Programme Educational Objectives(PEOs)

PEO1 (Core Competency) : Graduates will acquire a strong foundation in mathematical, scientific and engineering fundamentals necessary to formulate, solve and analyze Computer Science and Engineering problems.

PEO2 (Professionalism) : Graduates will practice the profession with ethics, integrity and leadership to relate engineering to global perspective issues and social context.

PEO3 (Higher Studies and Entrepreneurship) : Graduates will be prepared for their careers in the software industry or in higher studies leading to research and for applying the spirit of innovation and entrepreneurship in their career and continuing to develop their professional knowledge on a life long basis.

Programme Outcomes(POs)

PO1: Engineering knowledge: Ability to apply the knowledge of mathematics, physical sciences and computer science and engineering specialization to the solution of complex engineering problems.

PO2: Problem analysis: Ability to identify, formulate and analyze complex real life problems in order to provide meaningful solutions by applying knowledge acquired in computer science and engineering.

PO3: Design/development of solutions: Ability to design cost effective software / hardware solutions to meet desired needs of customers/clients.

PO4: 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 in the field of computer science and engineering.

PO5: Modern tool usage: Create, select and apply appropriate techniques, resources and modern computer science and engineering tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6: 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.

PO7: 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.

PO8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO10: 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.

PO11: 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 multidisciplinary environments.

PO12: Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

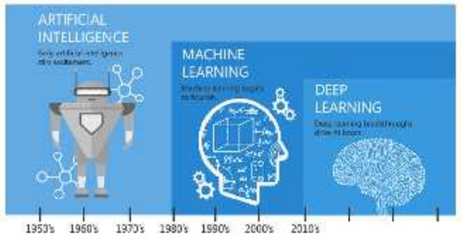
Programme Specific Outcomes (PSOs)

PSO1: Software System Design and Development: The ability to apply software development life cycle principles to design and develop the application software that meet the automation needs of society and industry.

PSO2: Computing and Research ability: The ability to employ modern computer languages, environments and platforms in creating innovative career paths in SMAC (Social, Mobile, Analytics and Cloud) technologies.

K S R INSTITUTE FOR ENGINEERING AND TECHNOLOGY
K.S.R KALVI NAGAR, TIRUCHENGODE - 637 215
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
KSRIET
TECH ZEST
Fuel Your Mind
July - 2016 - Volume IV / Issue I

Grid and Cloud Computing



K S R Institute for Engineering and Technology

Vision

To become a globalLy recognized Institution in Engineering Education, Research and Entrepreneurship.

Mission

IM1: Accomplish quality education through improved teaching learning process.
IM2: Enrich technical skills with state of the art laboratories and facilities.
IM3: Enhance research and entrepreneurship activities to meet the industrial and societal needs

Department of Computer Science and Engineering

Vision

To produce globally competitive Computer Science Engineers and Entrepreneurs with moral values.

Mission

DM1 (Quality Education) : Provide quality education to enhance problem solving skills, leadership qualities, team spirit and ethical responsibilities.

DM2 (State of art Laboratory) : Enable the students to adapt to the rapidly changing technologies by providing advanced laboratories and facilities.

DM3 (Research and Development) : Promote research based activities in the emerging areas of techno-environment in order to meet industrial and societal needs.

INTRODUCTION

Cloud Computing is For Service Oriented where as Grid Computing is for Application Oriented. Grid computing is used to build Virtual supercomputer using a middleware to achieve a common task that can be shared among several resources. Most probably this task will be kind of computing or data storage.

Cloud Computing is the use of hardware and software to deliver a service over a network (typically the Internet). With cloud computing, users can access files and use applications from any device that can access the Internet. An example of a Cloud Computing provider is Google's Gmail.

A reliable and efficient communications system is required for the robust, affordable and secure supply of power through Smart Grids (SG). Computational requirements for Smart Grid applications can be met by utilizing the Cloud Computing (CC) model. Flexible resources and services shared in network, parallel processing and omnipresent access are some features of

Many companies are delivering services from the cloud. Some notable examples,

R.Selvaganapathi, III / CSE

CHARACTERISTICS OF CLOUD

- 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.

- On-demand self-service - Users are able to provision cloud computing resources without requiring human interaction, mostly done though a web-based self-service portal (management console).

- 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).

