AI

Duration: 40-hour

Audience: Junior IT/programmers/DBA or anyone with a technical background and tech enthusiasts.

introductory AI course. This course is designed to provide participants with a comprehensive overview of various AI concepts and applications. It covers fundamental principles, machine learning, and basic deep learning, allowing participants to gain a solid foundation in the field of Artificial Intelligence.

This 40-hour AI course is designed to provide participants with a well-rounded introduction to the field, covering foundational principles, machine learning, deep learning, and real-world applications. Adjustments can be made based on the specific needs and pace of the participants.

Module 1: Introduction to Artificial Intelligence

- Session 1: Overview of AI
  - Definition and history of AI
  - Applications of AI in various domains
- Session 2: Types of AI
  - Narrow AI vs. General AI
  - Expert systems and rule-based AI
- Session 3: AI Ethics and Responsible AI
  - Ethical considerations in AI development
  - Responsible AI practices

Module 2: Foundations of Machine Learning

- Session 4: Introduction to Machine Learning

    - Basic concepts and terminology

    - Supervised, unsupervised, and reinforcement learning

- Session 5: Machine Learning Algorithms

    - Linear regression, logistic regression

    - Decision trees, k-nearest neighbors

- Session 6: Model Evaluation and Metrics

    - Accuracy, precision, recall, F1 score

    - Confusion matrix and ROC curves

Module 3: Hands-On Machine Learning with Scikit-Learn

- Session 7: Getting Started with Scikit-Learn

    - Installing and using Scikit-Learn

    - Building and training machine learning models

- Session 8: Feature Engineering and Data Preprocessing

    - Handling missing data

    - Feature scaling and normalization

- Session 9: Practical Machine Learning Project

    - Applying machine learning to a real-world dataset

    - Model selection and evaluation

Module 4: Introduction to Deep Learning

- Session 10: Basics of Neural Networks

    - Neurons, layers, and activation functions

    - Feedforward and backpropagation

- Session 11: Introduction to TensorFlow

    - Overview of TensorFlow

    - Building and training a simple neural network

- Session 12: Introduction to Keras

    - High-level neural network API

    - Building a deep learning model with Keras

Module 5: Deep Learning for Computer Vision

- Session 13: Introduction to Computer Vision

    - Applications of computer vision in AI

    - Image processing and feature extraction

- Session 14: Convolutional Neural Networks (CNNs)

    - Architecture and components of CNNs

    - Image classification with CNNs

- Session 15: Hands-On Project: Image Classification

    - Applying CNNs to classify images

    - Model evaluation and interpretation

Module 6: Natural Language Processing (NLP) and AI Applications

- Session 16: Introduction to NLP

    - Text preprocessing and tokenization

    - NLP applications in AI

- Session 17: Sentiment Analysis with NLP

    - Analyzing sentiment in text data

    - Practical applications of NLP

- Session 18: Real-world AI Applications and Case Studies

    - Industry use cases

    - Discussion on AI in healthcare, finance, and other domains

Module 7: Advanced Topics and Future Trends

- Session 19: Reinforcement Learning

    - Basics of reinforcement learning

    - Applications in gaming and robotics

- Session 20: Generative Models and GANs

    - Introduction to generative models

    - Applications of Generative Adversarial Networks (GANs)

- Session 21: Emerging Trends in AI

    - Exploring recent developments

    - AI in edge computing, AI ethics, and AI for good

Module 8: Final Project and Review

- Session 22: Capstone AI Project

  - Applying AI techniques to a real-world problem

  - Project presentation and discussion

- Session 23: Review and Q&A

  - Recap of key AI concepts

  - Addressing participant questions and concerns

- Session 24: Course Conclusion and Certificates

  - Course summary

  - Certificate distribution