SUTANTRA

_Information for enlightening

INFORMATION TECHNOLOGY

July-2016

About Department

The Department of IT was established in the year 2001 to groom the student of A.P for the requirements of IT industry. The Department has emerged as a reputed center of learning in the coastal districts of Andhra Pradesh. Footprints of the department´s students can be found in most of the local and global software majors. Student of this department mainly, brought glory to the college by securing University Rank.The department strives to empower the students, to achieve the demanding standards of IT industry, by bringing about a synergistic a cademic environment wherein cutting edge technologies, industry experts, faculty and students are engaged in a sustained interaction.

Vision of the Institute

To emerge as a Premier Institution for Technical Education in the Country through Academic Excellence and to be recognized as a Centre for Excellence in Research & Development, catering to the needs of our Country.

Mission of the Institute

To realize a strong Institution by consistently maintaining State-of-art infrastructure and building a cohesive, World Class Team and provide need based Technical Education, Research and Development through enhanced Industry Interaction.

Department Vision

To attain academic excellence in the field of Information Technology and research serving to the needs of the society through technological developments.

Department Mission

M1: To create stimulating learning ambiance by providing state-of-art infrastructure and to induce innovative and problem-solving capabilities to address societal challenges.
M2: To impart quality technical education with professional team to make the graduates globally competent to IT Enabled Services.
M3: To strengthen industry-academia relationship for enhancing research capabilities.

Program Specific Outcomes

PSO1:

Develop software programs in various programming languages learnt to create the software applications to solve the real life problems of the society.

PSO2:

Excel in emerging software tools and technologies.

PSO3:

Effectively transform their ideas and bring consensus for the transformation of the idea into a usable software product / application.

Program Educational Objectives

PEO 1:

To have a successful career in IT as researchers, entrepreneurs and IT professionals satisfying the needs of the society.

PEO 2:

To motivate students towards higher education and incline them towards continuous learning process.

PEO 3:

To inculcate professional ethics of IT industry and prepare them with effective soft skills essential to work in teams.

PROGRAM OUTCOMES

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,

3. Design/development of solutions:

Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriateconsideration 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 isocietal 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 multidisciplinary 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 multid isciplinary environments.

12. 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.

JAVA

Java is an object-oriented programming language developed by James Gosling and colleagues at Sun Microsystems in the early 1990s. Unlike conventional languages which are generally designed either to be compiled to native (machine) code, or to be interpreted from source code at runtime, Java is intended to be compiled to a bytecode, which is then run (generally using JIT compilation) by a Java Virtual Machine. The language itself borrows much syntax from C and C++ but has a simpler object model and fewer low-level facilities. Java is only distantly related to JavaScript, though they have similar names and share a C-like syntax. Java was started as a project called "Oak" by James Gosling in June 1991. Gosling's goals were to implement a virtual machine and a language that had a familiar C-like notation but with greater uniformity and simplicity than C/C++. The first public implementation was Java 1.0 in 1995. It made the promise of "Write Once, Run Anywhere", with free runtimes on popular platforms. It was fairly secure and its security was configurable, allowing for network and file access to be limited. The major web browsers soon incorporated it into their standard configurations in a secure "applet" configuration. popular quickly. New versions for large and small platforms (J2EE and J2ME) soon were designed with the advent of "Java 2". Sun has not announced any plans for a "Java 3". In 1997, Sun approached the ISO/IEC JTC1 standards body and later the Ecma International to formalize Java, but it soon withdrew from the process. Java remains a proprietary de facto standard that is controlled through the Java Community Process. Sun makes most of its Java implementations available without charge, with revenue being generated by specialized products such as the Java Enterprise System. Sun distinguishes between its Software Development Kit (SDK) and Runtime Environment (JRE) which is a subset of the SDK, the primary distinction being that in the JRE the compiler is not present. The first characteristic, object orientation ("OO"), refers to a method of programming and language design. Although there are many interpretations of OO, one primary distinguishing idea is to design software so that the various types of data it manipulates are combined together with their relevant operations. Thus, data and code are combined into entities called objects. An object can be thought of as a self-contained bundle of behavior (code) and state (data). The principle is to separate the things that change from the things that stay the same; often, a change to some data structure requires a corresponding change to the code that operates on that data, or vice versa. This separation into coherent objects provides a more stable foundation for a software system's design. The intent is to make large software projects easier to manage, thus improving quality and reducing the number of failed projects.

