Introduction to Analytics

Lecture 1

15/07/2021

Syllabus

- PBD-3803
- A. Data Visualization with Tableau
- B. Modeling in Operations Management (Banking, Healthcare and Retail analytics)
- References:
- Data Mining and Predictive Analytics ; Larose and Larose
- Business Analytics: The Science of Data-Driven Decision Making; Dinesh Kumar Unnikrishnan.

Introduction to Analytics

- “If you torture the data long enough, it will confess.”
  — Ronald H. Coase

Introduction to Analytics

- *"Analytics help organizations to create value by solving problems effectively and assisting in decision making“*
- Analytics can be classified into descriptive analytics, predictive analytics, and prescriptive analytics.
- In descriptive analytics, we try to find hidden patterns using descriptive statistics and data visualization.
- In predictive analytics, we predict future events such as customer churn, employee attrition, revenue forecasts etc.
- In Prescriptive analytics we arrive at the optimal decision for a given problem.

Introduction to Analytics

- In short Descriptive Analytics describes what happened in the past using the data, Predictive Analytics predicts what will happen in the future and Prescriptive Analytics helps to decide what action to take.

Introduction to Analytics

- Example of Predictive Analytics include solution to Problems such as:
- Which product the customer is likely to buy in his next purchase (recommender system).
- Which customer is likely to default in his/her loan payment.
- Who is likely to cancel the product that was ordered through e-commerce portal.
- Example of Prescriptive Analytics Problems are:
- What is the optimal product mix?
- What is the optimal route for a delivery truck.
- Optimal assignment of aircraft to flight.

Preparing to model the data

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- Data Preprocessing
  - ➢Sort out issues like Missing data
- Data understanding & Data preparation
  - ➢Feature Engineering
  - ➢Statistical Transformations
  - ➢Model Development
  - ➢Results and Conclusions

Supervised vs Unsupervised Methods

- Data Mining methods may be classified as Supervised or Unsupervised.
- In Unsupervised methods, no target variable is identified. The most common unsupervised datamining method is clustering.
- Most data mining methods are Supervised methods. i.e,
- 1. there is a particular pre specified target variable.
- 2. The value of the target variable is provided so that the algorithm may learn which values of the target variable are associated with which values of the predictor variables.