Hewlett Packard Enterprise

Course Datasheet

Artificial Intelligence

Education Services course product number – HPE-AI-v1.0
Course length – 60 Hrs.
Delivery mode – Instructor Led Training (ILT)
            Virtual Instructor Led Training (vILT)

Artificial Intelligence (AI) is a field of study that helps to build software systems that behave 'intelligently'. In other words it is all about making machines that can perceive, reason and perform intelligent tasks like an intelligent human being. AI is achieved by first studying about how human brain thinks, learn, understand, decide and perform on a problem he is trying to solve. The outcomes of such study is then used as a basis of developing intelligent software and system.

Course Objective

The 60 hours comprehensive training program will help a learner to understand the fundamentals of Artificial Intelligence followed by understanding concepts like Intelligent Systems, Intelligent Agents, Search Algorithms, Expert Systems and applications of AI in NLP and Robotics.

Prerequisite

It is recommended to have a fundamental understanding of concepts like probability and statistics.

Course Modules

Chapter 01 - Fundamentals of Artificial Intelligence

- What is Artificial Intelligence
- The History of Artificial Intelligence
- Goals of Artificial Intelligence
- Artificial Intelligence Techniques
- Applications of Artificial Intelligence
- What contributes to Artificial Intelligence
- Real life Use cases in various industries

Chapter 02 - Intelligent Agents and Environments

Course Datasheet

- Agents and Environments
- Agents Terminology
- The Structure of Intelligent Agents
- The Nature of environments
- Properties of Environment
- The concept of Rationality
- What is ideal Rational Agent

Chapter 03 - Intelligent Systems

- What is Intelligence
- Types of Intelligence
- Its components

Chapter 04 - Artificial Intelligence Search Algorithms

- Search Terminologies
- Single Agent Pathfinding problems
- Graph Based Search
- Brute-Force Search (Uninformed Search)
- Heuristic Search (Informed Search)
- Local Search Algorithms

Chapter 05 - Fuzzy Logic Systems in Artificial Intelligence

- About Fuzzy Logic
- Its System Architecture
- Application of Fuzzy Logic Systems and relevant examples
- Advantages and Disadvantages

Chapter 06 - Expert Systems

- Overview
- Typical Expert System Tasks
- Its Characteristics and Advantages
- Capabilities and Structure of Expert Systems
- Facts and Rules (Procedures)
- Components of Expert Systems
  - Knowledge Base
  - Inference Engine
  - User Interface
- Expert Systems Development
- Expert Systems Benefit and its limitations

Chapter 07 - Learning

- Forms of Learning
- Supervised Learning
- Learning Decision Trees
- Artificial Neural Networks
  - What are Artificial Neural Networks
  - Structure of Artificial Neural Networks and its types
  - Single-layer feed-forward Artificial Neural Networks
  - Multilayer feed-forward Artificial Neural Networks

- o Working of Artificial Neural Networks
- o Application of Artificial Neural Networks

Chapter 08 - Artificial Intelligence Natural Language Processing

- Terminologies
- Language Models
- Information Retrieval
- Information Extraction
- Natural Languages vs. Computer languages
- Components of Natural Language Processing
- Problems in Natural Language Processing
- Tasks Involved (Steps in Natural Language Processing)
- Speech Recognition

Chapter 09 - Perception

- Image Formation
- Image Processing Operations
- Object Recognition by Appearance
- Object Recognition from Structural Information
- Reconstructing the 3D World

Chapter 10 - Robotics

- Introduction
- What are Robots and its components
- What is Robotics and its relevance to Artificial Intelligence
- Robot Hardware
    - o Sensors
    - o Effectors
- Robotic Perception
- Robot Locomotion
    - o Planning to Move
    - o Planning uncertain movements
    - o Moving
- Robotic Software Architecture
- Application Areas of Robotics in Real life scenarios

Chapter 11 - Conclusion

- Artificial Intelligence: Present and Future
- Weak Artificial Intelligence vs Strong Artificial Intelligence
- The Ethics and Risks involved with developing Artificial Intelligence