually addressed or managed by users; instead, the entire provider-managed suite of hardware and software can be thought of as an amorphous cloud.

- Cloud computing is the on demand availability of computer system resources, especially data storage and computing power, without direct active management by the user. The term is generally used to describe data centers available to many users over the Internet. Large clouds, predominant today, often have functions distributed over multiple locations from central servers.
- If the connection to the user is relatively close, it may be designated an edge server.
- Clouds may be limited to a single organization (enterprise clouds,) be available to many organizations (public cloud,) or a combination of both (hybrid cloud.) The largest public cloud is Amazon AWS.
- Cloud computing relies on sharing of resources to achieve coherence and economies of scale.
- Advocates of public and hybrid clouds note that cloud computing allows companies to avoid or minimize up-front IT infrastructure costs. Proponents also claim that cloud computing allows enterprises to get their applications up and running faster, with improved manageability and less maintenance, and that it enables IT teams to more rapidly adjust resources to meet fluctuating and unpredictable demand. Cloud providers typically use a "pay-as-you-go" model, which can lead to unexpected operating expenses if administrators are not familiarized with cloud-pricing models.
- The availability of high-capacity networks, low-cost

computers and storage devices as well as the widespread adoption of hardware virtualization, service-oriented architecture,
and autonomic and utility computing has led to growth in cloud computing.

Characteristics

Cloud computing exhibits the following key characteristics:

- Agility for organizations may be improved, as cloud computing may increase users' flexibility with re-provisioning, adding, or expanding technological infrastructure resources.
- Cost reductions are claimed by cloud providers. A public-cloud delivery model converts capital expenditures (e.g., buying servers) to operational expenditure. This purportedly lowers barriers to entry, as infrastructure is typically provided by a third party and need not be purchased for one-time or infrequent intensive computing tasks. Pricing on a utility computing basis is "fine-grained", with usage-based billing options. As well, less in-house IT skills are required for implementation of projects that use cloud computing. The e-FISCAL project's state-of-the-art repository contains several articles looking into cost aspects in more detail, most of them concluding that costs savings depend on the type of activities supported and the type of infrastructure available in-house.
- Device and location independence enable users to access systems using a web browser regardless of their location or what device they use (e.g., PC, mobile phone). As infrastructure is off-site (typically provided by a third-party) and accessed via the Internet, users can connect to it from anywhere.
- Maintenance of cloud computing applications is easier, because they do not need to be installed on each user's computer and can be accessed from different places (e.g., different work locations, while travelling, etc.).
- Multitenancy enables sharing of resources and costs across a large pool of users thus allowing for:
  - centralization of infrastructure in locations with lower costs (such as real estate, electricity, etc.)
  - peak-load capacity increases (users need not engineer and pay for the resources and equipment to meet their highest possible load-levels)
  - utilisation and efficiency improvements for systems that are often only 10–20% utilised.
- Performance is monitored by IT experts from the service provider, and consistent and loosely coupled architectures are constructed using web services as the system interface.
- Productivity may be increased when multiple users can work on the same

data simultaneously, rather than waiting for it to be saved and emailed. Time may be saved as information does not need to be re-entered when fields are matched, nor do users need to install application software upgrades to their computer.

- Reliability improves with the use of multiple redundant sites, which makes well-designed cloud computing suitable for business continuity and disaster recovery.
- Scalability and elasticity via dynamic ("on-demand") provisioning of resources on a fine-grained, self-service basis in near real-time (Note, the VM startup time varies by VM type, location, OS and cloud providers), without users having to engineer for peak loads. This gives the ability to scale up when the usage need increases or down if resources are not being used. Emerging approaches for managing elasticity include the utilization of machine learning techniques to propose efficient elasticity models.
- Security can improve due to centralization of data, increased security-focused resources, etc., but concerns can persist about loss of control over certain sensitive data, and the lack of security for stored kernels. Security is often as good as or better than other traditional systems, in part because service providers are able to devote resources to solving security issues that many customers cannot afford to tackle or which they lack the technical skills to address. However, the complexity of security is greatly increased when data is distributed over a wider area or over a greater number of devices, as well as in multi-tenant systems shared by unrelated users. In addition, user access to security audit logs may be difficult or impossible. Private cloud installations are in part motivated by users' desire to retain control over the infrastructure and avoid losing control of information security.

The National Institute of Standards and Technology's definition of cloud computing identifies "five essential characteristics":

On-demand self-service. A consumer can unilaterally provision computing capabilities, such as server time and network storage, as needed automatically without requiring human interaction with each service provider.

Broad network access. Capabilities are available over the network and accessed through standard mechanisms that promote use by heterogeneous thin or thick client platforms (e.g., mobile phones, tablets, laptops, and workstations).

Resource pooling. The provider's computing resources are pooled to serve multiple consumers using a multi-tenant model, with different physical and virtual resources dynamically assigned and reassigned according to consumer demand.

Rapid elasticity. Capabilities can be elastically provisioned and released, in some cases automatically, to scale rapidly outward and inward commensurate with demand. To the consumer, the capabilities available for provisioning often appear unlimited and can be appropriated in any quantity at any time.

Measured service. Cloud systems automatically control and optimize resource use by leveraging a metering capability at some level of abstraction appropriate to the type of service (e.g., storage, processing, bandwidth, and active user accounts). Resource usage can be monitored, controlled, and reported, providing transparency for both the provider and consumer of the utilized service.

