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VISION:

To be well recognized department in technology to meet the growing needs of the industry and society.

MISSION:

- Imparting quality education through a well-designed curriculum which improves basic and disciplinary knowledge of the subject.
- To train the students to design, develop and test world class software systems.
- To inculcate the spirit of analysis, teamwork, innovation and professionalism among the students.
- To train students with hand and soft skills for their future jobs, higher studies and to be an entrepreneur.

❖ Technical Articles

A Quick Look at Hadoop Security

Miss. Desai Shakira

In this era of Big Data, with cheap data storage devices and cheap processing power becoming available, organizations are collecting massive volumes of data, with the intent of deriving insights and making decisions. While most of the focus is on collecting data, having all data at one place increases the risk of data security and any kind of data breach can lead to negative publicity and a loss of customer confidence. Hadoop is one of the main technologies powering Big Data implementations. In this article, we cover some of the ways in which data security can be ensured while implementing Big solutions using Hadoop.

Evolution of Hadoop Security:

During the initial development of Hadoop, security was not a prime focus area. In most of the cases, the Hadoop platform was being developed using data sets where security was not a prime concern because the data was publicly available. However, as Hadoop has become main stream, organizations are putting a lot of data from varied sources onto a Hadoop cluster, creating a possible data security situation. The Hadoop community has realized that more robust Security controls are needed and has decided to focus on the security aspect and new security features are being developed. While the use of basic features provided by Hadoop itself is of importance, organizations cannot be parochial; instead they must have a holistic approach for securing Hadoop. Hadoop security in itself is a very vast area and ever evolving to cater to the growing market. A high level overview of Hadoop security is given in the following sections.

Big Data Security – A Three –Tier Approach

Hadoop security can be considered to be a multi-layered approach. Each layer has Different set of security approaches and techniques, as depicted.

Data Transfer & Integration Layer

The first layer of security is at the integration cusp between the different source systems and Hadoop ecosystem. For data ingestion into and dissemination out of Hadoop, there are different methods and techniques which can transfer data back and forth from source systems. Security aspects of some of the tools/techniques for data transfer are listed below:

• Apache Flume – Flume can be used for collecting, aggregating, and moving large amounts of data from multiple sources into Hadoop Distributed File System (HDFS). If multiple users need to transfer the data using Flume agent to HDFS, proxy users can be created and mapped to a single principal user. Alternately, Kerberos principal can be used to access Hadoop directly

• Apache Sqoop – Apache Sqoop can be used to transfer data to and from relational databases to Hadoop. It provides role-based access and execution restrictions using 'Admin' and 'Operator' roles. This enforces restrictions on execution of activities like import and export of data by end users.

- External Tools – Extract, Transform and Load (ETL) tools or custom built applications can connect to Hadoop data stores like HBase or Hive. These data stores support Kerberos, Lightweight Directory Access Protocol (LDAP) & custom pluggable authentication. The external applications can access Hadoop as itself or by impersonating the connected user using proxy privileges which can be configured in Hadoop.

• File Transfer – Secured File Transfer Protocol (SFTP) is a good option for data transfer. Also if an FTP server is to be used, then it will be better to use single user access of FTP server or use proxy user credentials with required permissions

OS Layer - Authorization & Authentication

The Hadoop file system is similar to a Portable Operating System Interface for Unix (POSIX) file system and gives administrators and users the ability to apply file permissions and controls read and write access. For overcoming the OS related concerns, Hadoop should be configured using a user id, which is not the root user or is not part of the root users group. This user can act as a super-user for Hadoop Name Node and can have the rights to start and stop Hadoop processes. In a Hadoop ecosystem, several users, namely 'hdfs', 'mapred', 'yarn' are created during installation.

Hadoop Integral Security Layer

Hadoop provides several security control features. Subsequent releases of Hadoop are expected to provide enhanced security features. Following are some of the essential security features available in Hadoop: Authentication, Authorization, EncryptionOperating Systems have developed a lot in last 15 years.

Li-Fi TECHNOLOGY

Miss. Mahajan Mayuri M.

