

Unit I

A Short Taxonomy of Data Analytics:

1. **Descriptive Analytics:** This type of data analytics focuses on summarizing historical data to provide insights into past events, trends, and patterns. It involves using visualization and summary statistics to gain a better understanding of what has happened in the data. Descriptive analytics answers questions like "What happened?" Examples include sales reports, website traffic analysis, and customer segmentation based on past behaviours.
2. **Diagnostic Analytics:** Diagnostic analytics aims to understand why certain events occurred in the data. It involves digging deeper into the data to identify the root causes of specific outcomes or anomalies. By analyzing historical data and performing root cause analysis, organizations can gain insights into the factors contributing to particular results. Examples include investigating reasons for customer churn, analyzing the causes of a drop in sales, or identifying factors leading to a sudden increase in website errors.
3. **Predictive Analytics:** Predictive analytics involves using historical data and statistical modeling techniques to make predictions about future events or outcomes. It leverages machine learning algorithms to identify patterns and trends in the data and uses that knowledge to forecast future scenarios. Examples of predictive analytics include sales forecasting, demand prediction, and customer lifetime value prediction.
4. **Prescriptive Analytics:** Prescriptive analytics goes beyond predicting future events and suggests potential actions or interventions to optimize outcomes. It uses optimization and simulation techniques to recommend the best course of action given different scenarios and constraints. Prescriptive analytics can assist in decision-making processes by providing actionable insights. Examples include supply chain optimization, pricing optimization, and resource allocation in project management.

Examples of Data Use in Data Analytics:

1. **Business Analytics:** Data analytics is extensively used in businesses to gain insights into customer behavior, market trends, and operational efficiency. Companies use data to optimize inventory levels, improve marketing strategies, and personalize customer experiences.
2. **Healthcare Analytics:** In the healthcare industry, data analytics is utilized for patient diagnosis, treatment optimization, and disease surveillance. It helps in predicting disease outbreaks, identifying high-risk patients, and improving healthcare services.

3. **Financial Analytics:** Financial institutions employ data analytics to detect fraudulent activities, assess credit risk, and make investment decisions. Data analytics aids in predicting market trends, analyzing portfolio performance, and automating financial processes.
4. **Social Media Analytics:** Organizations leverage social media data to understand customer sentiment, monitor brand reputation, and identify influencers. Social media analytics also assists in targeted marketing campaigns and product feedback analysis.
5. **Supply Chain Analytics:** Companies use data analytics to optimize supply chain processes, such as inventory management, demand forecasting, and logistics optimization. It helps in reducing costs and improving overall efficiency.
6. **Sports Analytics:** In the sports industry, data analytics plays a crucial role in player performance analysis, game strategy development, and injury prevention. Teams use data to make informed decisions and gain a competitive advantage.
7. **Environmental Analytics:** Data analytics is used to monitor environmental conditions, predict climate changes, and assess the impact of human activities on ecosystems. It aids in natural resource management and conservation efforts.

Types of Data Analysis



Descriptive Analysis



Inferential Analysis



Predictive Analysis



Prescriptive Analysis



Text Analysis