— *National Institute of Standards and Technology*

Security and privacy

Cloud computing poses privacy concerns because the service provider can access the data that is in the cloud at any time. It could accidentally or deliberately alter or delete information. Many cloud providers can share information with third parties if necessary for purposes of law and order without a warrant. That is permitted in their privacy policies, which users must agree to before they start using cloud services. Solutions to privacy include policy and legislation as well as end users' choices for how data is stored. Users can encrypt data that is processed or stored within the cloud to prevent unauthorized access.

According to the Cloud Security Alliance, the top three threats in the cloud are Insecure Interfaces and API's, Data Loss & Leakage, and Hardware Failure—which accounted for 29%, 25% and 10% of all cloud security outages respectively. Together, these form shared technology vulnerabilities. In a cloud provider platform being shared by different users there may be a possibility that information belonging to different customers resides on same data server. Additionally, Eugene Schultz, chief technology officer at Emagined Security, said that hackers are spending substantial time and effort looking for ways to penetrate the cloud. "There are some real Achilles' heels in the cloud infrastructure that are making big holes for the bad guys to get into". Because data from hundreds or thousands of companies can be stored on large cloud servers, hackers can theoretically gain control of huge stores of information through a single attack—a process he called "hyperjacking". Some examples of this include the Dropbox security breach, and iCloud 2014 leak. Dropbox had been breached in October 2014, having over 7 million of its users passwords stolen by hackers in an effort to get monetary value from it by Bitcoins (BTC). By having these passwords, they are able to read private data as well as have this data be indexed by search engines (making the information public).

There is the problem of legal ownership of the data (If a user stores some data in the cloud, can the cloud provider profit from it?). Many Terms of Service agreements are silent on the question of ownership. Physical control of the computer equipment (private cloud) is more secure than having the equipment off site and under someone else's control (public cloud). This delivers great incentive to public cloud computing service providers to prioritize building and maintaining strong management of secure services. Some small businesses that don't have expertise in IT security could find that it's more secure for them to use a public cloud. There is the risk that end users do not understand the issues involved when signing on to a cloud service (persons sometimes don't read the many pages of the terms of service agreement, and just click "Accept" without reading). This is important now that cloud computing is becoming popular and required for some services to work, for example for an intelligent personal assistant (Apple's Siri or Google Now). Fundamentally, private cloud is seen as more secure with higher levels of control for the owner, however public cloud is seen to be more flexible and requires less time and money investment from the user.

Limitations and disadvantages

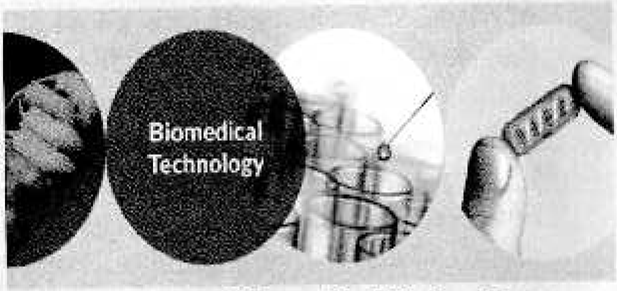
According to Bruce Schneier, "The downside is that you will have limited customization options. Cloud computing is cheaper because of economics of scale, and — like any outsourced task — you tend to get what you get. A restaurant with a limited menu is cheaper than a personal chef who can cook anything you want. Fewer options at a much cheaper price: it's a feature, not a bug." He also suggests that "the cloud provider might not meet your legal needs" and that businesses need to weigh the benefits of cloud computing against the risks. In cloud computing, the control of the back end infrastructure is limited to the cloud vendor only. Cloud providers often decide on the management policies, which moderates what the cloud users are able to do with their deployment. Cloud users are also limited to the control and management of their applications, data and services. This includes data caps, which are placed on cloud users by the cloud vendor allocating certain amount of bandwidth for each customer and are often shared among other cloud users.

Privacy and confidentiality are big concerns in some activities. For instance, sworn translators working under the stipulations of an NDA, might face problems regarding sensitive data that are not encrypted.

Cloud computing is beneficial to many enterprises; it lowers costs and allows them to focus on competence instead of on matters of IT and infrastructure. Nevertheless, cloud computing has proven to have some limitations and disadvantages, especially for smaller business operations, particularly regarding security and downtime. Technical outages are inevitable and occur sometimes when cloud service providers (CSPs) become overwhelmed in the process of serving their clients. This may result to temporary business suspension. Since this technology's systems rely on the internet, an individual cannot be able to access their applications, server or data from the cloud during an outage.

Emerging trends

Cloud computing is still a subject of research. A driving factor in the evolution of cloud computing has been chief technology officers seeking to minimize risk of internal outages and mitigate the complexity of housing network and computing hardware in-house. Major cloud technology companies invest billions of dollars per year in cloud Research and Development. For example, in 2011 Microsoft committed 90 percent of its $9.6 billion R&D budget to its cloud. Research by investment bank Centaur Partners in late 2015 forecasted that SaaS revenue would grow from $13.5 billion in 2011 to $32.8 billion in 2016.



Biomedical Technology

By

E. Dinesh kumar

18BEI012

INRODUCTION:

Biomedical technology broadly refers to the application of engineering practices and principles in the field of medical science to create innovative technology for diagnosing various complex diseases in addition to this these innovative technologies can be very much useful in discovering new methods relating biology.People have achieved greater heights in this field till now but whatever has been discovered is just a part in total.

