Implement Generative AI engineering with Azure Databricks

Courses Code: DP-3028
Duration: 1 Day
Delivery Mode: Instructor-led Training (ILT) | Virtual Instructor led Training (VILT)

Overview

This course covers generative AI engineering on Azure Databricks, using Spark to explore, fine-tune, evaluate, and integrate advanced language models. It teaches how to implement techniques like retrieval-augmented generation (RAG) and multi-stage reasoning, as well as how to fine-tune large language models for specific tasks and evaluate their performance. Learners will also explore responsible AI practices for deploying AI solutions and how to manage models in production using LLMOps (Large Language Model Operations) on Azure Databricks.

Skills Covered

- Understand the fundamentals of Generative AI and Large Language Models (LLMs)
- Build LLM-powered applications on Azure Databricks
- Apply natural-language processing techniques with LLMs
- Implement Retrieval-Augmented Generation (RAG) for enterprise data solutions
- Perform data preparation and vector search for RAG workflows
- Build multi-stage reasoning systems using frameworks like LangChain, LlamaIndex, Haystack, and DSPy
- Fine-tune Azure OpenAI models using Azure Databricks
- Evaluate LLM performance using metrics and LLM-as-a-judge methods
- Apply Responsible AI practices and risk-mitigation strategies
- Implement LLMOps for deployment, monitoring, and governance with ML flow & Unity Catalog

Who Should Attend

This course is designed for data scientists, machine learning engineers, and other AI practitioners who want to build generative AI applications using Azure Databricks. It is intended for professionals familiar with fundamental AI concepts and the Azure Databricks platform.

Prerequisites

Familiarity with fundamental Azure Databricks concepts (Recommended: "Get started with artificial intelligence" and "Explore Azure Databricks" modules)

Course Modules

1. Get started with language models in Azure Databricks
Large Language Models (LLMs) have revolutionized various industries by enabling advanced natural language processing (NLP) capabilities. These language models are utilized in a wide array of applications, including text summarization, sentiment analysis, language translation, zero-shot classification, and few-shot learning.

2. Implement Retrieval Augmented Generation (RAG) with Azure Databricks
Retrieval Augmented Generation (RAG) is an advanced technique in natural language processing that enhances the capabilities of generative models by integrating external information retrieval mechanisms. When you use both generative models and retrieval systems, RAG dynamically fetches relevant information from external data sources to augment the generation process, leading to more accurate and contextually relevant outputs.

3. Implement multi-stage reasoning in Azure Databricks
Multi-stage reasoning systems break down complex problems into multiple stages or steps, with each stage focusing on a specific reasoning task. The output of one stage serves as the input for the next, allowing for a more structured and systematic approach to problem-solving.

4. Fine-tune language models with Azure Databricks
Fine-tuning uses Large Language Models' (LLMs) general knowledge to improve performance on specific tasks, allowing organizations to create specialized models that are more accurate and relevant while saving resources and time compared to training from scratch.
5. Evaluate language models with Azure Databricks
In this module, you explore Large Language Model evaluation using various metrics and approaches, learn about evaluation challenges and best practices, and discover automated evaluation techniques including LLM-as-a-judge methods.

6. Review responsible AI principles for language models in Azure Databricks
When working with Large Language Models (LLMs) in Azure Databricks, it's important to understand the responsible AI principles for implementation, ethical considerations, and how to mitigate risks. Based on identified risks, learn how to implement key security tooling for language models.

7. Implement LLMOps in Azure Databricks
Streamline the implementation of Large Language Models (LLMs) with LLMOps (LLM Operations) in Azure Databricks. Learn how to deploy and manage LLMs throughout their lifecycle using Azure Databricks.

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