



STANLEY
COLLEGE OF ENGINEERING & TECHNOLOGY FOR WOMEN
(Approved by AICTE, New Delhi | Affiliated to Osmania University ,Hyderabad)
Address : Chapel Road, Abids ,Hyderabad

CS 562

MACHINE LEARNING

UNIT-I

Introduction: Learning, Types of Machine Learning.

Concept learning: Introduction, Version Spaces and the Candidate Elimination Algorithm.

Learning with Trees: Constructing Decision Trees, CART. Classification Example

UNIT-II

Linear Discriminants: The Perceptron, Linear Separability, Linear Regression

Multilayer Perceptron (MLP): Going Forwards, Backwards, MLP in practices, Deriving backPropagation
SUPPORT Vector Machines: Optimal Separation, Kernels

UNIT-III

Some Basic Statistics: Averages, Variance and Covariance, The Gaussian, The Bias-Variance Tradeoff
Bayesian learning: Introduction, Bayes theorem. Bayes Optimal Classifier, Naïve Bayes Classifier.

Graphical Models: Bayesian networks, Approximate Inference, Making Bayesian Networks, Hidden Markov Models, The Forward Algorithm.

UNIT-IV

Evolutionary Learning: Genetic Algorithms, Genetic Operators, Genetic Programming
Ensemble learning: Boosting, Bagging

Dimensionality Reduction: Linear Discriminant Analysis, Principal Component Analysis

UNIT-V

Clustering: Introduction, Similarity and Distance Measures, Outliers, Hierarchical Methods, Partitional Algorithms, Clustering Large Databases, Clustering with Categorical Attributes, Comparison

Suggested Reading:

1. Tom M. Mitchell, 'Machine Learning " , MC Craw Hill, 1997

2. Stephen Marsland, "Machine Learning - An Algorithmic Perspective", CRC Press, 2009
3. Margaret H Dunham, "Data Mining". Pearson Edition., 2003.
4. Galit Shmueli, Nitin R Patel, Peter C Bruce, "Data Mining for Business Intelligence". Wiley India Edition, 2007
5. Rajjan Shinghal, "Pattern Recognition", Oxford University Press, 2006.

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