FIELDS IN BIOMEDICAL ENGINEERING:

Generally biomedical technology has separate divisions in which different people specialize ome of the significant divisions are

- Tissue engineering
- Biomaterial engineering

- Neural engineering
- Biomechanics
- Cellular and anatomical sciences
- Genetics

Toxicology etc.

All these years biomedical field has been split into various divisions inorder to gain knowledge in a much more efficient way and each and every divisions of these helps us to get an indepth idea about what is internally and externally present with us and remember these can be carried out only by the existence of engineering and technological principles.

ACHIEVEMENTS IN BIOMEDICAL TECHNOLOGY:

By implementing all the well found engineering principles our advancement in medical field has reached its zenith,one of the well known development is the discovery of nanotechnology which is being used for various requirements including diagnosing and treating cancer which has been marked a tremendous achievement .Here nanoparticles made from synthesised materials such as silver and gold ranging from 1 to 100nm are used as contrast agents from which a projection of the image of the tumour present inside can be easily diagnosed.Here comes the best part using nanotechnology biomedical engineers has created nanobots which are made from a single strand of DNA and are designed in desired ways to deliver drugs into specialized areas where our reach is impossible.These nanobots are in the size of 10 to 25nm so that they can enter into tiny areas such as blood cells and are being used by us which are pacemakers, artificial lungs , earbuds etc.

CLASSIFICATIONS OF BIOMEDICAL INSTRUMENTS:

The study of biomedical instruments can be approached from atleast four viewpoints;

- Techniques of biomedical measurement can be grouped according to the quantity that is sensed, such as pressure, flow, or temperature. One advantage of this classification is that it makes different methods for measuring any quantity easy to compare.
- A second classification scheme uses the principle of transduction , such as resistive, inductive, capacitive, ultrasonic, or electrochemical. Different applications of each principle can be used to strengthen the understanding of each concept also ; new applications may be readily apparent.

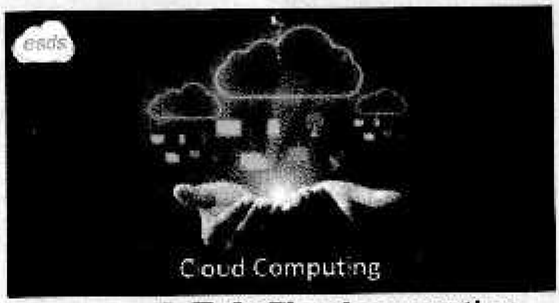
- Measurement techniques can be studied separately for each organ system, such as the cardiovascular , pulmonary, nervous, and endocrine systems. This approach isolates all important measurements for specialists who need to know only about a specific area ,but it results in considerable overlap of quantities and principles of transduction.
- Finally, biomedical instruments can be classified according to the clinical medicine specialities, such as paediatrics, obstetrics, cardiology or radiology. This approach is valuable for medical personnel who are interested in specialized instruments. Of course certain measurements such as blood pressure are important to many different medical specialties.

APPLICATION OF INSTRUMENTATION:

These devices came into existence only due to the presence of engineering that too it is specialized in instrumentation because these devices are mainly made up of quantum dots from semiconductors and in addition to it these devices are dependent on electronics so we electronic and instrumentation engineers play a major role in creating new devices and maintaining the consistency of the pre-existing devices.This field has no endpoint because new diseases and problems get arises every now and then and everyday we get to discover new fields in which our knowledge is zero.The way through which these problems involve solutions from instrumentation is by using sensors and receptors through which information can be gained and the problem can be solved.

VERDICT:

My final verdict is that we instrumentation engineers have great opportunity lying infront of us in the field of biotechnology and it is our responsibility to shine well in this latent field so that we could be provided with an increased employment oppurtunities and can contribute our hardwork to this society as promised as engineers.



IoT & Cloud computing

By

Mohammed Riyaz

17BEI044

What is cloud computing????

Many of us could heared about this word cloud computing.. Let us briefly know about what is cloud computing. And how it creates an impact in modern advanced computerized world,in future upcoming generations, and its brief history about how it evolved in these generations and how it is going to be developed in the upcoming generations..

Well the first thing that strikes your mind when we hear this word Cloud Computing is the vast storage space created to store many millions of data. Cloud computing is defined as the delivering computer power and the delivery of services through internet.Cloud computing is the on demand availability of computer system resources, especially data storage and computing power, without direct active management by the user.Cloud Computing is a technology uses the internet and central remote servers to maintain data and applications. Cloud computing allows consumers and businesses to use applications without installation and access their personal files at any computer with internet access.

The various cloud softwares are Google Drive ,Microsoft Azure, iCloud ,Adobe creative cloud etc...,

WHY CLOUDS ARE SO BENEFICIAL TO THE DATA SHARING WORLD

The main reason that the future of cloud computing will be as powerful and expansive as it portends to be is that cloud technology is extremely beneficial. For one thing, the extreme agility and accessibility of a cloud is far superior to the use of current technology. No matter where in the world someone happens to be, or what device they are using, they can access their cloud and continue to do their work or share their information.With cloud computing and the technology behind it there are many potential opportunities and capabilities. Cloud computing can open a whole new world of jobs, services, platforms, applications, and much more. There are thousands of possibilities beginning to form as the future of cloud computing starts to really take off.

