Faculty of Engineering & Technology

Ph.D. (Artificial Intelligence) Admission Test

2024 -25   Syllabus Section B

Applications of AI. Advanced search Techniques, Intelligent Agents and Environments, Knowledge representation & reasoning.

Foundations and History of AI, Current trends, Intelligent Agents and Environments, The Nature of Environments, Structure of Agents, Problem-Solving Agents, Search Algorithms, Uninformed Search Strategies, Informed (Heuristic) Search Strategies, Heuristic Functions, Local Search, Adversarial Search and Games, Heuristic Alpha-Beta Tree Search, Monte Carlo Tree Search, Constraint Satisfaction Problems, Backtracking Search for CSPs.

Logical and Knowledge-Based Agents, The Wumpus World, Propositional Logic and Theorem Proving, First-Order Logic, Syntax, Semantics and inferencing in First-Order Logic, Unification, Forward and Backward Chaining, Resolution, Knowledge Representation: Ontological Engineering, Categories and Objects, Events, Mental Objects and Modal Logic, Reasoning Systems for Categories, Automated Planning: Definitions and Algorithms.

Major applications of AI: Natural Language Processing: Language Understanding and Machine Translation, Computer Vision: image features, classifying images and object detection, Robotics: Perception, Planning and Control, Limitations of AI, The Ethics of AI, The Future of AI, AI Components, AI Architectures.

Machine Learning Techniques, Supervised, Unsupervised, and Semi-Supervised Learning, Reinforcement Learning, Fuzzy Logic, Artificial Neural Networks, Evolutionary algorithms, Natural Language Processing, Image Processing & Computer Vision, Edge detection, Segmentation, CNN.

Basic statistics: Random variables, mean, median, mode, geometric mean, Probability Theory, Probability Distributions, Bayes Theorem, Measure of Dispersion, Statistical Tests, Analysis of Variance.