

GenAI: LangChain, Prompt Engineering & Azure OpenAI

Learn to build generative AI applications using prompt engineering, LangChain and Azure OpenAI, from foundational models to enterprise architecture.

5 Days

40 HOURS

10

MODULES

55

TOPICS

7

HANDS-ON ACTIVITIES

COURSE 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.

WHO THIS COURSE IS FOR

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

PREREQUISITES

- Functional Knowledge of Python with basic knowledge of Machine learning concepts is mandatory.

What You Will Learn

- Explain deep learning foundations behind generative models and GANs
- Apply prompt engineering techniques such as zero-shot and chain of thought
- Compare text, image, video and audio AI models and services
- Develop AI applications using LangChain and LlamaIndex
- Implement data loaders, text splitters, chains and memory in LangChain
- Customise large language models using fine tuning and embeddings
- Configure Azure OpenAI to generate text, images and front-end applications
- Assess responsible AI concerns such as bias, copyright and licensing

COURSE SYLLABUS

10 Modules, 55 Topics

01

Introductory Session

TOPICS

Machine Learning · Deep Learning

Hands-on Lab

02

Introduction to GenAI

TOPICS

- Generative AI Applications
- Understanding Probability and Statistics in Generative AI
- 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

03**Hands-on Lab**

Learning Prompt Engineering

TOPICS

- 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
- Adversarial

04**Hands-on Lab**

Introduction of LLM Model & Non-Microsoft Solutions

TOPICS

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

05**Hands-on Lab**

AI App Development Using LangChain and LlamaIndex

TOPICS

- The LangChain Ecosystem
- Supported LLMs
- **Case Study:** Getting started with LangChain and OpenAI
- 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

06**Hands-on Lab**

Customizing LLM for Own Data

TOPICS

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

07**Hands-on Lab**

Azure OpenAI

TOPICS

- 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

08

Responsible AI in GenAI

TOPICS

Impact on environment · Biases and other ethical Issues · Copyrights and ownership · License types for models and its implications

09

GenAI and Enterprise Architecture

TOPICS

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

Industrialization and Demos

TOPICS

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

HANDS-ON ACTIVITIES

Practise What You Learn

#	MODULE	ACTIVITY
01	Introductory Session	Hands-on Lab
02	Introduction to GenAI	Hands-on Lab
03	Learning Prompt Engineering	Hands-on lab
04	Introduction of LLM Model & Non-Microsoft Solutions	Hands-on Lab
05	AI App Development Using LangChain and LlamaIndex	Hands-on Lab
06	Customizing LLM for Own Data	Hands-on Lab
07	Azure OpenAI	Hands-on Lab

WHAT IS INCLUDED

Everything You Need to Succeed

- Koenig course material for every module
- Delivery by certified instructors and subject matter experts
- Hands-on exercises throughout the course
- Course completion certificate from Koenig

ABOUT KOENIG

Who We Are

Established in 1993, Koenig Solutions is a globally recognised training provider with 35+ technology partnerships, 5,000+ training programmes and a network of certified instructors and subject matter experts, supporting individuals and enterprise teams worldwide.

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