Cloud Systems and Technologies

A cloud system or cloud computing technology refers to the computing components (hardware, software and infrastructure) that enable the delivery of cloud computing services such as: SaaS (software as a service), PaaS (platform as a service) and IaaS (infrastructure as service) via a network (i.e. the Internet). Cloud system users access computing services using web browsers, which represents a computing model that shifts the computing workload to a remote location. Internet based email applications are a prime example of a cloud system that provides a platform for the delivery electronic messaging services. Cloud computing is also sometimes referred to as utility computing, since consumer usage of cloud systems is metered and billed in a manner similar to a commodity like water or electric services.

KEY COMPONENTS

SOA Architecture –

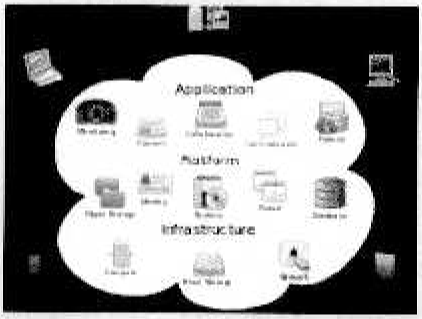
This element of cloud technology allows organizations to access cloud based computing solutions with features that can be modified on demand, as business needs change. Service Oriented Architecture allows independent web services to communicate with each other via the Internet in real time, providing the flexibility that is required to rapidly reconfigure the service delivery for a specific cloud computing offering. SOA places the responsibility and costs of development, deployment and maintenance of web service components on the web services provider, which allows a web services consumer to access various web services with out the expense or overhead that is associated with traditional methods of IT services delivery. SOA is a powerful technological component of cloud computing because it facilitates centralized distribution and component reuse, which significantly drives down the cost of software development and delivery.

Cloud Virtualization--

It is another important aspect of a cloud system that facilitates the efficient delivery of cloud computing services. The implementation of virtual computing resources in the cloud, that mimic the functionality of physical computing resources, serves as a flexible load balancing management tool that allows for the swift adjustment of computing services delivery on demand. Virtualization technology provides organizations with a tool that promotes high levels of availability, scalability and reliability; in terms of the cloud systems or cloud computing technology that an enterprise can access to meet its information technology needs. Virtualization is also a very important component of cloud computing technology for the purposes of disaster recovery and fail-over support.

Uses of Cloud Computing

The role of cloud computing on a corporate level can be either for the in house operations, or as a deployment tool for software or services the company develops for the public. Through the PaaS, much of the administration, maintenance and deployment of the software becomes the job of a third party, the PaaS.



Data Analytics

By

A.GAYATHRI

18BEI002

Cloud computing and Data Analytics makes computer system resources, especially storage and computing power, available on demand without direct active management by the user. The term is generally used to describe data centers available to many users over the Internet. Large clouds, predominant today, often have functions distributed over multiple locations from central servers. If the connection to the user is relatively close, it may be designated an Edge server.

Clouds may be limited to a single organization (enterprise clouds,) be available to many organizations (public cloud,) or a combination of both (hybrid cloud.) The largest public cloud is Amazon AWS. Cloud computing relies on sharing of resources to achieve coherence and economies of scale.

Advocates of public and hybrid clouds note that cloud computing allows companies to avoid or minimize up-front IT infrastructure costs. Proponents also claim that cloud computing allows enterprises to get their applications up and running faster, with improved manageability and less maintenance, and that it enables IT teams to more rapidly adjust resources to meet fluctuating and unpredictable demand. Cloud providers typically use a "pay-as-you-go" model, which can lead to unexpected operating expenses if administrators are not familiarized with cloud-pricing models.

Cloud computing metaphor: the group of networked elements providing services need not be individually addressed or managed by users; instead, the entire provider-managed suite of hardware and software can be thought of as an amorphous cloud.

The availability of high-capacity networks, low-cost computers and storage devices as well as the widespread adoption of hardware virtualization, service-oriented architecture,
and autonomic and utility computing has led to growth in cloud computing.

Similar concepts

The goal of cloud computing is to allow users to take benefit from all of these technologies, without the need for deep knowledge about or expertise with each one of them. The cloud aims to cut costs, and helps the users focus on their core business instead of being impeded by IT obstacles. The main enabling technology for cloud computing is virtualization. Virtualization software separates a physical computing device into one or more "virtual" devices, each of which can be easily used and managed to perform computing tasks. With operating system–level virtualization essentially creating a scalable system of multiple independent computing devices, idle computing resources can be allocated and used more efficiently. Virtualization provides the agility required to speed up IT operations, and reduces cost by increasing infrastructure utilization. Autonomic computing automates the process through which the user can provision resources on-demand. By minimizing user involvement, automation speeds up the process, reduces labor costs and reduces the possibility of human errors.

Users routinely face difficult business problems. Cloud computing adopts concepts from Service-oriented Architecture (SOA) that can help the user break these problems into services that can be integrated to provide a solution. Cloud computing provides all of its resources as services, and makes use of the well-established standards and best practices gained in the domain of SOA to allow global and easy access to cloud services in a standardized way.

Cloud computing also leverages concepts from utility computing to provide metrics for the services used. Such metrics are at the core of the public cloud pay-per-use models. In addition, measured services are an essential part of the feedback loop in autonomic computing, allowing services to scale on-demand and to perform automatic failure recovery. Cloud computing is a kind of grid computing; it has evolved by addressing the QoS (quality of service) and reliability problems. Cloud computing provides the tools and technologies to build data/compute intensive parallel applications with much more affordable prices compared to traditional parallel computing techniques.

