

Objective(s)

At the end of this course, Student will have better understanding of Machine learning concept and scenario of machine learning application. They will be able to compare different types of learning algorithms and apply machine learning concepts in real life problems.

Unit I

Introduction: Learning Problems, designing a learning system, Issues with machine learning.

Unit II

Supervised and Unsupervised learning: Decision Tree Representation, Appropriate problems for Decision tree learning, Algorithm, Hypothesis space search in Decision tree learning, Issues in Decision tree learning, K- Nearest Neighbour Learning.

Unit III

Artificial Neural networks and genetic algorithms: Neural Network Representation, Appropriate problems for Neural Network Learning, Perceptrons, Multilayer Networks and Back Propagation Algorithms, Remarks on Back Propagation Algorithms

Unit IV

Bayesian Learning : Bayes Theorem, Bayes Theorem and Concept Learning, Maximum Likelihood and Least squared Error Hypothesis, Maximum likelihood hypothesis for Predicting probabilities, Minimum Description Length Principle, Bayes Optimal Classifier, Gibbs Algorithm, Naïve Bayes Classifier

Reference Book(s):

1. Tom M Mitchell, "Machine Learning", McGraw Hill
2. Peter Harrington, "Machine Learning in Action", DreamTech

Practical(s):

1. Classifying with distance measures,
2. Constructing Decision trees and Classification using Decision Trees
3. K-means
4. Classification with k-Nearest Neighbours
5. Random Forest
6. Support vector machines
7. PageRank
8. Naïve Bayes Classification