Course Name : O Level(B4-Ist sem.)
Topic : Big Data Analytics
And Cloud Computing

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Big Data Analytics

Big data is a term, used to refer ***data sets*** that are ***too large or complex.*** For processing of this type of data sets use special type of application software. Big data was originally associated with three key concepts: **Volume, Variety and Velocity.**

Characteristics

Big data can be described by the following characteristics:

Volume

Volume defines the quantity of generated and stored data. The size of the data determines its value and its type to understand whether data can be considered as Big data or not.

Variety

Variety defines the type and nature of the data. This helps user to effectively use that data. Big data is combination of text, images, audio and video.

Velocity

Velocity defines the speed at which the data is generated and processed to fulfill the demands and challenges. Big data is often available in real-time. Compared to small data, big data are produced more continually. Two types of velocity related to big data are the frequency of generation and the frequency of handling, recording, and publishing.

Big Data Types

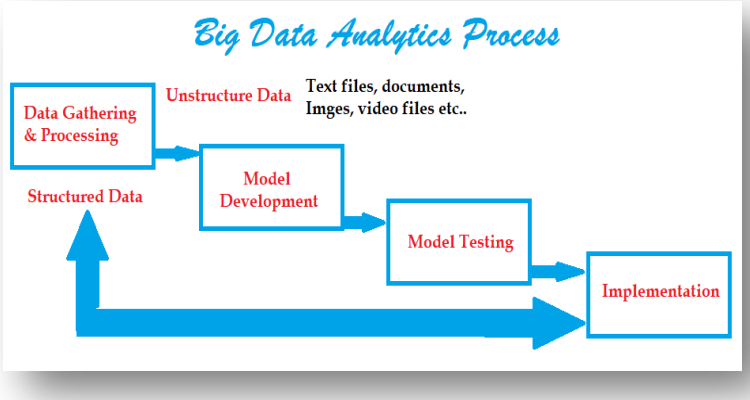
Mainly, there are three types of Big Data, as given below:

- **Structured Data**:- The structured data can be stored in a tabular column. **E**xamples **of** structured data **are** Relational databases**.**
- **Unstructured Data:-** The unstructured data can be stored in a tabular column. Examples of unstructured data are **audio**, **video etc.**
- **Semi-structured Data:-** The **semi-structured** data contains both structured and unstructured data. Examples of Semi-structured Data are **XML data**, **JSON files**, and others.

Big Data Analytics Process

Big Data Analytics includes following process:

- Structure vs Unstructured Data
- Data Gathering and processing



- Model development
- Model Testing on Random Sample
- Implementation on Data

Cloud Computing

Cloud Computing is Internet-based computing. By using this, the shared resources, software, and information are provided to computers or other devices like Mobile, laptop etc on demand.

What makes cloud computing different?

- It is managed by well qualified professionals.
- It is "on-demand"
- User could register and pay for it and start using cloud resources very quickly on their own device.
- Broad network access .
- User could access cloud services via the Internet from anywhere.
- It's public or private cloud .
- Public Cloud offers their computing services to user for general public, example **AWS**.

Services Of Cloud Computing

1. Infrastructure-as-a-Service (IaaS) :

Infrastructure as a service (IaaS) is a service model that delivers computer infrastructure on an outsourced basis to support enterprise operations. Typically, IaaS provides hardware, storage, servers and data center space or network components; it may also include software. Infrastructure as a service (IaaS) is also known as hardware as a service (HaaS). **For example; services like Amazon EC2 or Google APIs for maps.**

2. Software-as-a-Service (SaaS)

Software as a service (SaaS) is a model for the distribution of software where customers access software over the Internet. In SaaS, a service provider hosts the application at its data center and a customer accesses it via a standard web browser. **For example; online file storage, drawing, office software.**

3. Platform-as-a-Service (PaaS)

Platform as a service (PaaS) is a concept that describes a computing platform that is rented or delivered as an integrated solution, solution stack or service through an Internet connection. **For example; portals like Google apps that user may configure for their own organization.**

Exercise:

1. Write short notes on Big Data Analytics and Cloud Computing.