Architecture

Cloud architecture, the systems architecture of the software systems involved in the delivery of cloud computing, typically involves multiple *cloud components* communicating with each other over a loose coupling mechanism such as a messaging queue. Elastic provision implies intelligence in the use of tight or loose coupling as applied to mechanisms such as these and others.

Cloud engineering

Cloud engineering is the application of engineering disciplines to cloud computing. It brings a systematic approach to the high-level concerns of commercialization, standardization, and governance in conceiving, developing, operating and maintaining cloud computing systems. It is a multidisciplinary method encompassing contributions from diverse areas such as systems, software, web, performan ce, information technology engineering, security, platform, risk, and quality engineering.

Limitations and disadvantages

According to Bruce Schneier, "The downside is that you will have limited customization options. Cloud computing is cheaper because of economics of scale, and — like any outsourced task — you tend to get what you get. A restaurant with a limited menu is cheaper than a personal chef who can cook anything you want. Fewer options at a much cheaper price: it's a feature, not a bug." He also suggests that "the cloud provider might not meet your legal needs" and that businesses need to weigh the benefits of cloud computing against the risks. In cloud computing, the control of the back end infrastructure is limited to the cloud vendor only. Cloud providers often decide on the management policies, which moderates what the cloud users are able to do with their deployment. Cloud users are also limited to the control and management of their applications, data and services. This includes data caps, which are placed on cloud users by the cloud vendor allocating certain amount of bandwidth for each customer and are often shared among other cloud users.

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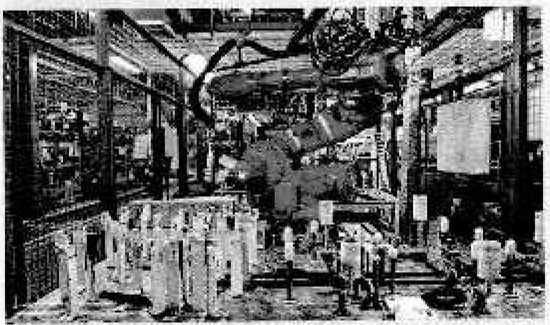


AUTOMATION AND CONTROL

By
G.RATHAI POOMPAVAI
18BEIO34

Automation is the technology by which a process or procedure is performed with minimum human assistance. Automation or automatic control is the use of various control systems for operating equipment such as machinery, processes in factories, boilers and heat treating ovens, switching on telephone networks, steering and stabilization of ships, aircraft and other applications and vehicles with minimal or reduced human intervention. Some processes have been completely automated.

Automation covers applications ranging from a household thermostat controlling a boiler, to a large industrial control system with tens of thousands of input measurements and output control signals. In control complexity it can range from simple on-off control to multi-variable high level algorithms.

In the simplest type of an automatic control loop, a controller compares a measured value of a process with a desired set value, and processes the resulting error signal to change some input to the process, in such a way that the process stays at its set point despite disturbances. This closed-loop control is an application of negative feedback to a system. The mathematical basis of control theory was begun in the 18th century, and advanced rapidly in the 20th

Automation has been achieved by various means including mechanical, hydraulic, pneumatic, electrical, electronic devices and computers, usually in combination. Complicated systems, such as modern factories, airplanes and ships typically use all these combined techniques. The benefit of automation include labor savings, savings in electricity costs, savings in material costs, and improvements to quality, accuracy and precision.

The World Bank's World Development Report2019 shows evidence that the new industries and jobs in the technological sector outweigh the economic effects of workers being displaced by automation.

The term *automation*, inspired by the earlier word *automatic* (coming from *automation*), was not widely used before 1947, when Ford established an automation department. It was during this time that industry was rapidly adopting feedback controllers, which were introduced in the 1930s.

Minimum human intervention is required to control many large facilities such as this electrical generating station

Discrete Control (ON/OFF)

One of the simplest types of control is *on-off* control. An example is the thermostat used on household appliances which either opens or closes an electrical contact. (Thermostats were originally developed as true feedback-control mechanisms rather than the on-off common household appliance thermostat.)

Sequence control, in which a programmed sequence of *discrete* operations is performed, often based on system logic that involves system states. An elevator control system is an example of sequence control.

PID controller

A **proportional–integral–derivative controller(PID controller)** is a control loop feedback mechanism (controller) widely used in industrial control systems.

In a PID loop, the controller continuously calculates an *error value* as the difference between a desired setpoint and a measured process variable and applies a correction based on proportional, integral, and derivative terms, respectively (sometimes denoted *P*, *I*, and *D*) which give their name to the controller type.

The theoretical understanding and application dates from the 1920s, and they are implemented in nearly all analogue control systems; originally in mechanical controllers, and then using discrete electronics and latterly in industrial process computers.

Computer control

Computers can perform both sequential control and feedback control, and typically a single computer will do both in an industrial application. Programmable logic controllers(PLCs) are a type of special purpose microprocessor that replaced many hardware components such as timers and drum sequencers used in relay logic type systems. General purpose process control computers have increasingly replaced stand alone controllers, with a single computer able to perform the operations of hundreds of controllers. Process control computers can process data from a network of PLCs, instruments and controllers in order to implement typical (such as PID) control of many individual variables or, in some cases, to implement complex control algorithms using multiple inputs and mathematical manipulations. They can also analyze data and create real time graphical displays for operators and run reports for operators, engineers and management.

