ME 620

Fundamentals of Artificial Intelligence

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Artificial Intelligence

What does automatic scheduling or autonomous driving have in common with web search, speech recognition and machine translation?

These are complex real world problems that span across various practices of engineering.

Artificial Intelligence undertake efforts to tackle such problems with rigorous mathematical tools.

Artificial Intelligence

Artificial Intelligence is the ability of machines to seemingly think for themselves. Artificial Intelligence is demonstrated when a task performed by a human and thought of as requiring the ability to learn, reason and solve problems can be done by a machine.

Course Overview

- This is **an introductory course** into the field of Artificial Intelligence.

- The course **covers important elements of AI** such as knowledge representation, inference and machine learning. The course would draw examples from game playing, information retrieval, computer vision, and robotics.

- It is a **broad course** aimed to teach the very **basics of modern AI.**

Learning Objectives vis-à-vis Modules

Modules	Topic	Learning Objectives
1	Introduction	a. What does AI mean? b. Foundations of AI.
2	Problem Solving by Search	a. Elements constituting problems. b. Uninformed and Informed search.
3	Knowledge Representation and Reasoning	a. Formal methods for representing knowledge. b. Process of inference. c. Answer extraction.
4	Reasoning under Uncertainty	a. Notion of uncertainty. b. Probabilistic reasoning methods. c. Inference under uncertainty.
5	Planning and Decision Making	a. Notion of planning in AI. b. Classical Planning. c. Computational Issues in Making Decisions.
6	Machine Learning	a. Supervised Learning Algorithms b. Unsupervised Learning Algorithms c. Reinforcement Learning

Teaching Plan

Sl. No.	Broad Title / Topics	Number of Lectures
1	Introduction: History, Trends and Future Directions	1
2	Problem Solving by Search	10
3	Knowledge Representation and Reasoning	08
4	Reasoning under Uncertainty	06
5	Planning	04
6	Decision Making	03
7	Machine Learning	10
	Total Number of Lectures =	42

Evaluation Plan

Quiz	15 x 2	=	30
Term Project - 1 / Home Assignment - 3		=	100
Mid Sem. Exam - 2 Hr.	40 x 1	=	40
End Sem. Exam - 3 Hr.	80 x 1	=	80
Total			250