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Learning Style: Virtual Classroom

Technology: Microsoft

Difficulty: Intermediate

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