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Learning Style: Virtual Classroom

Technology: Microsoft

Difficulty: Advanced

Course Duration: 4 Days

Operationalize machine learning and generative AI solutions (AI-300)



About This Course:

Natural language processing (NLP) solutions use language models to interpret the semantic meaning of written or spoken language. You can use the Language Understanding service to build language models for your applications.

Course Objectives:

- Analyze text with Azure Language in Foundry Tools
- Develop a text analysis agent with the Azure Language MCP server
- Develop a speech-capable generative AI application
- Create speech-enabled apps with Azure Speech in Microsoft Foundry Tools
- Develop a speech agent with the Azure Speech MCP server
- Develop an Azure Speech Voice Live Agent in Microsoft Foundry
- Translate text and speech with Microsoft Foundry Tools

Audience:

- AI Engineers and Developers interested in building natural language processing (NLP) solutions
- Software Developers working with conversational AI and language-based applications\

Prerequisites:

- Familiarity with Azure and the Azure portal.
- Experience programming with C# or Python.

Course Outline:

1 - Experiment with Azure Machine Learning

Preprocess data and configure featurization

Run an automated machine learning experiment

Evaluate and compare models

Configure MLflow for model tracking in notebooks

Train and track models in notebooks

Evaluate models with the Responsible AI dashboard

Module assessment

2 - Perform hyperparameter tuning with Azure Machine Learning

Define a search space

Configure a sampling method

Configure early termination

Use a sweep job for hyperparameter tuning

Module assessment

3 - Run pipelines in Azure Machine Learning

Create components

Create a pipeline

Run a pipeline job

Module assessment

4 - Trigger Azure Machine Learning jobs with GitHub Actions

Understand the business problem

Explore the solution architecture

Use GitHub Actions for model training

Module assessment

5 - Trigger GitHub Actions with feature-based development

Understand the business problem

Explore the solution architecture

Trigger a workflow

Module assessment

6 - Work with environments in GitHub Actions

Understand the business problem

Explore the solution architecture

Set up environments

Module assessment

7 - Deploy a model with GitHub Actions

Understand the business problem

Explore the solution architecture

Model deployment

Module assessment

8 - Plan and prepare a GenAIOps solution

Explore use cases for GenAIOps

Select the right generative AI model

Understand the development lifecycle of a language model application

Explore available tools and frameworks to implement GenAIOps

Module assessment

9 - Manage prompts for agents in Microsoft Foundry with GitHub

Apply version control to prompts

Understand Microsoft Foundry agents and prompt versioning

Organize prompts in GitHub repositories

Develop safe prompt deployment workflows

10 - Evaluate and optimize AI agents through structured experiments

Design evaluation experiments

Apply Git-based workflows to optimization experiments

Apply evaluation rubrics for consistent scoring

11 - Automate AI evaluations with Microsoft Foundry and GitHub Actions

Understand why automated evaluations matter

Align evaluators with human criteria

Create evaluation datasets

Implement batch evaluations with Python

Integrate evaluations into GitHub Actions

12 - Monitor your generative AI application

Why do you need to monitor?

Understand key metrics to monitor

Explore how to monitor with Azure

Integrate monitoring into your app

Interpret monitoring results

13 - Analyze and debug your generative AI app with tracing

Why do you need to use tracing?

Identify what to trace in generative AI applications

Implement tracing in generative AI applications

Debug complex workflows with advanced tracing patterns

Make informed decisions with trace data analysis