

**VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)**

MACHINE LEARNING

B.TECH-VI Semester

L/T/P/C

3/0 /0 /3

Pre-requisites: Knowledge of DAA, Programming for Problem solving, Data Warehouse and Data mining.

Course Objectives:

- To be able to formulate machine learning problems corresponding to different applications.
- To understand a range of machine learning algorithms along with their strengths and weaknesses
- To understand the basic theory underlying machine learning.
- To be able to apply machine learning algorithms to solve problems of moderate complexity.
- To be able to read current research papers and understands the issues raised by current research.

UNIT-I:The ingredients of machine learning, Tasks: the problems that can be solved with machine learning, Models: the output of machine learning, Features, the workhorses of machine learning. Binary classification and related tasks:Classification, Scoring and ranking.

UNIT- II:

Beyond binary classification: Handling more than two classes, Regression, Unsupervised and descriptive learning. Concept learning: The hypothesis space, Paths through the hypothesis space.

UNIT-III:

Models: Decision trees, Ranking and probability estimation trees, Tree learning as variance reduction. Rule models: Learning ordered rule lists, Learning unordered rule sets, Descriptive rule learning, First order rule learning.

UNIT-IV:

Linear models: The least-squares method, The Perceptron: a heuristic learning algorithm for linear classifiers, Support vector machines, Probabilistic models: The normal distribution and its geometric interpretations, Probabilistic models for categorical data.

UNIT- V:

Getting Started with R: Installing R, Running R, The Comprehensive R Archive Network, Getting Help in R, Packages in R. Essentials of the R Language: Calculations, Logical Operations, Vectors and Subscripts, Matrices and arrays, Random numbers , Sampling and shuffling, loops and repeats, List, Data Input, Data Frames, Graphics.

Course Outcomes:

After the completion of this course the students should be able to :

CO-1: Understand the theory underlying machine learning

CO-2: Learn beyond binary classification.

CO-3: Recognize and implement various genetic algorithms.

CO-4: Construct algorithms to learn tree, to learn linear, non-linear models and Probabilistic models.

CO-5: Able to analyze the data using R Programming.