Mr. P. Surya Prabhakara Rao
Assistant Professor

BIG DATA

In order to explain a new model for data utilization, the locution “Big Data” has recently been emerging. These new hi-techs, in the field of Information Technology, tend to emerge very often and with a huge publicity, however the point of difference takes some time to be recognized. Big Data (also known as BD) is distinct in numerous ways such as volume (too big), velocity (faster arrival) variability (quick changes), veracity (much commotion), and variety (diversity). Using orthodox propositions and procedures this Big Data is processed in limited reckoning arrangements. Even the technologies introduced to support BD contain different variety of presentations, which ultimately make it hard to stimulate the creation of tools and applications to help encompass data from numerous sources. This study therefore identifies possible areas for uniformity within the BD technology expanse Multifaceted and huge datasets have various types of different and important features that are closely in resemblance with “Big Data”. To administer these datasets is troublesome with the traditional information preparing frameworks. Furthermore, data storage, data transition, data visualization, data penetrating, data analysis, data security, data privacy violations and sharing propose different uphill challenges that the “Big Data” reinforces To potentially grasp the supplementary information sets the Big Data is appropriate as a contemplation that highlights the dearth of ability of habitual information structures. The emergence of Big Data model transpires when the compute of the data is either in take it easy or in motion; it forcedly induces the management of data in the system engineering design to become a significant driver. Basically the Big Data Model represents a paradigm shift in the data infrastructures i.e. from substantial systems with perpendicular mount into a parallel mounted system that coalesce an unbounded connected set of reserves. This change from perpendicular to parallel predicates some different problems in some dissimilar areas such as information deliverance, information orchestrating, and inactivity in the consistency across schematics, stack stabilizing, and process deficiencies and their interdependencies on single hand. On other hand, the Big Data model uses different contraptions to provide the clamber in data handling, but embodies the same shift again. The reason for this move is to bargain out codes and information crosswise over inexactly coupled assets and match the scaling in information. As to produce additional knowledge about the data a different purpose of residing and retrieve huge amounts of data is to execute analysis. In the olden days, the assay was usually attained on an undirected sample of the data The word “Big Data” contains assortment of distinctiveness, it is used in various contexts. To identify with where ideology will appropriately assist backing the big data model, in order to find what the term really means we have to stretch our knowledge to some extent of consonance. The “Big Data” is a gathering of information with unique excellence (e.g. capacity, momentum, array, range, precision, etc.) that for a problem realm at any given moment can't be expertly handled using current/accessible/apperceived/routine advancements and strategies with a specific end goal to concentrate esteem.

Mrs. G. Surya Kala Eswari
Assistant Prossor

DATA ANALYTICS

Data analytics (DA) is the process of examining data sets in order to draw conclusions about the information they contain, increasingly with the aid of specialized systems and software. Data analytics technologies and techniques are widely used in commercial industries to enable organizations to make more-informed business decisions and by scientists and researchers to verify or disprove scientific models, theories and hypotheses. As a term, data analytics predominantly refers to an assortment of applications, from basic business intelligence (BI), reporting and online analytical processing (OLAP) to various forms of advanced analytics. In that sense, it's similar in nature to business analytics, another umbrella term for approaches to analyzing data -- with the difference that the latter is oriented to business uses, while data analytics has a broader focus. The expansive view of the term isn't universal, though: In some cases, people use data analytics specifically to mean advanced analytics, treating BI as a separate category. Data analytics initiatives can help businesses increase revenues, improve operational efficiency, optimize marketing campaigns and customer service efforts, respond more quickly to emerging market trends and gain a competitive edge over rivals -- all with the ultimate goal of boosting business performance. Depending on the particular application, the data that's analyzed can consist of either historical records or new information that has been processed for real-time analytics uses. In addition, it can come from a mix of internal systems and external data sources. At a high level, data analytics methodologies include exploratory data analysis (EDA), which aims to find patterns and relationships in data, and confirmatory data analysis (CDA), which applies statistical techniques to determine whether hypotheses about a data set are true or false. EDA is often compared to detective work, while CDA is akin to the work of a judge or jury during a court trial -- a distinction first drawn by statistician John W. Tukey in his 1977 book Exploratory Data Analysis. Data analytics can also be separated into quantitative data analysis and qualitative data analysis. The former involves analysis of numerical data with quantifiable variables that can be compared or measured statistically. The qualitative approach is more interpretive -- it focuses on understanding the content of non-numerical data like text, images, audio and video, including common phrases, themes and points of view. At the application level, BI and reporting provides business executives and other corporate workers with actionable information about key performance indicators, business operations, customers and more. In the past, data queries and reports typically were created for end users by BI developers working in IT or for a centralized BI team; now, organizations increasingly use self-service BI tools that let execs, business analysts and operational workers run their own ad hoc queries and build reports themselves.

