



Information Technology

Introduction to Artificial intelligence

Course Introduction

Artificial intelligence

This 5-day training program is designed to provide a comprehensive introduction to Artificial Intelligence, aimed at individuals with little to no prior experience in the field.

Participants will be introduced to the core concepts, algorithms, and tools that power AI technologies. The program combines theoretical learning with practical, hands-on exercises, allowing participants to build real-world AI models and applications using widely used programming languages and tools such as Python, TensorFlow, and OpenAI Gym.

By the end of the program, participants will have a solid understanding of AI's fundamental principles, its key applications in various industries, and the hands-on experience required to begin using AI tools and techniques in their professional work.

Target Audience

Professionals and students looking to explore the fundamentals of artificial intelligence, including its applications and implications. Ideal for those in business, IT, and technology roles who want to understand how AI is transforming industries.

Learning Objectives

- Define Artificial Intelligence, its history, and its relevance in modern society
- Differentiate between types of AI (Narrow AI vs. General AI)

- Explore the key subfields of AI, including Machine Learning, Deep Learning, and Natural Language Processing
- Understand the principles of supervised, unsupervised, and reinforcement learning
- Implement key machine learning algorithms such as linear regression, decision trees, and K-means clustering
- Evaluate machine learning models using appropriate metrics and performance measures
- Identify and prepare data for AI applications, including handling missing values and normalizing data
- Implement feature engineering and dimensionality reduction techniques
- Work with real-world datasets and preprocess data using Python
- Understand the basics of neural networks and deep learning techniques
- Apply convolutional neural networks (CNN) for image classification tasks
- Understand the role of Recurrent Neural Networks (RNN) in sequential data analysis
- Understand the key concepts in Natural Language Processing
- Implement basic NLP tasks such as sentiment analysis and text classification
- Use NLP libraries like NLTK and SpaCy to process and analyze textual data
- Understand the core concepts of computer vision and image recognition
- Use deep learning models like CNNs for image classification and object detection tasks
- Apply transfer learning with pre-trained models for more efficient image analysis
- Understand the fundamentals of reinforcement learning, including agents, environments, and rewards
- Implement simple reinforcement learning algorithms using OpenAI Gym
- Explore how reinforcement learning can be used in real-world applications like gaming and robotics
- Identify the ethical challenges associated with AI, including bias, fairness, and privacy concerns
- Understand the social and economic implications of AI on jobs, inequality, and society
- Recognize the importance of responsible AI development and usage

Course Outline

• Day 01

Introduction to Artificial Intelligence

- What is AI?
- Definition and history of AI
- Types of AI: Narrow AI vs. General AI
- Key milestones in AI development
- Common misconceptions about AI
- Importance of AI in today's world
- Applications of AI in Various Industries
- AI in healthcare, finance, education, and business
- Case studies and real-world applications

Overview of Machine Learning (ML)

- What is Machine Learning?
- Key concepts: Supervised learning, unsupervised learning, and reinforcement learning
- The relationship between AI and machine learning
- Types of machine learning algorithms
- Introduction to Python for AI
- Installing necessary libraries (e.g., NumPy, Pandas, Matplotlib)
- First machine learning model using Python (linear regression)

• Day 02

Understanding Data and Data Preprocessing

- The Role of Data in AI
- Types of data: Structured vs. unstructured data

- Importance of data quality
- Data Preprocessing
- Data cleaning techniques
- Feature engineering and normalization
- Handling missing data
- Hands-On Exercise
- Data collection and preprocessing in Python using real datasets

Supervised Learning

- Introduction to Supervised Learning
- Regression vs. classification tasks
- Key algorithms: Linear regression, logistic regression, k-nearest neighbors (KNN), decision trees
- Model Evaluation
- Metrics for evaluating supervised models (accuracy, precision, recall, F1-score)

• Day 03

Unsupervised Learning

- Introduction to Unsupervised Learning
- Key concepts: Clustering and association
- Popular algorithms: K-means clustering, hierarchical clustering, DBSCAN
- Dimensionality reduction techniques: PCA (Principal Component Analysis)

Neural Networks and Deep Learning

- Introduction to Neural Networks
- Basics of artificial neurons and neural networks
- Understanding layers, activation functions, and weights

- Deep learning and the role of deep neural networks
- Types of Neural Networks
- Feedforward neural networks
- Convolutional Neural Networks (CNN)
- Recurrent Neural Networks (RNN)
- Building a basic neural network using TensorFlow/Keras

• Day 04

Natural Language Processing (NLP)

- Introduction to NLP
- What is Natural Language Processing?
- Key challenges in NLP: Understanding and processing human language
- Applications of NLP: Chatbots, sentiment analysis, text classification
- NLP Techniques and Tools
- Tokenization, stemming, lemmatization
- Word embeddings (e.g., Word2Vec, GloVe)

AI in Computer Vision

- Introduction to Computer Vision
- What is computer vision and how does it relate to AI?
- Key challenges in computer vision: Image recognition, object detection, segmentation
- Applications of computer vision: Face recognition, autonomous vehicles, medical imaging

• Day 05

Reinforcement Learning

- Introduction to Reinforcement Learning
- What is reinforcement learning?
- Key components: Agent, environment, reward, policy
- Types of reinforcement learning: Model-free vs. model-based

- Applications of reinforcement learning in gaming and robotics
- Building a simple reinforcement learning agent using OpenAI Gym

Ethical Considerations and Future of AI

- Ethics in AI
- AI bias and fairness
- Privacy concerns and data protection
- The impact of AI on jobs and society
- The importance of responsible AI development
- The Future of AI
- AI in the next decade: Trends and predictions
- The role of AI in shaping future technologies

Confirmed Sessions

FROM	TO	DURATION	FEES	LOCATION
April 14, 2025	April 18, 2025	5 days	4950.00 \$	England - London
April 21, 2025	April 25, 2025	5 days	4250.00 \$	UAE - Dubai
June 4, 2025	June 8, 2025	5 days	2150.00 \$	Virtual - Online
Aug. 11, 2025	Aug. 15, 2025	5 days	4950.00 \$	Italy - Milan
Dec. 1, 2025	Dec. 5, 2025	5 days	4250.00 \$	UAE - Dubai