- 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 to be unlimited and can be appropriated in any quantity at any time.

S.Vinitha, III / CSE

☢ Experts predict that 40 zettabytes of data will be held in the cloud by 2020. ☢

LANGUAGE CORNER :

JAVA SCRIPT : JavaScript (JS) is a lightweight, interpreted or JIT compiled programming language with first-class functions. Most well-known as the scripting language for Web pages, many non-browser environments also use it, such as nodeJS and Apache CouchDB.

PHP: Hypertext Preprocessor is a widely-used open source general-purpose scriptinglanguage that is especially suited for web development and can be embedded into HTML.

ASP- Active Server Pages, later known as Classic ASP or ASP Classic, is Microsoft's first server-side script engine for dynamically generated web pages.

AJAX- AJAX stands for Asynchronous JavaScript and XML.AJAX is a new technique for creating better, faster, and more interactive web applications with the help of XML, HTML, CSS, and Java Script.

PERL- Perl is a family of two high-level, general-purpose, interpreted, dynamic programming languages, Perl 5 and Perl 6. Though Perl is not officially an acronym, there are various backronyms in use, including "Practical Extraction and Reporting Language".

JAVA-Java is a general-purpose computer-programming language that is concurrent, class-based, object-oriented, and specifically designed to have as few implementation dependencies as possible. SQL- SQL is a domain-specific language used in programming and designed for managing data held in a relational database management system, or for stream processing in a relational data stream management system.

S.Sathya, IV / CSE

QUIZ

1. Based on the current market, which of these are popular languages being used to develop cloud applications?
   a) JavaScript, XML, PHP
   b) C++, Visual Basic, Flash
   c) Ubercode, Yorick, ZOPL

2.What oft-neglected virtualization player is ranked closely behind VMware and Xen in the transition to the cloud, in addition to being a web hosting staple?
   a) Oracle
   b) Parallels
   c) HP

3. Amazon Elastic Cloud Computing is a facility for quickly providing virtual servers. This is an example of:
   a) IAAS
   b) PAAS
   c) SAAS
   d) None of the above

4. Identify the missing word in the following sentence. Private clouds are operated solely for _____ organizations.
   a) A spcific
   b) Several
   c) Govermental
   d) For-profit

5. For which of the following workloads can cloud computing have the greatest benefit?
   a) Fixed and predictable workloads
   b) Unexpectedly varying workloads
   c) Steadily increasing workloads
   d) Steadily decreasing workloads

K.Vinothini, IV / CSE

☢ 56% of organization are seeking to hire staff with cloud expertise. ☢

TERRAFORMS:

Terraform is the first multi-cloud immutable infrastructure tool that was introduced to the world by HashiCorp, released three years ago.Terraform is a tool and has become more popular because it has a simple syntax that allows easy modularity and works against multi-cloud.

Terraform is an open source tool that you use to write declarative configuration files to create and modify infrastructure, but it's not exactly a —configuration automation tool.‖Terraform can help you automatically configure these resources with the aid of extensive resource graphing and execution plans. But you'll still likely need a configuration management tool like Puppet or Chef to help you automate the setup and execution of the software on those resources.

HashiCorp Terraform

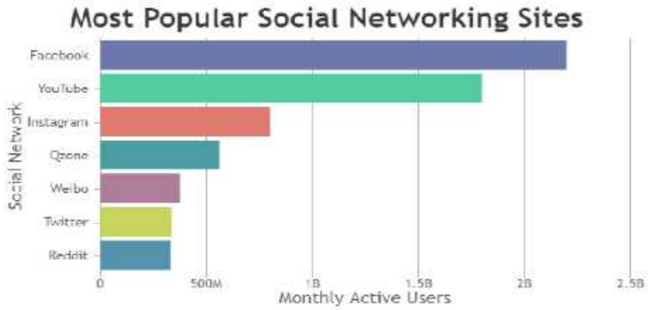
P.Lavanya, M.Poornima, III / CSE

APPLICATIONS

1. SOCIAL NETWORKING:

Social networking is the practice of expanding the number of one's business and/or social contacts by making connections through individuals, often through social media sites such as Facebook, Twitter, LinkedIn and Google+. Social Media is the most popular and often overlooked application of cloud computing. Facebook, LinkedIn, MySpace, Twitter, and many other social networking sites use cloud computing. Social networking sites are designed to find people you already know or would like to know. In course of finding people, we end up sharing a lot of personal information. Cloud has provided sophisticated solutions to companies as well as individuals.