Control of an automated teller machine (ATM) is an example of an interactive process in which a computer will perform a logic derived response to a user selection based on information retrieved from a networked database. The ATM process has similarities with other online transaction processes. The different logical responses are called *scenarios*. Such processes are typically designed with the aid of use cases and flowcharts, which guide the writing of the software code. The earliest feedback control mechanism was the water clock invented by Greek engineer Ctesibius (285–222 BC)

Advantages and disadvantages

Perhaps the most cited advantage of automation in industry is that it is associated with faster production and cheaper labor costs. Another benefit could be that it replaces hard, physical, or monotonous work. Additionally, tasks that take place in hazardous environments or that are otherwise beyond human capabilities can be done by machines, as machines can operate even under extreme temperatures or in atmospheres that are radioactive or toxic. They can also be maintained with simple quality checks. However, at the time being, not all tasks can be automated, and some tasks are more expensive to automate than others. Initial costs of installing the machinery in factory settings are high, and failure to maintain a system could result in the loss of the product itself. Moreover, some studies seem to indicate that industrial automation could impose ill effects beyond operational concerns, including worker displacement due to systemic loss of employment and compounded environmental damage; however, these findings are both

NISHA

convoluted and controversial in nature, and could potentially be circumvented.

MACHINE LEARNING

By

Dhivya .G

17BEI005

Machine learning is the scientific study of algorithms and statistical models. It used to effectively perform a specific task without using explicit instructions. It is used in applications like email filtering and computer vision .Machine learning reorganised as a separate field, started to flourish in the 1990s.The field changed its goal from achieving artificial intelligences to tackling solvable problems of a practical nature. Although machine learning has been transformative in some fields, machine learning programs often fails to deliver expected results. Reasons may be lack of data privacy problems, badly chosen tasks and algorithms. For example in 2018 a self driving car of Uber failed to detect a pedestrian who was killed after a collision. However there are some factors to correct these mistakes. They are Improved unsupervised algorithms, Enhanced personalisation, Increased adoption of quantum computing, Improved cognitive services, Rise of robots .Machine learning is one the most disruptive technologies of the 21st century .Though this technology can still be considered nascent, its future is bright. The above five predictions have just scratched the surface of what could be possible with machine learning . In the coming years ,we are likely to see more advanced applications that stretch its capabilities to unimaginable levels.

RENEWABLE ENERGY

By

P.Saravanan

18BEI018

Introduction

The world's energy needs could be reduced by one-third by 2050 if individuals and corporations work to save energy now and begin relying on renewable energy sources provided by power companies and personalized adoption. Renewable energy allows you to tap into natural resources that are replenished as part of the normal life cycle. Cut a tree down to burn for heat, and that tree is gone forever. Tap into the wind with a turbine to generate electricity, and the wind continues to blow. The Union of Concerned Scientists suggests the following clean renewable energy sources:

Wind Power.

The U.S. can produce more than 10 times its energy needs through wind power, one of the fastest-growing energy sources. Turbines use wind to generate electricity without creating pollutants.

Currently, this is one of the least expensive alternative fuel sources available. The obstacles to this resource's popularity include:

- Opposition to the towers that appear on the landscape
- Concerns about the long-term impact of the towers and turbines on the habitat.

Solar Power

The sun will be a source of energy for billions of years. The current technology to capture this energy includes photovoltaic panels, solar collectors and thin-film solar sheeting. The solar cells turn sunlight into electricity directly, so there is no need for a generator. It is a clean, non-polluting source of energy.

The challenges that this renewable energy source has include:

- Cost of the solar panels is still relatively high compared to other forms of energy

- Amount of energy generated by the cells is a product of insolation, or how much sun reaches the cells

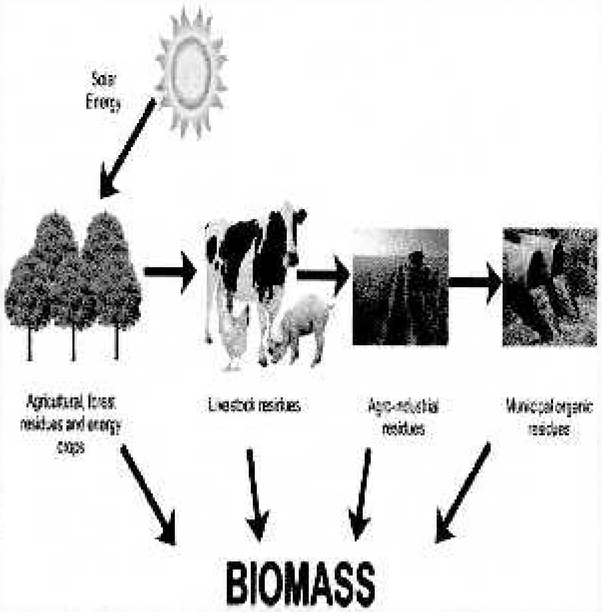
- Storage cell (battery) technology needs to advance to hold electricity to cover days of little to no sunshine

Biomass

This is the use of plant matter and animal waste to create electricity. When converted properly, it is a low-carbon source of energy with little pollution. Some of the challenges with this renewable resource include:

- This technology has not advanced as quickly as wind and solar, so it remains expensive

