Hewlett Packard Enterprise

Artificial Intelligence

HPE Certificate of Competency (CoC) Program - Associate Level
Exam Coverage

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.

Module 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

Module 02 - Intelligent Agents and Environments

- 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

Module 03 - Intelligent Systems

- What is Intelligence
- Types of Intelligence
- Its components

Module 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

Course Datasheet

Module 05 - Fuzzy Logic Systems in Artificial Intelligence

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

Module 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

Module 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
  - Working of Artificial Neural Networks
  - Application of Artificial Neural Networks

Module 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

Module 09 - Perception

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

Course Datasheet

Module 10 - Robotics

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

Module 11 - Conclusion

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