Chapter 1 : Data Warehouse (DWH) Fundamentals with Introduction to Data Mining 1-1 to 1-44

Syllabus : DWH characteristics, Dimensional modeling : Star, Snowflakes, OLAP operation, OLTP vs OLAP Data Mining as a step in KDD, Kind of patterns to be mined, Technologies used, Data Mining applications.

Self-learning Topics : Data Marts, Major issues in Data Mining.

Syllabus : Types of Attributes, Statistical Description of Data, Measuring Data Similarity and Dissimilarity. Why Preprocessing ? Data Cleaning, Data Integration, Data Reduction : Attribute Subset Selection, Histograms, Clustering, Sampling, Data Cube aggregation, Data transformation and Data Discretization : Normalization, Binning, Histogram Analysis. Self-learning Topics Data Visualization, Concept hierarchy generation.

Syllabus : Basic Concepts; Classification methods : 1. Decision Tree Induction: Attribute Selection Measures, Tree pruning.

2. Bayesian Classification : Naïve Bayes Classifier. Prediction: Structure of regression models; Simple linear regression, Accuracy and Error measures, Precision, Recall, Holdout, Random Sampling, Cross Validation, Bootstrap, Introduction of Ensemble methods, Bagging, Boosting, AdaBoost and Random forest. Self-learning Topics : Multiple linear regression, logistic regression, Random forest, nearest neighbour classifier, SVM

Chapter 4 : Clustering and Outlier Detection 4-1 to 4-72

Syllabus : Cluster Analysis : Basic Concepts; Partitioning Methods: K-Means, K Medoids ; Hierarchical Methods: Agglomerative, Divisive, BIRCH; Density-Based Methods: DBSCAN. What are outliers? Types, Challenges; Outlier

Detection Methods : Supervised, Semi Supervised, Unsupervised, Proximity based, Clustering Based. Self-learning Topics Hierarchical methods : Chameleon, Density based methods: OPTICS, Grid based methods: STING, CLIQUE.

Chapter 5 : Frequent Pattern Mining 5-1 to 5-48

Syllabus : Basic Concepts : Market Basket Analysis, Frequent Itemset, Closed Itemset, and Association Rules, Mining Methods: The Apriori Algorithm: Finding Frequent Itemset Using Candidate Generation, Generating Association Rules from Frequent Itemset, Improving the Efficiency of Apriori, A pattern growth approach for mining Frequent Itemset, Mining Frequent Itemset using vertical data formats; Introduction to Advance Pattern Mining : Mining Multilevel Association Rules and Multidimensional Association Rules.

Self-learning Topics : Association Mining to Correlation Analysis, lift, Introduction to Constraint-Based Association Mining

Syllabus : What is BI? Business intelligence architectures; Definition of decision support system; Development of a business intelligence system using Data Mining for business Applications like Fraud Detection, Recommendation System

Self-learning Topics : Clickstream Mining, Market Segmentation, Retail industry, Telecommunications industry, Banking & finance CRM, Epidemic prediction, Fake News Detection, Cyberbullying, Sentiment Analysis etc.

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