- If not managed correctly, it can have a negative impact on the environment



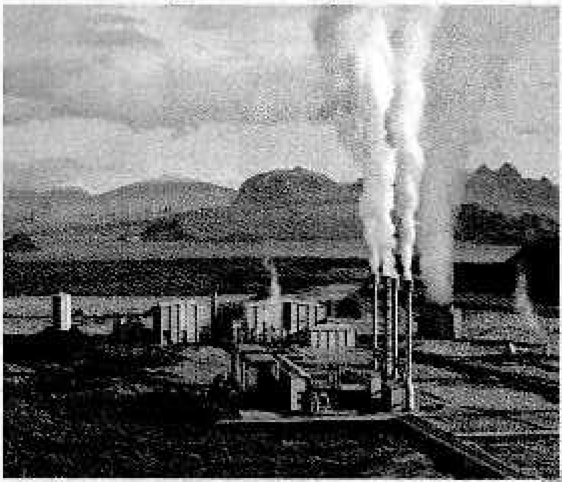
Geothermal Energy

This is the use of heated water and steam from the Earth to run power stations, which turn the steam into electricity. California has more than 40 geothermal power stations producing five percent of that state's needs. The Philippines, Iceland and El Salvador are all generating more than 25 percent of their electricity with geothermal plants.

Some of the challenges with this energy source are:

- Plants are expensive to build

· Location of the plants is limited to the most geothermally active areas



Hydroelectric Power

This uses flowing water to move turbines which generate electricity. Hydropower provides 20 percent of the world's energy needs, according to the United States Geological Survey.

There are several issues regarding the continued use of hydropower:

· Rivers must be dammed, which can have a severe impact on the land and wildlife

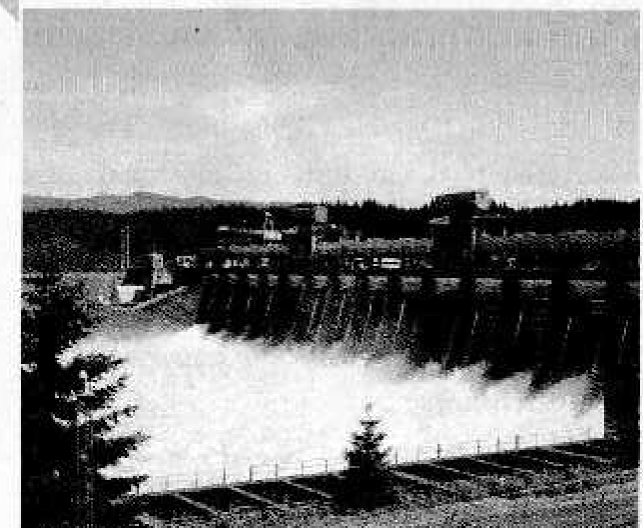
· This impact also affects communities that rely on fish that must travel through the dams

· The costs to build these dams is huge, and the return is slow. There are several motivations for learning about these options and how you may be able to use them in your home energy plan, including:

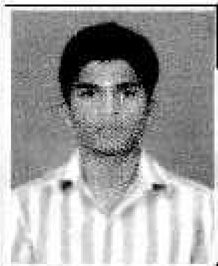
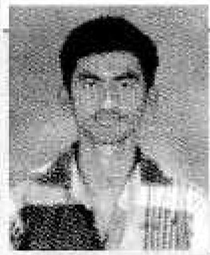
· They protect the environment from further damage.

· They use resources that will not run out

· There are government incentives for implementing renewable energy sources, as defined by the U.S. Department of Energy



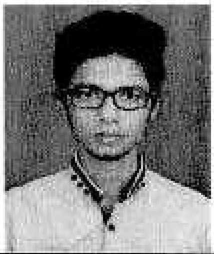
Dr.Mahalingam College of Engineering and Technology,Pollachi-03				
Department of Electronics and Instrumentation Engineering				
2018-19 Batch Placement Details				
S.No	**Name & Roll No**	**Photo**	**Company Placed**	**Salary Offered**
1	S.Dharani (15BEI015)		Soliton	4,50,000
2	S.PRIYADHARSHNI (15BEI028)		INFOSYS	3,60,000
3	K.ROSHINI SWATHIKA (15BEI026)		INFOSYS	3,60,000
4	C.PREETHI (15BEI006)		INFOSYS	3,60,000
5	K.DHAARANI (15BEI034)		INFOSYS	3,60,000

6	M.KAVUSHIKA(15BEI020)		INFOSYS	3,60,000
7	K.V.MANI RAMU (15BEI038)		INFOSYS/WIPRO	3,60,000
8	S.ARUN KUMAR (15BEI024)		INFOSYS	3,60,000
9	S.YAADESH (15BEI036)		INFOSYS	3,60,000
10	S.R.GAYATHRI (15BEI037)		INFOSYS	3,60,000

11	M.GIRI PRASAD (15BEI001)		INFOSYS	3,60,000
12	D.ABINASH (15BEI016)		VVDN	3,20,000
13	P.ISHWARYA (15BEI023)		VVDN	3,20,000
14	SRI JANANI G (15BEI007)		VVDN/NTT data	3,20,000
15	K.VIGNESH (15BEI027)		Dattapatterns	2,16,000
16	B.GOKUL PRASATH (15BEI018)		Tessolve	2,40,000

