

Designing and implementing a Microsoft Azure AI Solution

Duration: 4 Days

Course Description:

AI-102 Designing and Implementing an Azure AI Solution is intended for software developers wanting to build AI infused applications that leverage Azure AI Services, Azure AI Search, and Azure OpenAI. The course will use C# or Python as the programming language.

Intended Audience:

Software engineers concerned with building, managing and deploying AI solutions that leverage Azure AI Services, Azure AI Search, and Azure OpenAI. They are familiar with C# or Python and have knowledge on using REST-based APIs to build computer vision, language analysis, knowledge mining, intelligent search, and generative AI solutions on Azure.

Course Outline:

Prepare to develop AI solutions on Azure

- Introduction
- Define artificial intelligence
- Understand AI-related terms
- Understand considerations for AI Engineers
- Understand considerations for responsible AI
- Understand capabilities of Azure Machine Learning
- Understand capabilities of Azure AI Services
- Understand capabilities of the Azure OpenAI Service
- Understand capabilities of Azure Cognitive Search

Create and consume Azure AI services

- Introduction
- Provision an Azure AI services resource
- Identify endpoints and keys
- Use a REST API
- Use an SDK

Secure Azure AI services

- Introduction
- Consider authentication
- Implement network security

Monitor Azure AI services

- Introduction
- Monitor cost
- Create alerts
- View metrics
- Manage diagnostic logging

Deploy Azure AI services in containers

- Introduction
- Understand containers
- Use Azure AI services containers

Analyze images

- Introduction
- Provision an Azure AI Vision resource
- Analyze an image
- Generate a smart-cropped thumbnail and remove background

Classify images

- Introduction
- Provision Azure resources for Azure AI Custom Vision
- Understand image classification
- Train an image classifier

Detect, analyze, and recognize faces

- Introduction
- Identify options for face detection analysis and identification
- Understand considerations for face analysis
- Detect faces with the Azure AI Vision service
- Understand capabilities of the face service
- Compare and match detected faces
- Implement facial recognition

Read Text in images and documents with the Azure AI Vision Service

- Introduction
- Explore Azure AI Vision options for reading text
- Use the Read API

Analyze video

- Introduction
- Understand Azure Video Indexer capabilities
- Extract custom insights
- Use Video Analyzer widgets and APIs

Plan an Azure AI Document Intelligence solution

- Introduction
- Understand AI Document Intelligence
- Plan Azure AI Document Intelligence resources
- Choose a model type

Analyze text with Azure AI Language

- Introduction
- Provision an Azure AI Language resource
- Detect language
- Extract key phrases
- Analyze sentiment
- Extract entities
- Extract linked entities

Build a question answering solution

- Introduction
- Understand question answering
- Compare question answering to Azure AI Language understanding
- Create a knowledge base
- Implement multi-turn conversation
- Test and publish a knowledge base
- Use a knowledge base
- Improve question answering performance

Build a conversational language understanding model

- Introduction
- Understand prebuilt capabilities of the Azure AI Language service
- Understand resources for building a conversational language understanding model
- Define intents, utterances, and entities
- Use patterns to differentiate similar utterances
- Use pre-built entity components
- Train, test, publish, and review a conversational language understanding model

Create a custom text classification solution

- Introduction
- Understand types of classification projects
- Understand how to build text classification projects

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COURSE OUTLINE

Create a custom named entity extraction solution

- Introduction
- Understand custom named entity recognition
- Label your data
- Train and evaluate your model

Generate images with Azure OpenAI Service

- Introduction
- What is DALL-E?
- Explore DALL-E in Azure OpenAI Studio
- Use the Azure OpenAI REST API to consume DALL-E models

Translate text with Azure AI Translator service

- Introduction
- Provision an Azure AI Translator resource
- Understand language detection, translation, and transliteration
- Specify translation options
- Define custom translations

Create speech-enabled apps with Azure AI services

- Introduction
- Provision an Azure resource for speech
- Use the Azure AI Speech to Text API
- Use the text to speech API
- Configure audio format and voices
- Use Speech Synthesis Markup Language

Translate speech with the Azure AI Speech service

- Introduction
- Provision an Azure resource for speech translation
- Translate speech to text
- Synthesize translations

Create an Azure AI Search solution

- Introduction
- Manage capacity
- Understand search components
- Understand the indexing process
- Search an index
- Apply filtering and sorting
- Enhance the index

Create a custom skill for Azure AI Search

- Introduction
- Create a custom skill
- Add a custom skill to a skillset

Create a knowledge store with Azure AI Search

- Introduction
- Define projections
- Define a knowledge store

Use prebuilt Form Recognizer models

- Introduction
- Understand prebuilt models
- Use the General Document, Read, and Layout models
- Use financial, ID, and tax models

Extract data from forms with Azure Document Intelligence

- Introduction
- What is Azure Document Intelligence?
- Get started with Azure Document Intelligence
- Train custom models
- Use Azure Document Intelligence models
- Use the Azure Document Intelligence Studio

Get started with Azure OpenAI Service

- Introduction
- Access Azure OpenAI Service
- Use Azure OpenAI Studio
- Explore types of generative AI models
- Deploy generative AI models
- Use prompts to get completions from models
- Test models in Azure OpenAI Studio's playgrounds

Build natural language solutions with Azure OpenAI Service

- Introduction
- Integrate Azure OpenAI into your app
- Use Azure OpenAI REST API
- Use Azure OpenAI SDK

Apply prompt engineering with Azure OpenAI Service

- Introduction
- Understand prompt engineering
- Write more effective prompts
- Provide context to improve accuracy

Generate code with Azure OpenAI Service

- Introduction
- Construct code from natural language
- Complete code and assist the development process
- Fix bugs and improve your code

Implement Retrieval Augmented Generation (RAG) with Azure OpenAI Service

- Introduction
- Understand Retrieval Augmented Generation (RAG) with Azure OpenAI Service
- Add your own data source
- Chat with your model using your own data

Fundamentals of Responsible Generative AI

- Introduction
- Plan a responsible generative AI solution
- Identify potential harms
- Measure potential harms
- Mitigate potential harms
- Operate a responsible generative AI solution

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