AI+ Engineer ™

Duration: 40 hours

Course Overview

The AI+ Engineer certification program offers a structured journey through the foundational principles, advanced techniques, and practical applications of Artificial Intelligence (AI). Beginning with the Foundations of AI, participants progress through modules covering AI Architecture, Neural Networks, Large Language Models (LLMs), Generative AI, Natural Language Processing (NLP), and Transfer Learning using Hugging Face. With a focus on hands-on learning, students develop proficiency in crafting sophisticated Graphical User Interfaces (GUIs) tailored for AI solutions and gain insight into AI communication and deployment pipelines. Upon completion, graduates are equipped with a robust understanding of AI concepts and techniques, ready to tackle real-world challenges and contribute effectively to the ever-evolving field of Artificial Intelligence.

Course Prerequisites

- AI+ Data or AI Developer course should be completed
- Basic Math: Familiarity with high school-level algebra and basic statistics
- Basic understanding of Python
- Python Programming: Proficiency in Python is mandatory for hands-on exercises and project work.
- Computer Science Fundamentals: Understanding basic programming concepts (variables, functions, loops) and data structures (lists, dictionaries).

Course Agenda

Module 1: Foundations of Artificial Intelligence

- Introduction to AI
- Core Concepts and Techniques in AI
- Ethical Considerations

Module 2: Introduction to AI Architecture

- Overview of AI and its Various Applications
- Introduction to AI Architecture
- Understanding the AI Development Lifecycle
- Hands-on: Setting up a Basic AI Environment

Module 3: Fundamentals of Neural Networks

- Basics of Neural Networks
- Activation Functions and Their Role
- Backpropagation and Optimization Algorithms
- Hands-on: Building a Simple Neural Network Using a Deep Learning Framework

Module 4: Applications of Neural Networks

- Introduction to Neural Networks in Image Processing
- Neural Networks for Sequential Data
- Practical Implementation of Neural Networks

Module 5: Significance of Large Language Models (LLM)

- Exploring Large Language Models
- Popular Large Language Models
- Practical Finetuning of Language Models
- Hands-on: Practical Finetuning for Text Classification

Module 6: Application of Generative AI

- Introduction to Generative Adversarial Networks (GANs)
- Applications of Variational Autoencoders (VAEs)
- Generating Realistic Data Using Generative Models
- Hands-on: Implementing Generative Models for Image Synthesis

Module 7: Natural Language Processing

- NLP in Real-world Scenarios
- Attention Mechanisms and Practical Use of Transformers
- In-depth Understanding of BERT for Practical NLP Tasks
- Hands-on: Building Practical NLP Pipelines with Pretrained Models

Module 8: Transfer Learning with Hugging Face

- Overview of Transfer Learning in AI
- Transfer Learning Strategies and Techniques
- Hands-on: Implementing Transfer Learning with Hugging Face Models for Various Tasks

Module 9: Crafting Sophisticated GUIs for AI Solutions

- Overview of GUI-based AI Applications
- Web-based Framework
- Desktop Application Framework

Module 10: AI Communication and Deployment Pipeline

- Communicating AI Results Effectively to Non-Technical Stakeholders
- Building a Deployment Pipeline for AI Models
- Developing Prototypes Based on Client Requirements
- Hands-on: Deployment