Building AI Applications with

Large Language Models and LangChain

Course Duration: 03 days (24 hours)

Important Note:
To perform lab/exercise, participants need to have their own OpenAI API subscription: https://platform.openai.com/account/billing/overview

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Module 01: Introduction to Large Language Models
- Definition and Significance of Large Language Models (LLMs)
- Architecture: Overview of transformer-based models
- Training: Data collection, tokenization, and transfer learning
- Fine-Tuning: Adapting LLMs for specific tasks
- Challenges & Ethics: Addressing biases, fake information, and ethical considerations

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Module 02: Prompt Engineering for Large Language Model (OpenAI model)
- Introduction to Prompting
- Guidelines for Prompting
- Types of Prompting
- Labs/Exercise

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Module 03: Building Systems using Large Language Model (OpenAI model)
- Requirements for Building Robust System
- Text Classification
- Text Moderation
- Chain of Thought Reasoning
- Chaining Prompts
- Evaluating Generated Output
- Evaluating Overall System Performance using Custom Chatbot
- Labs/Exercise

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Module 04: LangChain for LLM Application Development
- Expand use cases and capabilities of language models using LangChain
- Call LLMs, provide prompts, parse responses, use memories

- Create sequences of operations, apply LLMs to proprietary data
- Explore LLM as reasoning agent
- Explore LLM as reasoning agents
- Labs/Exercise

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Module 05: Chat with Your Data using LangChain

- Loaders for various data sources using LangChain
- Build a chatbot to chat with your own documents and data
- Load data, split documents, integrate embeddings and vector stores.
- Access and index data in the vector store.
- Build a one-pass question-answering solution to chat with your data.
- Track and select pertinent information while building your chatbot using LangChain
- Labs/Exercise

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Module 06: Building Generative AI Applications with Gradio

- Quickly create and demo machine learning applications using Gradio
- Build apps for Image generation
- Build apps for Image captioning
- Build apps for Text-summarization
- Share your app on Hugging Face Spaces
- Labs/Exercise

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