FBEF915   MACHINE LEARNING (3-0-0)

Objectives:

- Understanding of the fundamental issues and challenges of machine learning: data, model selection, model complexity, etc.
- Understanding of the strengths and weaknesses of many popular machine learning approaches.
- Appreciate the underlying mathematical relationships within and across Machine Learning algorithms and the paradigms of supervised and un-supervised learning.
- Be able to design and implement various machine learning algorithms in a range of real-world applications.

Module –I (10 Hours)

Introduction: Basic definitions, types of learning, hypothesis space and inductive bias, evaluation, cross-validation. Linear regression, Decision trees, over fitting.

Module -II :(10 Hours)

Instance based learning, Feature reduction, Collaborative filtering based recommendation. Probability and Bayes learning. Logistic Regression, Support Vector Machine, Kernel function and Kernel SVM. Neural network: Perceptron, multilayer network, back propagation, introduction to deep neural network.

Module -III: (10 Hours)

Computational learning theory, PAC learning model, Sample complexity, VC Dimension, Ensemble learning. Clustering: k-means, adaptive hierarchical clustering, Gaussian mixture model

Text Book :: 1.Machine Learning. Tom Mitchell. First Edition, McGraw- Hill, 1997.

2. Introduction to Machine Learning Edition 2, by Ethem Alpaydin.