AI 3100 Foundations of Artificial Intelligence

Outline

AI 3100 provides a comprehensive exploration of core AI principles, progressing from classical problem-solving techniques to modern approaches in machine learning. This course delves into critical AI methodologies, covering topics such as search strategies, game theory, and intelligent agent design. The course introduces probabilistic reasoning frameworks to address uncertainty in AI applications and concludes with an overview of foundational machine learning concepts. Students will examine knowledge representation, logical reasoning, and planning mechanisms to understand how AI systems make informed decisions. Designed to equip students with essential AI skills, this course emphasizes both theoretical understanding and practical problem-solving techniques across various AI domains.

Course Topics

Problem-Solving and Search: Informed and uninformed search techniques, optimization strategies, and game theory applications in AI.

Knowledge Representation and Reasoning: Methods for representing knowledge, logical inference, and reasoning mechanisms.

Planning and Decision Making: Agent-based systems, logical and probabilistic planning, and action-based decision-making processes.

Probabilistic Reasoning: Bayesian networks, Markov models, and other probabilistic methods to handle uncertainty in AI.

Introduction to Machine Learning: Fundamentals of supervised and unsupervised learning, including basic concepts of neural networks and applications in AI.

Meeting times

Class: Tuesday and Thursday 2 PM – 3:20 PM, ARC 140

Office Hour: Tuesday and Thursday 3:30 PM – 4:30 PM, Stocker 343