Program: M.Sc
Course Code: MSCD2360
Course Name: Disruptive Technology
Lecture - 5

Dr. Sanjay Kumar

Professor (SCSE)

Topics Covered in the Previous Lecture (Lecture-4)

- **Unit-I:** Introduction and Enterprise Innovation - **Topic 4:** Enterprise Software Trends

- The 6 important trends of Enterprise Software in detail.

Unit – I: Introduction & Enterprise Innovation
Topic 5: Key Emerging Technology Vendors

The Key Emerging Technology Vendors are:

- ➢ Artificial Intelligence (AI)
- ➢ Internet Of Things (IoT)
- ➢ Big Data
- ➢ Chatbots
- ➢ Google Opens Up VR180 Standard for Virtual Reality Photos and Videos
- ➢ GPS maker Trimble's AR foray for construction industry
- ➢ Machine Learning
- • Methods of Machine Learning
- ➢ Cloud Computing
- ➢ Cyber Security
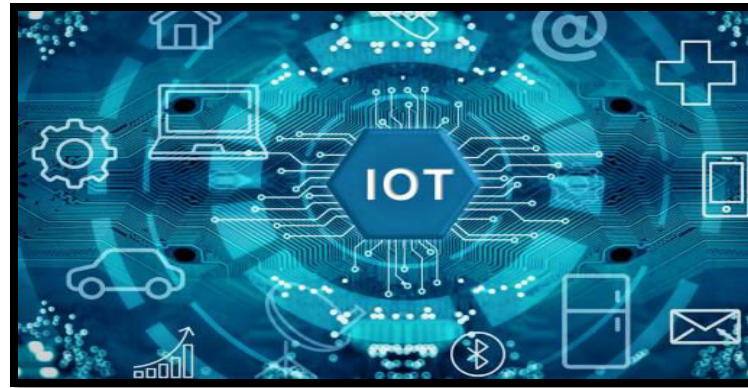- ➢ Analytics

Artificial Intelligence (AI)

Robot teaches itself how to dress people

- A robot is successfully sliding hospital gowns on people's arms. The machine doesn't use its eyes as it pulls the cloth. Instead, it relies on the forces it feels as it guides the garment onto a person's hand, around the elbow and onto the shoulder.

- More than 1 million Americans require daily physical assistance to get dressed because of injury, disease and advanced age. Robots could potentially help, but cloth and the human body are complex.

Internet of Things (IoT)

IoT In India – The Next Big Wave

- Increased penetration of affordable devices, combined with cloud computing, analytics and rising consumer expectations is driving the rapid growth of the IOT market. This report presents a detailed overview of the IoT products landscape in India and discusses key business and technology trends, drivers, and enabling ecosystem for IoT and its sub segments.

- The report also highlights and profiles cutting edge IoT solutions and products developed by ~94 Indian firms. The landscape is catering to both Industrial IOT and Consumer IOT.

Big Data

Forbes in its article **'A Very Short History Of Big Data'** shows the journey of big data through its major milestones. The ways to store and analyze evolved as the size of big data increased. Today, the term 'Big Data' is associated with a number of big data technologies which have developed through the years. However, some Big Data technologies decimated over time. There are a few technologies that have not only remained relevant but have also expanded.

Chatbot

Latest Developments In Chatbot Technology Herald An Exciting Future
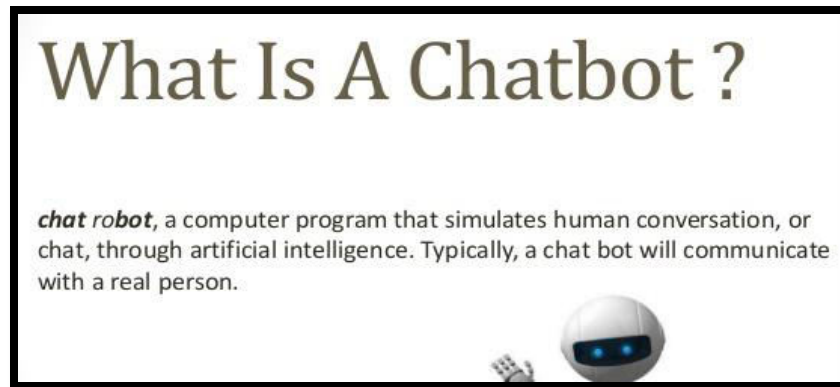
- Spring brings a range of major vendor technology and developer events, showing off new products or features. Chatbot innovations are high on the list for the likes of Face book, Google and others, and indicate exciting changes in how we interact with our robot friends.

- List as follows:-

- *Big Boy Bot Talk

- *Face book Talks Pictures

- *Google IO For Bots

Google Opens Up VR180 Standard for Virtual Reality Photos and Videos

- Virtual reality can be a fun experience, and more phones than ever support VR capabilities. That makes mobile VR easy for people to start using. While VR is cool, the main issue is a lack of content. Google hopes to change that with its VR180 video format. It introduced VR180 last year, and the first consumer devices were announced in January 2018. Now, Google has published additional details so developers and hardware makers can gear up to make new VR180 products. Google's VR180 video is based on the Spherical Video Metadata V2 standard, but there are a few additions to make it suitable for mobile VR. VR180 includes a so-called Camera Motion Metadata Track.

