MSCS302 ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING (3-0-0)

Module I (9 Hrs.)
Introduction to AI, AI Problems and AI techniques, Solving problems by searching, Problem Formulation. Intelligent Agents: Structure of Intelligent agents, Types of Agents, Agent Environments . Uninformed Search Techniques: DFS, BFS, Informed Search Methods: Heuristic functions, Hill Climbing, Best First Search, A*, Adversarial Search: Game Playing, Min-Max Search, Alpha BetaPruning.
Module II (9 Hrs.)
Knowledge and Reasoning: A Knowledge Based Agent, WUMPUS WORLD Environment, Propositional Logic, First Order Predicate Logic, Forward and Backward Chaining.Expert Systems: Introduction, Design of Expert systems.
Module III (9 Hrs.)
Introduction MLP. Type of Human Learning, Type of Machine Learning:Supervised, unsupervised, reinforcement, General Model of Learning Agents
Module IV (9 Hrs.)
Supervised: holdout method, K-fold cross- validation method, boot strapping, simple-regression method, unsupervised: clustering, association, reinforcement learning model.

Text Books:

1. Stuart Russell and Peter Norvig, Artificial Intelligence: A Modern Approach, 3rd Edition,2010, Pearson Education.
2. Elaine Rich, Kevin Knight, Shivshankar B Nair, Artificial Intelligence, McGraw Hill, 3rd Edition.
3. Tom Mitchell, Machine Learning, McGraw Hill , 1997, ISBN 0-07-042807-7
4. Richard O. Duda, Peter E. Hart, David G. Stork, Pattern classification, Wiley , (2nd edition). Wiley, New York, 2001

Reference Books

1. Dan W. Patterson, “Introduction to Artificial Intelligence and Expert Systems”, 1st Edition, 1996, PHI Learning Pvt. Ltd., New Delhi.
2. Nills J. Nilsson, “Artificial Intelligence: A New Synthesis”, 2nd Edition, 2000, Elsevier India Publications, New Delhi.
3. Christopher M. Bishop, Pattern Recognition and Machine Learning, Springer , 2011 edition
4. Ian Goodfellow, YoshuaBengio, Aaron Courville, Deep Learning, MIT Press , 2016