

ARTIFICIAL INTELLIGENCE SYLLABUS

Module 1: Introduction

- Evolution of AI
- State of the Art
- Different Types of Artificial Intelligence
- Applications of AI
- Subfields of AI
- Intelligent Agents
 - Structure of Intelligent Agents
 - Environments

Module 2: Problem Solving Based on Searching

- Introduction to Problem Solving by Searching Methods
- State Space Search
- Uninformed Search Methods
 - Uniform Cost Search
 - Breadth-First Search
 - Depth-First Search
 - Depth-Limited Search
 - Iterative Deepening Depth-First Search
- Informed Search Methods
 - Best-First Search
 - A* Search

Module 3: Local Search and Adversarial Search

- Local Search Algorithms
 - Hill-Climbing Search
 - Simulated Annealing
 - Genetic Algorithm
- Adversarial Search

- Game Trees and Minimax Evaluation
- Elementary Two-Player Games (e.g., Tic-Tac-Toe)
- Minimax with Alpha-Beta Pruning

Module 4: Logic and Reasoning

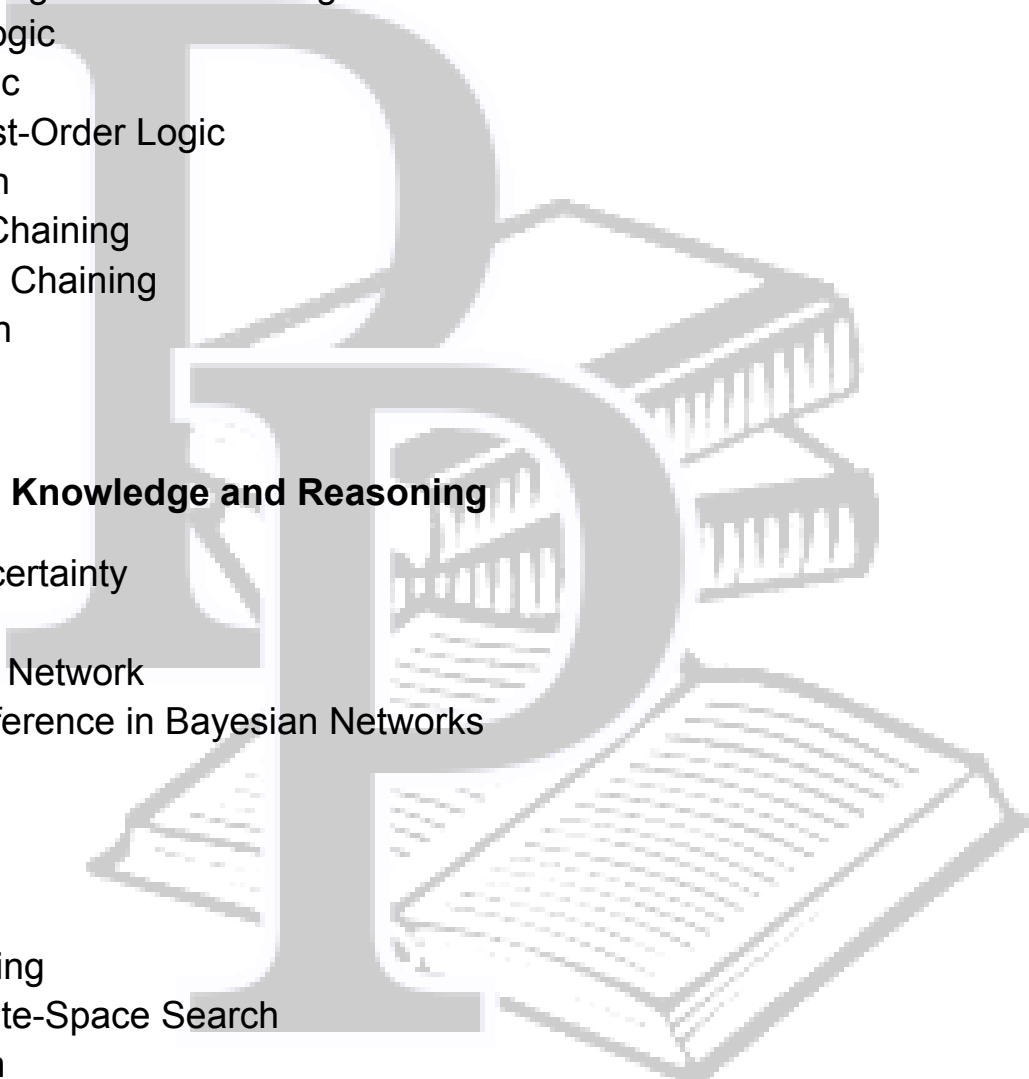
- Introduction to Logic and Reasoning
- Propositional Logic
- First-Order Logic
- Inference in First-Order Logic
 - Unification
 - Forward Chaining
 - Backward Chaining
 - Resolution

Module 5: Uncertain Knowledge and Reasoning

- Quantifying Uncertainty
- Bayes' Rule
- Bayesian Belief Network
- Approximate Inference in Bayesian Networks

Module 6: Planning

- Classical Planning
- Planning as State-Space Search
- Forward Search
- Backward Search
- Planning Graphs
- Hierarchical Planning
- Planning and Acting in Nondeterministic Domains
 - Sensor-less Planning
 - Multiagent Planning



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Module 7: Communicating, Perceiving, and Acting

- Communication
 - Fundamentals of Language
 - Probabilistic Language Processing
 - Information Retrieval
 - Information Extraction
- Perception
 - Image Formation
 - Object Recognition



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