17	AISHWARYASRI V (15BEI019)		NTT data	3,00,000
18	SANJEEV R (15BEI012)		Wipro/NTT data	3,40,000
19	SREETHI P.A (15BEI035)		NTT data	3,00,000
20	GANAPATHI RAJ A (15BEI005)		NTT data	3,00,000
21	RATHIDEVI S (15BEI017)		LMW/CTS	3,40,000
22	DIVYA P (15BEI031)		Maestero	2,00,000

23	DIVYA M (15BEI039)		Maestero	2,00,000
24	AMOSE VASANTH S (15BEI010)		Maestero	2,00,000
25	KRITHIKA A (15BEI009)		XCEL corp	2,40,000
26	HARISH V (15BEI033)		Voltech/ XCELcorp	3,00,000
27	SURENDAR PANDI M (15BEI040)		Voltech/IDBI	3,00,000
28	DIVIYA DHARSHINI R (15BEI011)		CSS corp	200,000

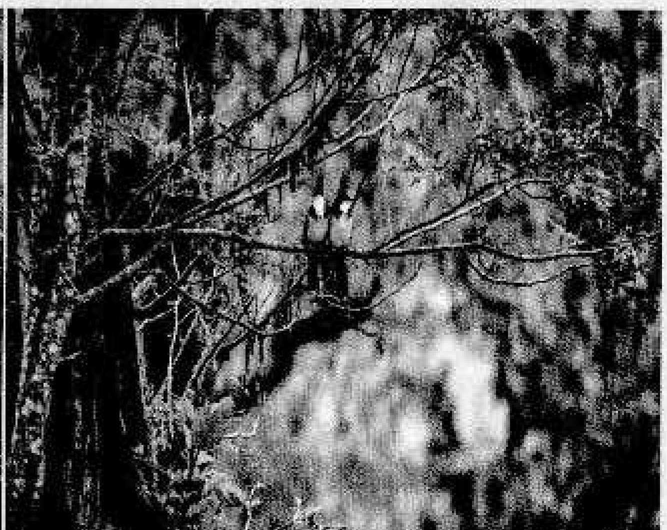
29	SUJITH KUMAR S (15BEI004)		Kotak Mahindara	3,00,000
30	ABEESH.R (15BEI043)		Voltech	2,16,000
31	PRANAV JP (16BEI302`)		Voltech	2,16,000
32	MANOJ KUMAR.S (15BEI002)		Voltech	2,16,000
	Number of students on roll			**43**
	No of Students Registered on Eligible			**31**
	No of students placed on eligible			**29**
	Total No of students placed			**32**
	No of students holding dual offer			**7**
	Percentage on eligible			**93.5**
	Average CTC			**315000**

Photos by

Nithish Prabu. S - II year.

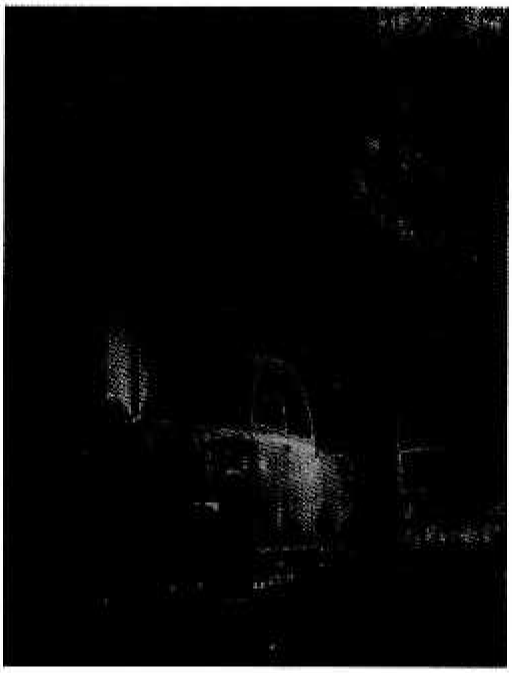
Photos by

Pravinkumar. M - II year.



Photos by

Siva chand. S - II year.



S.No.	Roll. No.	Name.	Signature.
1	16BEI035	M. Purusoth Ramanan	Purusoth Ramanan M
2.	16BEI044	S.K. Naresh	[illegible]
3.	16BEI036	R. Soundarrajan	R. [illegible]
4.	16BEI019	K. Gokulraj	K. Gokulraj
5.	16BEI041	Bharanidharan. M	M.Bharanidharan
6.	17BEI036	K. Vishnu Priya	[illegible]
7)	17BEI031	J.P. Pragathi	[illegible]
8)	17BEI034	Tamilmullai Mani Mozhi D.	[illegible]
9)	17BEI047	N. Naveen.	[illegible]
10.	16BEI039	V. Bhavya Maruthi	[illegible]
11.	17BEI009	M.NARMATHASREE	M.[illegible]
12.	16BEI048	J. Burkesh Ramanan	[illegible]
13.	16BEI047.	D. Santhosh Kumar	[illegible]
14.	17BEI301	K. Gopal.	K.[illegible]
15	17BEI044	S. Mohammed Riyaz	S.[illegible]
16	16BEI046	R. Mohammed Asri	R.[illegible]
17	16BEI023	R. Manikandan	[illegible]
18.	17BEI302	S. Meenatchi Sundaram	S.[illegible]
19	16BEI040	S.praveen kumar	S[illegible]

“HUMANS FOOT IS A MASTER PIECE OF ENGINEERING AND A WORK OF ART”