

ARTIFICIAL INTELLIGENCE AND EXPERT SYSTEMS

Module I 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, Uniform cost search, Depth Limited Search, Iterative Deepening, Bidirectional search, Comparing Different Techniques.

Module II Informed Search Methods: Heuristic functions, Hill Climbing, Simulated Annealing, Best First Search, A*, IDA*, SMA*, Crypto-Arithmetic Problem, Backtracking for CSP, Performance Evaluation. Adversarial Search: Game Playing, Min-Max Search, Alpha Beta Pruning.

Module III Knowledge and Reasoning: A Knowledge Based Agent, WUMPUS WORLD Environment, Propositional Logic, First Order Predicate Logic, Forward and Backward Chaining. Planning: Introduction to Planning, Planning with State Space Search, Partial Ordered planning, Hierarchical Planning, Conditional Planning, Planning with Operators.

Module IV Uncertain Knowledge and Reasoning: Uncertainty, Representing Knowledge in an Uncertain Domain, Conditional Probability, Joint Probability, Bays theorem, Belief Networks, Simple Inference in Belief Networks. Learning: Learning from Observation, General Model of Learning Agents, Inductive Learning, Learning Decision Trees, Rote Learning, Learning by Advice, Learning in Problem Solving, Explanation based Learning. Expert Systems: Introduction, Design of Expert systems.

BOOKS

1. Stuart Russell and Peter Norvig, Artificial Intelligence: A Modern Approach, 2nd Edition, Pearson Education.
2. Elaine Rich, Kevin Knight, Shivshankar B Nair, Artificial Intelligence, McGraw Hill, 3rd Edition.
3. Nils J. Nilsson, "Artificial Intelligence: A New Synthesis", 2nd Edition, 2000, Elsevier India Publications, New Delhi.
4. Michael Negnevitsky, "Artificial Intelligence: A Guide to Intelligent Systems", Second Edition, 2005, Pearson Education, Inc. New Delhi.

REFERENCES

1. Dan W. Patterson, "Introduction to Artificial Intelligence and Expert Systems", 1st Edition, 1996, PHI Learning Pvt. Ltd., New Delhi.
2. Ben Coppin, "Artificial Intelligence Illuminated", 2005, Narosa Publication, New Delhi. ISBN: 978- 81-7319-671-3