If you are looking for a service provider to help you leverage cloud then NewGenApps can be a partner of choice. We have worked on many popular cloud platforms like AWS and Azure. Online privacy will always be a hot topic, especially with giants databases such as Google's who is basically watching our every move. Still, to make things easier for its users, Google offers a tool called Privacy Checkup you can use to review and adjust privacy settings as you see it fit. The core focus of cloud security is keeping your data secure. Understand that the onus of cloud security not only rests on you but also on the cloud service provider. The system is designed to provide end-to-end confidentiality for enterprise users, and is built on the assumption that the cloud itself doesn't necessarily keep users' messages confidential.



C.Saathika Devi, IV / CSE

2. DIGITAL VIDEO SOFTWARE:

Digital Video Editing software is software that allows you to use your computer to edit video and audio, usually via a standard or modified computer keyboard and mouse. It can also be software that is incorporated into a turnkey video editing system that consists of a custom, dedicated computer for editing. Final Cut Pro, Avid, Vegas Video, Adobe Premiere, and Pinnacle Studio are examples of video editing software. The Casablanca, Kron, and Video Toaster are examples of turnkey video editing systems that contain video editing software. Hulu is a free application for videos that are found online for free. Cloud users can download popular movies, television shows, and documentaries and view them on their web-browser. Hulu is a joint venture of three firms viz. - Fox Entertainment Group, NBC Universal and ABC Inc. There are other popular video sites like - WatchMoviesOnline, the most famous YouTube, Google video, etc. Video editing usually requires specialist software, but there are some excellent online tools around that are just as powerful. The online video makers are, Movie Maker Online, itoodoo,ClipChamp,viva video maker, Adobe Spark and imovie.

M.Ragul IV / CSE

☢ The first computer mouse, constructed in 1964, was made out of wood. ☢

3.BIG DATA ANALYSIS:

Big data is a term used to refer to data sets that are too large or complex for traditional data-processing application software to adequately deal with. Data with many cases offer greater statistical power, while data with higher complexity may lead to a higher false discovery rate. Cloud services make mining massive amounts of data possible by providing higher processing power and sophisticated tools. There are many open source big data analytical tools that are based on the cloud for instance Hadoop, Cassandra, HPCC etc. Without the cloud, it won't be very difficult to collect and analyze data in real time, especially for small companies. By processing the data in motion, real-time Big Data Processing enables you to walk in parallel with the current landscape of your Business and turn data intelligence into vital business decisions. Whether it is positive, negative or neutral, a clear picture can be visualized about the current status of the projects.

M.Kannan, IV / CSE

BENEFITS OF BIG DATA :

GAINING INSIGHTS:

In older times, when even storing and managing big data was considered as a tedious task, let alone analyzing the data to gain benefits from it, a very huge amount of data was going unused and wasted. Data that could contain important information which could help gain insights about the businesses or industries.

PREDICTION AND DECISION MAKING:

Now that the organizations are able to analyze Big Data, they have successfully started using Big Data to mitigate risks, revolving around various factors of their businesses. Using Big Data to reduce the risks regarding the decisions of the organizations and making predictions has become one of the many benefits coming from big data in industries.

R.Pradeep Kumar, II / CSE

☢ More than 2% of electricity in the US is consumed by data centers ☢

4. TWITTER-RELATED APPLICATIONS:

A website application that assists Twitter users with unfollower management and general maintenance tasks. NutshellMail. Website, an application that allows users to send tweets, direct message, reply, retweet, follow and search Twitter from any email inbox. All kind of communication messages are passing across the cloud and uses cloud storage. Tweets flying on cloud can be reached most of them by spreading as a short small-sized unique URL. When a user clicks that small unique URL, it redirects the user to that real website. Sometimes it seems harmful as hackers can put malicious attachments or programs with it which can further affect the user. Once made a partnership with Twitter, to allow twitter users to use shortened URLs. There is also another site name Twitpic which allows the user to upload pictures to be linked from twitter. It uses twitters login, creates shorterened URLs that can be invoked from twitter.