Li-Fi is a wireless optical networking technology that uses light-emitting diodes (LEDs) for data transmission. Li-Fi is designed to use LED light bulbs similar to those currently in use in many energy-conscious homes and offices. However, Li-Fi bulbs are outfitted with a chip that modulates the light imperceptibly for optical data transmission. Li-Fi data is transmitted by the LED bulbs and received by photoreceptors. Li-Fi's early developmental models were capable of 150 megabits-per-second (Mbps).

Some commercial kits enabling that speed have been released. In the lab, with stronger LEDs and different technology, researchers have enabled 10 gigabits-per-second (Gbps), which is faster than 802.11ad. Li-Fi, an alternative to Wi-Fi that transmits data using the spectrum of visible light, has achieved a new breakthrough, with UK scientists reporting transmission speeds of 10Gbit/s – more than 250 times faster than 'superfast' broadband. The fastest speed previously reported was 3Gbit/s, achieved earlier this year by the Fraunhofer Heinrich Hertz Institute in Germany. Chinese researchers also claimed this month to have produced a 150Mbp/s connection, but some experts were doubtful without seeing further proof. Many experts claim that Li-Fi represents the future of mobile internet thanks to its reduced costs and greater efficiency compared to traditional Wi-Fi. Both Wi-Fi and Li-Fi transmit data over the electromagnetic spectrum, but whereas Wi-Fi utilizes radio waves, Li-Fi uses visible light.

This is a distinct advantage in that the visible light is far more plentiful than the radio spectrum (10,000 times more in fact) and can achieve far greater data density. Li-Fi signals work by switching bulbs on and off incredibly quickly – too quickly to be noticed by the human eye. This most recent breakthrough builds upon this by using tiny micro-LED bulbs to stream several lines of data in parallel.

Benefits of Li-Fi:

- Higher speeds than Wi-Fi.
- 10000 times the frequency spectrum of radio.
- More secure because data cannot be intercepted without a clear line of sight.

- Prevents piggybacking.
- Eliminates neighboring network interference.
- Unimpeded by radio interference.
- Does not create interference in sensitive electronics, making it better for use in environments like hospitals and aircraft.

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❖ Papers Published/Presented by the faculty members

A Review on Side Information Entangling For Effective Clustering Of Text Documents in Data Mining

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Mr. Y. R. Gurav

Abstract

The study of this paper is immersed in effective clustering and mining approach with help of side information. Number of text mining applications, having side-information with them. This information may be of various forms, such as provenance information of the documents, the links in the document, web logs which contains user-access behaviour, or other text document which are embedded into the non-textual attributes. These attributes may contain a lot of information for clustering purposes. However, the concerned importance of this side-information may be hard to count, especially when some of the information is noisy. In such cases, it can be hazardous to merge side-information into the mining process, because it can either enhance the quality of the representation or can add noise in the system. Therefore, Discussion suggests way to design efficient algorithm which combines classical partitioning algorithm with probabilistic model for effective clustering approach, so as to maximize the benefits from using side information.

❖ Best Projects of final year students (Top Three):

Paperless E-Campus

Patil Komal R., Dhole Pooja R., Patil Sanyuja T., Mahajan Mayuri M.

Abstract

The system going to be developed can be used to keep information of the institution, department details, student information and generate a report based on the information of the above. The generated report is ready to submit format for the professional boardies like NBA (national board accreditation), AICTE, MHRD etc..

Android Based College Application

Chavan Aditya U., Tiwari Kartikeya S., Bhandare Vyenkatesh Z.

Abstract

The system deals with the introduction and short summary of the college which is developed on android platform that means it is user-friendly. In the “My College App” we provide application in which we have merged the various information related to our college which help the user to know about our college.

ONLINE NOTICE BOARD DISPLAY

Desai Shakira A., Ghasti Girija B., Shinde Vidya M., Shelke Priyanka B.

Abstract

The system deals with the view notices by the students and created by the staff. Also, the notices created by the staff are approved by the H.O.D of each department and the principal.In this project we create forms in which each student can login and view updated notices.