

Al-AI Bayt University
Prince Hussein bin Abdullah Faculty of Information Technology
Information Systems

Course Title : Fundamentals of intelligent systems

Course Number : 902371

Credit Hours : 3

Pre requisite :

Placement :

Instructor:

Course Description :

Artificial Intelligent (AI) focus on developing machine that can think. AI can be defined as a branch of computer science that is concerned in the automation of intelligent behavior. In this course, we will study the most fundamental knowledge for understanding AI. We will introduce some basic search algorithms for problem solving; knowledge representation and reasoning; Genetic Programming; and neural networks as well as machine learning.

The main research topics in AI include: problem solving, reasoning, planning, natural language understanding, computer vision, automatic programming, and machine learning, and so on. Of course, these topics are closely related with each other. For example, the knowledge acquired through learning can be used both for problem solving and for reasoning. In fact, the skill for problem solving itself should be acquired through learning. Also, methods for problem solving are useful both for reasoning and planning. Further, both natural language understanding and computer vision can be solved using methods developed in the field of pattern recognition.

General objectives :

Objective 1 : Understanding the foundations of Artificial Intelligence

Objective 2 : Representing a problem as a search solving problem.

Objective 3: Searching a space of answers for a solution to a problem in practical time.

Objective 4 : Representing problems in terms of logic and deduction.

Objective 5 : Representing intelligent behavior in terms of agent.

Objective 6 : Automated creation of complex plans in complex and unknown environments.

Objective 7: Logical representations of uncertainty, and rational decision making in uncertain environments.

Objective 8: Automated creation of new knowledge from examples and previous knowledge.

Course outline :

Introduction and History of AI

? What is AI

? A brief history

? The state of the art

Intelligent Agents

? Agents and environments

? Rationality

? PEAS (Performance measure, Environment, Actuators, Sensors)

? Environment types

? Agent types

Solving Problem by Searching

? Problem-solving agents

? Problem types

? Problem formulation

- ? Example problems
- ? Basic search algorithms

Informed search algorithms

- ? Best-first search
- ? A*_ search
- ? Heuristics

Adversial Search

- ? Games
- ? Perfect play
- ? minimax decisions
- ? pruning
- ? Resource limits and approximate evaluation
- ? Games of chance
- ? Games of imperfect information

Evaluation methodology :

References :

*Artificial Intelligence: A Modern Approach 3rd Edition, Prentice-Hall, Stuart Russell and Peter Norvig

Course Schedule :

Topic	Hours
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No Information Available...