

# Introduction to AI and Machine Learning on Google Cloud

7h

## What you'll learn

- Recognize the data-to-AI technologies and tools provided by Google Cloud.
- Build generative AI projects by using Gemini multimodal, efficient prompts, and model tuning.
- Explore various options for developing an AI project on Google Cloud.
- Create an ML model from end-to-end by using Vertex AI.

## Target audience

Professional AI developers, data scientists, and ML engineers who want to build predictive and generative AI projects on Google Cloud

## Prerequisites

Having one or more of the following:

- Basic knowledge of machine learning concepts
- Prior experience with programming languages such as SQL and Python

## Course Outline

## Module 01: AI Foundations

### Topics

- Why AI?
- AI/ML framework on Google Cloud
- Google Cloud infrastructure
- Data and AI products
- ML model categories
- BigQuery ML
- Lab introduction: BigQuery ML

### Objectives

- Recognize the AI/ML framework on Google Cloud.
- Identify the major components of Google Cloud infrastructure.
- Define the data and ML products on Google Cloud and how they support the data-to-AI lifecycle.
- Build an ML model with BigQueryML to bring data to AI.

### Activities

- Lab: Predicting Visitor Purchases with BigQuery ML
- Quiz
- Reading

## Module 02: AI Development Options

### Topics

- AI development options
- Pre-trained APIs
- Vertex AI
- AutoML
- Custom training
- Lab introduction: Natural Language API

### Objectives

- Define different options to build an ML model on Google Cloud.
- Recognize the primary features and applicable situations of pre-trained APIs, AutoML, and custom training.
- Use the Natural Language API to analyze text.

## Activities

- Lab: Entity and Sentiment Analysis with Natural Language API
- Quiz
- Reading

## **Module 03: AI Development Workflow**

- ML workflow
- Data preparation
- Model development
- Model serving
- MLOps and workflow automation
- Lab introduction: AutoML
- How a machine learns

## Objectives

- Define the workflow of building an ML model.
- Describe MLOps and workflow automation on Google Cloud.
- Build an ML model from end to end by using AutoML on Vertex AI.

## Activities

- Lab: Vertex AI: Predicting Loan Risk with AutoML
- Quiz
- Reading

## **Module 04: Generative AI**

## Topics

- Generative AI and workflow
- Gemini multimodal
- Prompt design
- Model tuning
- Model Garden
- AI solutions
- Lab introduction: Vertex AI Studio

## Objectives

- Define generative AI and foundation models.
- Use Gemini multimodal with Vertex AI Studio.

- Design efficient prompt and tune models with different methods.
- Recognize the AI solutions and the embedded Gen AI features.

#### Activities

- Lab: Getting Started with Vertex AI Studio
- Quiz
- Reading

### **Module 05: Course Summary**

#### Topics

- Course summary

#### Objectives

- Recognize the primary concepts, tools, technologies, and products learned in the course.

#### Activities

- Reading