

7. Creating Simple Web application using CGI Protocol: Study how the stateless behavior of HTTP is overcome to implement application logic. Study HTML tags related to forms. Use of cookies, hidden fields to carry forward session data should be demonstrated.
8. Implement a simple Web Application using Server Side Scripting. This could be the same application as done in assignment 7. Use server side scripting technology discussed in the class -(PHP, ASP, JSP, etc)
9. Implement a simple web Application. Study how database access (Addition, Modification and Deletion of records) works in Server Side Scripting. Use the database access API provided by Server Side Technology used.
10. Create an XML DTD file. Create an XML document based on the DTD and validate the XML document against the DTD. Use CSS to display XML document in the browser.
11. Create an XML Schema file. Create an XML document based on the schema and validate the XML document against the XML Schema.
12. Transform an XML document using XSLT for viewing inside a browser. Study the support provided by browser and Server side scripting technology used.
13. Implement a Simple Web service Use the support provided by Server Side scripting technology available on Server side.

CS501 Machine Learning.

Prerequisites : MT204, CS303

Course Contents:

Introduction

(10%)

Basic concepts. Version space. Decision Trees.

Supervised learning

(35%)

Supervised learning setup. LMS. Logistic regression. Neural networks, Perceptron, Exponential family. Generative learning algorithms. Gaussian discriminant analysis. Naive Bayes. Support vector machines. Model selection and feature selection. Ensemble methods: Bagging, boosting. Evaluating and debugging learning algorithms.

Learning theory

(5%)

Bias/variance tradeoff. Union and Chernoff/Hoeffding bounds. VC dimension. Worst case (online) learning. Practical advice on how to use learning algorithms.

Unsupervised learning

(30%)

Clustering. K-means. EM. Mixture of Gaussians. Factor analysis. PCA (Principal components analysis). ICA (Independent components analysis).

Reinforcement learning and control

(20%)

MDPs. Bellman equations. Value iteration and policy iteration. Linear quadratic regulation (LQR). LQG. Q-learning. Value function approximation. Policy search. Reinforce. POMDPs.

Main Reading

1. Tom Michele, Machine Learning, McGraw-Hill.
2. Ethem Alpaydin, Introduction to Machine Learning, MIT Press.
3. Richard O. Duda, Peter E. Hart, David G. Stork Pattern Classification, Wiley.