Generative AI

Duration: 40 Hours (5 Days)

Overview

Generative AI certification is an acknowledgment of mastering algorithms that can generate complex, data-like content ranging from text, to images, to music. The certification asserts expertise in using AI to create, enhance or modify content. Industries use Generative AI for tasks such as content automation, virtual assistance, graphic design and other creative work. The basis of Generative AI involves deep learning techniques like Generative Adversarial Networks (GANs), which include two sub-models, a generator to create new outputs, and a discriminator to compare these outputs to the original data. The certification indicates proficiency in these concepts and bolsters the holder's ability to create innovative AI solutions. NOTE: Please be aware that generative AI vendors, including OpenAI, GPT-3, and Azure Open AI Service, may change their rules, policies, and resources over time. In the context of this course, it is essential to understand that API keys and other resources related to generative AI may be provided to you as per the policies and guidelines set by these vendors.

Audience Profile

AI enthusiasts and technologists interested in learning cutting-edge technology • Software developers and engineers seeking for upskill

- Data scientists aiming to broaden their AI expertise
- Students studying computer science or relevant disciplines
- Companies or businesses looking to incorporate AI in their operations

Course Syllabus

Module 01: Introductory Session

- Machine Learning
- Deep Learning
- Hands-on Lab

Module 02: Introduction to GenAI

- Generative Al Applications
- Understanding Probability and Statistics in Generative Al
- Introduction to Generative Models
- Deep Learning for Generative Models
- Introduction to Generative Adversarial Networks (GANs)
- Autoencoders
- Transformers and Attention Mechanisms - "Attention is all you need".
- Hands-on Lab

Module 03: Learning Prompt Engineering

- Introduction to Prompt Engineering
- Designing a prompt - The process and workflow
- Avoiding prompt injections using delimiters

- Defining constraints
- Zero-shot Prompting
- Few-shot Prompting
- Persona Prompting
- Chain of Thought
- Adversial
- Hands-on lab

Module 04: Introduction of LLM Model & Non-Microsoft Solutions

- Architecture of Large Language Models
- Text Al LLMs (GPT-3, GPT-4, LaMDA, LLaMA, Stanford Alpaca, Google FLAN, Poe,
- Falcon LLM)
- Image Al Models & Services (Midjourney, Stable Diffusion, ControlNet (SD))
- Video Al Models (Runway - Gen 1 & 2, Kaiber, D-ID)
- Audio Al Models (ElevenLabs)
- Hands-on Lab

Module 05: Al App Development using LangChain and LlamaIndex

- The LangChain Ecosystem
- Supported LLMs
- Case Study: Getting started with LangChain and OpenAl
- Prompt composition and templates
- Using multiple LLMs (Chains)
- Working with Data loaders - Ingesting documents
- Working with text splitters - Chunking Data
- Working with Chains (Conversational Retrieval QA, Retrieval QA, Summarization, API etc.)
- Working with Memory
- Working with Embedding
- Basics of LlamaIndex
- Hands-on Lab

Module 06: Customizing LLM for own data

- Type of Customization (Fine Tuning, Embeddings, RLHF, etc.)
- Knowledge Graphs
- Hands-on Lab

Module 07: Azure OpenAI

- Overview of Azure OpenAI
- Code of Conduct
- Azure OpenAI Playground
- Generating Text using Azure OpenAI
- Generating Image using Azure OpenAI
- Build a Front-end Application using our own data
- Hands-on Lab

Module 08: Responsible Al in GenAl

- Impact on environment

- Biases and other ethical Issues
- Copyrights and ownership
- License types for models and its implications

Module 09: GenAl and Enterprise Architecture

- Gen Al positioning within Enterprise Architecture
- Attention Architecture
- Transformer Architecture
- End to End Al Model Architecture with GenAl
- Day in life of Data Scientist

Module 10: Industrialization and demos

- When and how to re-calibrate, re-train, re-build models
- Search Architecture
- Chatbot Architecture
- Domain specific architectures