KOENIG
step forward

KOENIG SOLUTIONS · COURSE OUTLINE

ChatGPT & OpenAI API: RAG (FAISS) & Fine-Tuning

Learn to build ChatGPT and OpenAI API solutions using prompt engineering, FAISS-based RAG and LLM fine-tuning.

4 Days	8	60
DURATION	MODULES	TOPICS

COURSE OVERVIEW

This course introduces generative AI, large language models and the ChatGPT and OpenAI API, covering setup, tokens, pricing and system prompts. It then explores prompt engineering techniques such as structured responses, summarization and chain of thought, followed by advanced ChatGPT applications including regression, classification and document analysis. Later modules cover retrieval augmented generation with FAISS and OpenAI embeddings, fine-tuning LLMs with quantization and LoRA, and building and checking a fine-tuned ChatGPT model. The course closes with responsible AI practices, data security and future trends in generative AI.

WHO THIS COURSE IS FOR

- **AI Developers**
- **Machine Learning Engineers**
- **NLP Practitioners**
- **Data Scientists**
- **Prompt Engineers**
- **Software Developers**

TOOLS AND REQUIREMENTS

- Client need to have their own ChatGPT Plus and OpenAI subscription to be able to perform hands-on

LEARNING OBJECTIVES

- Explain generative AI concepts including LLMs, embeddings and fine-tuning
- Configure the OpenAI API with keys, environment variables and libraries
- Apply prompt engineering techniques for structured and JSON responses
- Implement chain of thought and question-answering prompting strategies
- Analyse advanced ChatGPT applications such as classification and clustering
- Implement retrieval augmented generation using FAISS and OpenAI embeddings
- Develop a fine-tuned ChatGPT model using quantization and LoRA
- Assess responsible AI practices and data security protocols

COURSE SYLLABUS

8 Modules, 60 Topics

01

Getting Started with AI and Generative AI

TOPICS

- Introduction To Generative AI
- What is Artificial Intelligence (AI), Machine Learning (ML) & Deep Learning
- Understanding Generative AI in Detail
- How LLMs Conquered NLP
- How LLMs Change the NLP & Machine Learning Workflow
- **Exploring ChatGPT:** Features & Capabilities

02

Key Concepts of Generative AI

TOPICS

- Introduction to Key Concepts of Generative AI
- What is a LLM (Large Language Model) & How it Works with GenAI
- How Prompt Engineering helps you to Become a GenAI Pro
- What are Embeddings in LLMs
- How AI Models Are Fine Tuned For Custom Purposes
- Practical Uses Cases of Generative AI Across Industries
- Introduction to Uses Cases of GenAI
- **Generative AI in Retail:** Practical Uses Cases
- **Generative AI in Marketing:** Practical Uses Cases

03

The ChatGPT and OpenAI API

TOPICS

- The ChatGPT and OpenAI API
- Signup For OpenAI & Get Your API Key
- Set Environment Variables (Windows)
- Set Environment Variables (Linux & Mac)
- Install the OpenAI and Tiktoken Libraries
- Pricing of OpenAI
- What is a Token?
- Estimating Costs with Tiktoken
- Reproducibility
- System Prompt
- Incorporating History
- Temperature, Frequency and Presence Penalties
- Usage Policies

04

Prompt Engineering

TOPICS

- Introduction to Prompt Engineering
- Response from Unstructured to Structured and Vice-versa
- Response in JSON Mode
- Translation, Tone Enhancement, and Language Detection
- Sentiment Analysis & Stock Trading
- Summarization Techniques
- Another EL15 Example
- Question-Answering
- Chain of Thought Prompting

05

Advanced Applications of ChatGPT

TOPICS

- Communication Writing
- Targeted Advertising Optimization
- Regression Machine Learning using ChatGPT
- Classification Machine Learning using ChatGPT
- Predictive Customer Behaviour Modelling (Clustering)
- Document Analysis
- ChatGPT Functionalities

06

Retrieval Augmented Generation (RAG)

TOPICS

- Introduction to Semantic Search
- Facebook AI Similarity Search (FAISS)
- OpenAI Embedding's Endpoint
- RAG with FAISS (Facebook AI Similarity Search)

07

Fine-Tuning of LLMs

TOPICS

- What Is Fine-Tuning and When Should You Use It?
- Quantization of LLMs
- LoRA (Low Rank Adaptation) of LLMs
- OpenAI Fine-Tuning and File Endpoints
- Fine-Tuning ChatGPT - Making the Dataset
- Fine-Tuning ChatGPT - Upload Data and Create Fine-Tuning Job
- Fine-Tuning ChatGPT - Check the Results

08

Ethics & Future Trends in Generative AI

TOPICS

- Introduction to Responsible AI Systems
- How to Use Gen AI as Responsible AI
- Future Potential of GenAI & Future of Humans in World Of AI?
- Securing information and data security protocols
- Conclusion and Future Pathway in World of AI

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.

FLEXIBLE DELIVERY

Learn the Way That Suits You

Classroom Training | Live Online Classes (ILO) | Fly-Me-A-Trainer (FMAT) | Flexi (Self-Paced) | 1-on-1 Training

Ready to Get Started?

Talk to a learning advisor about schedules, group training and customised delivery.

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