TWITPIC-

TwitPic was a website and app that allowed users to post pictures to the Twitter microblogging service. TwitPic was often used by citizen journalists to upload and distribute pictures in near realtime as an event was taking place.

TWITPANE-

TwitPane is a light weight and powerful Twitter app. More useful and customizable app than official app.

P.Siva Sakthivel, II / CSE

5. COMMUNICATION:

Cloud communications are Internet-based data communications and voice where telecommunications applications, switching and storage are hosted by a third-party outside of the organization using them, and they are accessed over the public Internet. The cloud allows users to enjoy network-based access to communication tools like emails and calendars. Most of the communication with messaging and calling applications like,

Are also based on cloud infrastructure. All your messages and information are stored on the service provider's hardware rather than on internet.

Cloud communications is the blending of multiple communication modalities. These include methods such as voice, email, chat and video, in an integrated fashion to reduce or eliminate communication lag. Cloud communications is essentially internet-based communication.

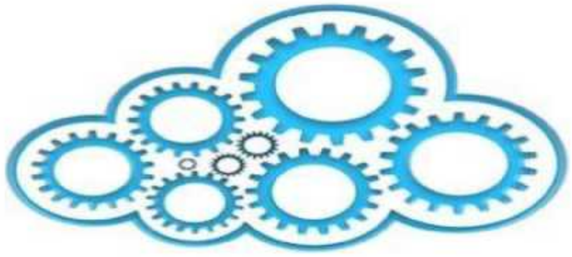
A.Janani, II / CSE

By 2020 cloud computing will cross the $270 billion mark.

TOOLS OF CLOUD COMPUTING:

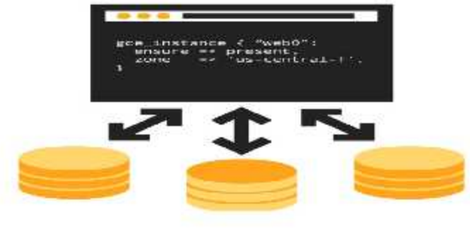
ANSIBLE:

Ansible is a radically simple IT automation engine that automates cloud provisioning, configuration management, application deployment, intra-service orchestration, and many other IT needs. Recently brought under the RedHat umbrella, Ansible is quickly becoming an industry standard based on its easy-to-use, task-based infrastructure automation. Major integrations include AWS, Microsoft Azure Cloud Computing, VMware, Rackspace, Digital Ocean, and Google Cloud Computing. Ansible boasts that you don't need an advanced degree in computer science to write automation, configuration, or orchestration tasks in its simple language, which you package in playbooks.



PUPPET:

Puppet is an open source systems management tool for centralizing and automating configuration management. Configuration management is the detailed recording and updating of information that describes an enterprise's hardware and software. A longtime leader in the configuration automation market, Puppet helps some of today's largest software teams model, configure, and systematically enforce desired configurations of their infrastructures. With Puppet Enterprise the company's commercial offering—you can manage all aspects of your cloud-based infrastructure, from compute to storage to networking resources, at an impressive scale (think upwards of 20,000 nodes for a basic deployment). And it works on public, private, and hybrid



CHEF:

Chef is an infrastructure automation framework that makes it easy to setup, configure, deploy, and manage servers and applications to any environment (physical/virtual/cloud). With Chef you can code your infrastructure (called 'recipes') and use the recipes to setup the infrastructure. Chef is another veteran player in the infrastructure configuration game. Like Puppet, Chef provides its own DSL to help you enforce everything from configuration policies to continuous delivery of production code. For Chef Automate users (Chef's commercial platform), you can automate the management of your self-hosted AWS-based infrastructure on an hourly basis or use AWS Opswork for Chef Automate.

KUBERNETES:

Kubernetes is an open source container orchestration tool designed to automate deploying, scaling, and operating containerized applications. Kubernetes was born from Google's 15-year experience running production workloads. It is designed to grow from tens, thousands, or even millions of containers. Originally developed by Google, Kubernetes is a container orchestration platform for automating the deployment, scaling, and management of containerized applications. In fact, it's established itself as the defacto standard for container orchestration and is the flagship project of the Cloud Native Computing Foundation, backed by key players like Google, AWS, Microsoft, IBM, Intel, Cisco, and RedHat.

T.E.Elakkiya,II / CSE & R.Divya, III / CSE

82 percent of all companies saved money in their last cloud adoption project.