SNS COLLEGE OF TECHNOLOGY

Coimbatore-35
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DEPARTMENT OF MECHATRONICS ENGINEERING

UNIT 1 – INTRODUCTION TO BIG DATA

CHARECTERSITICS OF BIG DATA APPLICATIONS
&
PERCEPTION & QUANTIFICATION OF VALUES

CHARECTERSITICS OF BIG DATA APPLICATIONS

Complexity:

- **Definition:** Indicates the intricate nature of big data applications, involving multiple technologies and diverse data sources.
- **Significance:** Big data applications are complex systems that may include distributed computing, parallel processing, and integration of various data storage and processing technologies.

Scalability:

- **Definition:** Refers to the ability of the application to handle increasing data volumes and user demands.
- **Significance:** Big data applications should be scalable to accommodate growing datasets and user requirements. This scalability often involves distributed computing and cloud-based infrastructure.

Parallel Processing:

- **Definition:** Involves the simultaneous processing of data across multiple computing resources.
- **Significance:** To handle large volumes of data efficiently, big data applications often leverage parallel processing techniques, distributing tasks across multiple nodes or servers.

Real-time Processing:

- **Definition:** Involves the ability to process and analyze data in real-time or near-real-time.
- **Significance:** Some big data applications require instant insights for time-sensitive decision-making. Real-time processing technologies, such as stream processing frameworks, are essential in such cases.

CHARECTERSITICS OF BIG DATA APPLICATIONS

Machine Learning Integration:

- **Definition:** Involves incorporating machine learning algorithms for advanced analytics.
- **Significance:** Big data applications increasingly leverage machine learning to discover patterns, make predictions, and improve decision-making based on the data being processed.

Security and Privacy Challenges:

- **Definition:** Refers to the need to address security and privacy concerns associated with handling large volumes of sensitive data.
- **Significance:** Big data applications must implement robust security measures to protect data from unauthorized access, ensure compliance with regulations, and address privacy considerations.

PERCEPTION & QUANTIFICATION OF VALUES

Perception and quantification of values in big data involve understanding the significance of the data and measuring its impact on business objectives. This process is crucial for organizations to derive actionable insights, make informed decisions, and extract value from their data assets. Here are key aspects of perception and quantification in the context of big data:

Business Objectives Alignment:

- **Perception:** Understanding how big data aligns with the organization's overall business objectives and strategic goals.
- **Quantification:** Defining key performance indicators (KPIs) that align with business objectives and can be measured to assess the impact of big data initiatives.

Identifying Relevant Data:

- **Perception:** Recognizing the relevance of specific data sources and types for achieving business objectives.
- **Quantification:** Establishing criteria to identify and prioritize the most valuable data sources based on their impact on decision-making and strategic goals.

Quality Assessment:

- **Perception:** Evaluating the quality and reliability of the data to ensure it is trustworthy.
- **Quantification:** Implementing data quality metrics and measures to quantify the accuracy, completeness, and consistency of the data.

PERCEPTION & QUANTIFICATION OF VALUES

Value Creation Through Analytics:

- **Perception:** Recognizing the potential for value creation through analytics, including insights, predictions, and optimization opportunities.
- **Quantification:** Measuring the impact of analytics on decision-making processes, cost savings, revenue generation, or other relevant business outcomes.

Cost-Benefit Analysis:

- **Perception:** Understanding the costs associated with collecting, storing, and processing big data.
- **Quantification:** Conducting a cost-benefit analysis to assess the return on investment (ROI) and determine whether the value derived from big data justifies the associated costs.

User and Stakeholder Feedback:

- **Perception:** Gathering feedback from users and stakeholders on the perceived value of big data initiatives.
- **Quantification:** Implementing surveys, interviews, or other feedback mechanisms to quantify user satisfaction, identify areas for improvement, and measure the perceived value of big data applications.

Time-to-Value:

- **Perception:** Assessing how quickly insights and value can be derived from big data.
- **Quantification:** Measuring the time-to-value metrics to evaluate the efficiency and agility of big data processes in delivering actionable insights.