AI-102T00: Designing and Implementing a Microsoft Azure AI Solution

Course ID #: 7000-600-ZZ-Z

Hours: 28

Course Content

Course Description:

In this course, you will cover how to build AI infused applications that leverage Azure Cognitive Services, Azure Cognitive Search, and Microsoft Bot Framework. The course will use C# or Python as the programming language.

Course Objectives:

- Describe considerations for AI-enabled application development
- Create, configure, deploy, and secure Azure Cognitive Services
- Develop applications that analyze text
- Develop speech-enabled applications
- Create applications with natural language understanding capabilities
- Create QnA applications
- Create conversational solutions with bots
- Use computer vision services to analyze images and videos
- Create custom computer vision models
- Develop applications that detect, analyze, and recognize faces
- Develop applications that read and process text in images and documents
- Create intelligent search solutions for knowledge mining

Prerequisites:

Before attending this course, students must have:

- Knowledge of Microsoft Azure and ability to navigate the Azure portal
- Knowledge of either C# or Python
- Familiarity with JSON and REST programming semantics

Target Audience:

Software engineers concerned with building, managing and deploying AI solutions that leverage Azure Cognitive Services, Azure Cognitive Search, and Microsoft Bot Framework. 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 conversational AI solutions on Azure.

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Topics:

Lesson 1: Introduction to AI on Azure
Artificial Intelligence (AI) is increasingly at the core of modern apps and services. In this module, you'll learn about some common AI capabilities that you can leverage in your apps, and how those capabilities are implemented in Microsoft Azure. You'll also learn about some considerations for designing and implementing AI solutions responsibly.
- Introduction to Artificial Intelligence
- Artificial Intelligence in Azure

Lesson 2: Introduction to AI on Azure
Cognitive Services are the core building blocks for integrating AI capabilities into your apps. In this module, you'll learn how to provision, secure, monitor, and deploy cognitive services.
- Getting Started with Cognitive Services
- Using Cognitive Services for Enterprise Applications

Lab: Get Started with Cognitive Services
Lab: Manage Cognitive Services Security
Lab: Monitor Cognitive Services
Lab: Use a Cognitive Services Container

Lesson 3: Getting Started with Natural Language Processing
Natural Language processing (NLP) is a branch of artificial intelligence that deals with extracting insights from written or spoken language. In this module, you'll learn how to use cognitive services to analyze and translate text.
- Analyzing Text
- Translating Text

Lab: Translate Text
Lab: Analyze Text

Lesson 4: Building Speech-Enabled Applications
Many modern apps and services accept spoken input and can respond by synthesizing text. In this module, you'll continue your exploration of natural language processing capabilities by learning how to build speech-enabled applications.
- Speech Recognition and Synthesis
- Speech Translation

Lab: Recognize and Synthesize Speech
Lab: Translate Speech

Lesson 5: Creating Language Understanding Solutions
To build an application that can intelligently understand and respond to natural language input, you must define and train a model for language understanding. In this module, you'll learn how to use the Language Understanding service to create an app that can identify user intent from natural language input.
- Creating a Language Understanding App
- Publishing and Using a Language Understanding App
- Using Language Understanding with Speech

Lab: Create a Language Understanding Client Application
Lab: Create a Language Understanding App
Lab: Use the Speech and Language Understanding Services

Lesson 6: Building a QnA Solution

One of the most common kinds of interaction between users and AI software agents is for users to submit questions in natural language, and for the AI agent to respond intelligently with an appropriate answer. In this module, you'll explore how the QnA Maker service enables the development of this kind of solution.

- Creating a QnA Knowledge Base
- Publishing and Using a QnA Knowledge Base

Lab: Create a QnA Solution

Lesson 7: Conversational AI and the Azure Bot Service

Bots are the basis for an increasingly common kind of AI application in which users engage in conversations with AI agents, often as they would with a human agent. In this module, you'll explore the Microsoft Bot Framework and the Azure Bot Service, which together provide a platform for creating and delivering conversational experiences.

- Bot Basics
- Implementing a Conversational Bot

Lab: Create a Bot with the Bot Framework SDK
Lab: Create a Bot with Bot Framework Composer

Lesson 8: Getting Started with Computer Vision

Computer vision is an area of artificial intelligence in which software applications interpret visual input from images or video. In this module, you'll start your exploration of computer vision by learning how to use cognitive services to analyze images and video.

- Analyzing Images
- Analyzing Videos

Lab: Analyze Video
Lab: Analyze Images with Computer Vision

Lesson 9: Developing Custom Vision Solutions

While there are many scenarios where pre-defined general computer vision capabilities can be useful, sometimes you need to train a custom model with your own visual data. In this module, you'll explore the Custom Vision service, and how to use it to create custom image classification and object detection models.

- Image Classification
- Object Detection

Lab: Classify Images with Custom Vision
Lab: Detect Objects in Images with Custom Vision

Lesson 10: Detecting, Analyzing, and Recognizing Faces

Facial detection, analysis, and recognition are common computer vision scenarios. In this module, you'll explore the user of cognitive services to identify human faces.

- Detecting Faces with the Computer Vision Service
- Using the Face Service

Lab: Detect, Analyze, and Recognize Faces

Lesson 11: Reading Text in Images and Documents

Optical character recognition (OCR) is another common computer vision scenario, in which software extracts text from images or documents. In this module, you'll explore cognitive services that can be used to detect and read text in images, documents, and forms.

- Reading text with the Computer Vision Service
- Extracting Information from Forms with the Form Recognizer service

Lab: Read Text in Images
Lab: Extract Data from Forms

Lesson 12: Creating a Knowledge Mining Solution

Ultimately, many AI scenarios involve intelligently searching for information based on user queries. AI-powered knowledge mining is an increasingly important way to build intelligent search solutions that use AI to extract insights from large repositories of digital data and enable users to find and analyze those insights.

- Implementing an Intelligent Search Solution
- Developing Custom Skills for an Enrichment Pipeline
- Creating a Knowledge Store

Lab: Create a Custom Skill for Azure Cognitive Search
Lab: Create an Azure Cognitive Search solution
Lab: Create a Knowledge Store with Azure Cognitive Search

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