Mrs. P.V. Komali
Assistant Professor

HADOOP

Hadoop is an open source framework overseen by Apache Software Foundation which is written in Java for storing and processing of huge datasets with the cluster of commodity hardware. There are mainly two problems with the big data. First one is to store such a huge amount of data and the second one is to process that stored data. The traditional approach like RDBMS is not sufficient due to the heterogeneity of the data. So Hadoop comes as the solution to the problem of big data i.e. storing and processing the big data with some extra capabilities. There are mainly two components of Hadoop which are Hadoop Distributed File System (HDFS) and Yet Another Resource Negotiator(YARN). Hadoop was started with Doug Cutting and Mike Cafarella in the year 2002 when they both started to work on Apache Nutch project. Apache Nutch project was the process of building a search engine system that can index 1 billion pages. After a lot of research on Nutch, they concluded that such a system will cost around half a million dollars in hardware, and along with a monthly running cost of $30, 000 approximately, which is very expensive. So, they realized that their project architecture will not be capable enough to the workaround with billions of pages on the web. So they were looking for a feasible solution which can reduce the implementation cost as well as the problem of storing and processing of large datasets. In 2003, they came across a paper that described the architecture of Google's distributed file system, called GFS (Google File System) which was published by Google, for storing the large data sets. Now they realize that this paper can solve their problem of storing very large files which were being generated because of web crawling and indexing processes. But this paper was just the half solution to their problem. In 2004, Google published one more paper on the technique MapReduce, which was the solution of processing those large datasets. Now this paper was another half solution for Doug Cutting and Mike Cafarella for their Nutch project. These both techniques (GFS & MapReduce) were just on white paper at Google. Google didn't implement these two techniques. Doug Cutting knew from his work on Apache Lucene (It is a free and open-source information retrieval software library, originally written in Java by Doug Cutting in 1999) that open-source is a great way to spread the technology to more people. So, together with Mike Cafarella, he started implementing Google's techniques (GFS & MapReduce) as open-source in the Apache Nutch project. In 2005, Cutting found that Nutch is limited to only 20-to-40 node clusters. He soon realized two problems:

Nutch wouldn't achieve its potential until it ran reliably on the larger clusters And that was looking impossible with just two people (Doug Cutting & Mike Cafarella).

The engineering task in Nutch project was much bigger than he realized. So he started to find a job with a company who is interested in investing in their efforts. And he found Yahoo!.Yahoo had a large team of engineers that was eager to work on this there project.

Mrs. Y. Srilatha
Assistant Professor

Cognitive Cloud Computing:

Cognitive Cloud is an extended ecosystem of traditional Cloud and Cognitive Computing.

It's due to this, you can create Cognitive Computing applications and bring to the masses through cloud deployments. Cognitive computing is considered as the next big evolution in the IT industry.

It converses in human language and helps experts in better decision making by understanding the complexities of Big Data. Its market size is expected to generate revenue of $13.8 billion by 2020 and is one of the top 10 trending technologies to consider this year.

Big brands such as IBM, Google, Microsoft, Cisco have already started implementing this next-gen tech to gear up for the upcoming market.

A.RASHMIKA
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DevOps:

DevOps Training – Explore the Curriculum to Master DevOps tools.
This is the odd one out in the list. It is not a technology, but a methodology. DevOps is a methodology that ensures that both the development and operations
go hand in hand. DevOps cycle is picturized as an infinite loop representing the
integration of developers and operation teams by:
automating infrastructure,
workflows and
continuously measuring application performance.
It is basically the process of continual improvement, so why not start with yourself.

A.B.PRIYANKA
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