GPS maker Trimble's AR foray for construction industry
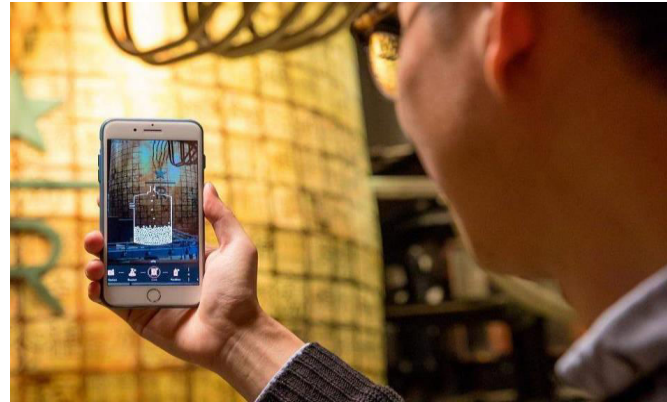
- California based Trimble which makes navigation solutions is betting on augmented reality products for the construction industry. Speaking to ET, RajanAiyer, Managing Director, Trimble, SAARC region said that engineers and supervisors at one of the largest construction companies in India used mixed reality tools to better interpret and interact with physical and digital information and their spatial relationships in near real-time.

- Back in 2015, Trimble entered into a collaboration with Microsoft to bring Microsoft HoloLens wearable holographic technology to the Architecture, Engineering and Construction (AEC) industry.

Machine Learning

- Machine learning is the science of getting computers to act without being explicitly programmed. In the past decade, machine learning has given us self-driving cars, practical speech recognition, effective web search, and a vastly improved understanding of the human genome. Machine learning is so pervasive today that you probably use it dozens of times a day without knowing it. Many researchers also think it is the best way to make progress towards human-level AI.

Machine Learning
Methods of Machine Learning

Machine learning algorithms are often categorized as supervised or unsupervised.

1) Supervised machine learning algorithms

2) Unsupervised machine learning algorithms

3) Semi-supervised machine learning algorithms

4) Reinforcement machine learning algorithms

We will discuss each one of them in detail.

Methods of Machine Learning

Method 1: Supervised machine learning algorithms

It can apply what has been learned in the past to new data using labeled examples to predict future events. Starting from the analysis of a known training dataset, the learning algorithm produces an inferred function to make predictions about the output values.

Methods of Machine Learning

Method 2: Unsupervised machine learning algorithms

In contrast, unsupervised machine learning algorithms are used when the information used to train is neither classified nor labeled. Unsupervised learning studies how systems can infer a function to describe a hidden structure from unlabeled data.

Methods of Machine Learning

Method 3: Semi-Supervised machine learning algorithms

Semi-supervised machine learning algorithms fall somewhere in between supervised and unsupervised learning, since they use both labeled and unlabeled data for training – typically a small amount of labeled data and a large amount of unlabeled data.

Methods of Machine Learning

Method 4: Reinforcement machine learning algorithms

Reinforcement machine learning algorithms is a learning method that interacts with its environment by producing actions and discovers errors or rewards. Trial and error search and delayed reward are the most relevant characteristics of reinforcement learning.

Cloud Computing

- If you're unsure about what Cloud Computing is, you are probably among the 95% of people that are already using cloud services, like online banking and social networks, but don't realize it.

- The "cloud" is a set of different types of hardware and software that work collectively to deliver many aspects of computing to the end-user as an online service.

Cyber Security

Major areas covered in cyber security are:

- **Application security** encompasses measures or counter-measures that are taken during the development life-cycle to protect applications from threats that can come through flaws in the application design, development, deployment, upgrade or maintenance. Some basic techniques used for application security are: **a)** Input parameter validation, **b)** User/Role Authentication & Authorization, **c)** Session management, parameter manipulation & exception management, and **d)** Auditing and logging.

- **Information security** protects information from unauthorized access to avoid identity theft and to protect privacy. Major techniques used to cover this are: **a)** Identification, authentication & authorization of user, **b)** Cryptography.

Cyber Security

Some More Major areas covered in cyber security are:

- **Disaster recovery** planning is a process that includes performing risk assessment, establishing priorities, developing recovery strategies in case of a disaster. Any business should have a concrete plan for disaster recovery to resume normal business operations as quickly as possible after a disaster.

- **Network security** includes activities to protect the usability, reliability, integrity and safety of the network. Effective network security targets a variety of threats and stops them from entering or spreading on the network. Network security components include: **a)** Anti-virus and anti-spyware, **b)**Firewall, to block unauthorized access to your network, **c)**Intrusion prevention systems (IPS), to identify fast-spreading threats, such as zero-day or zero-hour attacks, and **d)** Virtual Private Networks (VPNs), to provide secure remote access.

Analytics

Predictive Analytics

- Tools that make predictions about the future from patterns in past data. Although no one can predict the future with certainty, such tools are useful when assumptions need to be made. For example, an airline that is considering investing in a new route may attempt to predict future travel demand for a destination.

Risk Analytics

- Predictive analytics is often used to model business risks such as the credit risk associated with a particular customer.

Customer Analytics

- Analytics are often used to model customer behavior. For example, modeling the events that lead to a customer becoming brand loyal.

Analytics

Business Analytics

- Analytics can be applied to any area of a business including strategy, operations and sales. For example, operations analytics might look at product cost, quality control and the throughput of resources such as production lines.

Real-time Analytics

- Tools that look at current as opposed to historical data. For example, a bank might monitor credit card transactions in real time using an analytics tool.

Web Analytics

- Tools that report web traffic with the ability to explore data by factors such as cohort, demographics, client technology, geography, traffic source, page, campaign and conversions.

For any Doubts or Queries

Feel Free to Contact me at my Gmail ID: sanjaykumar@galgotiasuniversity.edu.in

OR

Contact no. **9911491577**

Thank You