Developing AI Solutions with Azure Workshop

2 Days / Instructor-Led / Format: On-Site or Virtual

Contact Us for Pricing

About this Course:

OpenAI trains sophisticated deep-learning models such as ChatGPT and DALL·E and makes them available to the public through REST APIs. ChatGPT is the most advanced text-generation model ever built, featuring 175 billion parameters. It excels at classifying text, translating text to other languages, generating longform text from simple descriptions, writing code in a variety of programming languages, converting code into natural language, and more. It's also adept at answering questions from context that you provide.

Azure OpenAI enables access to OpenAI models, while providing additional Azure features, such as private networking, regional availability, and responsible AI.

Learn the different ways of using OpenAI's text- and code-generation services through Azure with the OpenAI Studio web-based UI, REST APIs, and Python SDKs. Learn how Azure OpenAI can improve your business, and how to combine ChatGPT with OpenAI's Embeddings API to build a rich semantic-search system.

Key Learning Areas:

- Learn what ML and AI are
- Learn how neural networks work
- Learn how to use Intelligence-as-a-Service in the form of Azure Cognitive Services
- Learn how to access and use Azure OpenAI services
- Learn about Embeddings and Azure Cognitive Search
- Learn how embedding vectors can be stored in a vector database
- Learn how to use LangChain to simplify the process of building a Large Language Model (LLM)
- Learn how to get the most out of ChatGPT through prompt engineering

Who Should Attend:

Software Engineers

Prerequisites:

Most coding will be done in Python, so familiarity with Python is helpful but not required.

Course Outline:

Introduction to AI

- What is AI?
- Microsoft AI
- How neural networks work
- Backpropagation

Cognitive Services

- Introduction
- Authentication
- Calling Cognitive Services APIs
- Computer Vision Service
- Language Service
  - Analyzing Sentiment
  - Q/A
- Translator Service
- Speech Service
- Multvariate anomaly detector
- Custom Vision Service

Introduction to OpenAI

- What is OpenAI?
- What is Azure OpenAI?
  - Azure Open AI Service Models
- Azure Open AI Studio
  - Chat Playground
  - Completions Playground
- Chat GPT
  - How it works
  - Generating text

- Editing text
- Translating text
- Analyzing Sentiment
- Answering [Contextual] Questions
- Code generation

Embeddings and Azure Cognitive Search

- Tokenization
  - Keras Tokenizer
  - Byte Pair Encoding
- What are embeddings?
- Embeddings API
- Azure Cognitive Search?
  - Architecture
  - Indexers
  - Skillsets
  - Defining an index schema
  - Vector search
- Lab
  - Using OpenAI's Embeddings API to vectorize text samples
  - Tutorial: Index JSON blobs from Azure Storage using REST:
    - https://learn.microsoft.com/en-us/azure/search/search-semi-structured-data
  - Quickstart: Use preview REST APIs for vector search queries:
    - https://learn.microsoft.com/en-us/azure/search/search-get-started-vector

LangChain and Vector Database

- Document Loaders
  - Components
  - Chains
- Document loaders
- Text Splitters
- OpenAIEmbeddings
- Vector Store/Database
  - Chromadb
  - Azure Cognitive Search
- Retrieval techniques
- Lab:

- LangChain over documents using chromadb

Prompt Engineering

- What is Prompt Engineering?
- GPT Fundamentals
  - Roles
  - Components
- Techniques
  - Role prompting
  - Instruction prompting
  - Few-shot learning
  - Chain of thought prompting
  - Grounding context
  - Token usage
  - Best practices
- Structured Output
- Prompt hacking