

# Machine Learning

## Chapter 1: Introduction

- 1.1 Learning Challenges
- 1.2 Building a Learning System
- 1.3 Perspective and Challenges
- 1.4 Understanding Concept Learning
- 1.5 Version Space and Candidate Eliminations
- 1.6 Inductive Bias
- 1.7 Decision Tree Learning
- 1.8 Heuristic Search

## Chapter 2: Neural Networks and Genetic Algorithms

- 2.1 Introduction to Artificial Neural Networks (ANN)
- 2.2 Neural Network Representation
- 2.3 Challenges and Suitability of Backpropagation in Neural Networks
- 2.4 Perceptrons
- 2.5 Backpropagation Algorithms
- 2.6 Genetic Algorithm
- 2.7 Hypothesis Space Search
- 2.8 Genetic Programming (GP)
- 2.9 Models of Evolution and Learning

## **Chapter 3: Bayesian and Computational Learning**

- 3.1 Bayes Theorem
- 3.2 Concept Learning
- 3.3 Maximum Likelihood
- 3.4 Minimum Description Length
- 3.5 Bayes Optimal Classifier
- 3.6 Bayesian Belief Network
- 3.7 EM Algorithm
- 3.8 Probabilistic Model
- 3.9 Sample Complexity
- 3.10 Mistake Bound Model

## **Chapter 4: Instance-Based Learning**

- 4.1 K-Nearest Neighbour Learning
- 4.2 Locally Weighted Linear Regression
- 4.3 Radial Basis Function (RBF)
- 4.4 Case-Based Learning

## **Chapter 5: Advanced Learning**

- 5.1 Learning Sets of Rules
- 5.2 Sequential Covering Algorithms
- 5.3 First-Order Rules
- 5.4 Sets of First-Order Rules: FOIL
- 5.5 Induction on Inverted Deduction
- 5.6 Inverting Resolution

- 5.7 Analytical Learning
- 5.8 Perfect Domain Theories
- 5.9 Explanation-Based Learning (EBL)
- 5.10 FOCL Algorithm
- 5.11 Reinforcement Learning
- 5.12 Markov Decision Process
- 5.13 Q-Learning
- 5.14 Temporal Difference (TD) Learning

## Chapter 6: Autism Prediction Using Machine Learning

