Operationalize machine learning and generative AI solutions (AI-300T00)

Duration: 4 Days
Audience: Professionnel TI

Who is this training for?

This course is intended for data scientists, machine learning engineers, and DevOps professionals who want to design and operate production-grade AI solutions on Azure. It is suited for learners with experience in Python, a foundational understanding of machine learning concepts, and basic familiarity with DevOps practices such as source control, CI/CD, and command-line tools, who are preparing to implement MLOps and GenAIOps workflows using Azure-native services.

Training objectives

By

the end of this course, students will be able to:

- Train and evaluate machine learning classification models using Azure Machine Learning
- Optimize model training with scripts, MLflow tracking, hyperparameter tuning, and ML pipelines
- Design and automate MLOps solutions using GitHub Actions and Azure Machine Learning
- Deploy and monitor ML models to a managed online endpoint in Azure Machine Learning
- Set up and configure Microsoft Foundry for generative AI application development
- Develop, version, and deploy AI agents using prompt engineering in Microsoft Foundry
- Systematically test, evaluate, and optimize AI agent prompts using automated cloud evaluators
- Monitor and trace generative AI agents in production using Application Insights and distributed tracing
- Optimize AI agents through fine-tuning, including supervised fine-tuning, reinforcement fine-tuning, and
  direct preference optimization

Summary

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This course prepares learners to design, implement, and operate Machine Learning Operations (MLOps) and Generative AI Operations (GenAIOps) solutions on Azure. It covers building secure and scalable AI infrastructure, managing the full lifecycle of traditional machine learning models with Azure Machine Learning, and deploying, evaluating, monitoring, and optimizing generative AI applications and agents using Microsoft Foundry. Learners will gain hands-on knowledge of automation, continuous integration and delivery, infrastructure as code, and observability by using tools such as GitHub Actions, Azure CLI, and Bicep. The course emphasizes collaboration with data science and DevOps teams to deliver reliable, production-ready AI systems aligned with modern MLOps and GenAIOps best practices.

Course outline

Learning Path 1 — Machine Learning Operations (MLOps) with Azure Machine Learning

- Module 1 — Experiment with Azure Machine Learning
- Module 2 — Optimize model training in Azure Machine Learning
- Module 3 — Perform hyperparameter tuning with a sweep job
- Module 4 — Run pipelines in Azure Machine Learning
- Module 5 — Plan and prepare an MLOps solution with Azure Machine Learning
- Module 6 — Automate model training with GitHub Actions
- Module 7 — Deploy and monitor a model in Azure Machine

Learning Learning Path 2 — Generative AI Operations (GenAIOps) with Microsoft Foundry

- Module 1 — Plan and prepare a GenAIOps solution
- Module 2 — Manage prompts for agents in Microsoft Foundry with GitHub
- Module 3 — Evaluate and optimize AI agents through structured experiments
- Module 4 — Automate AI evaluations with Microsoft Foundry and GitHub Actions
- Module 5 — Monitor and trace your generative AI agent
- Module 6 — Optimize AI agents with fine tuning

Approach and methodology

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Practical and structured approach combining focused theory with guided workshops. Participants progressively build their ability to operationalize machine learning and generative AI solutions by applying Azure Machine Learning and Microsoft Foundry to real-world scenarios.

Through hands-on exercises, they learn how to design secure and scalable AI infrastructure, automate MLOps pipelines, manage the full lifecycle of machine learning models, and evaluate, monitor, and optimize generative AI agents using modern GenAIOps practices.

Led by a Microsoft Certified Trainer (MCT), the training emphasizes interactivity, practical demonstrations, and the development of immediately transferable skills for deploying production-ready AI systems on Azure.

Prerequisites

Students
should have the following knowledge and experience before attending this
course:

- Familiarity with Python programming; a basic
  understanding of machine learning concepts
- Experience with Azure services (Azure portal, subscriptions,
  resource groups)
- Familiarity with GitHub and version control.
- Experience with Azure Machine
  Learning or Azure AI services is beneficial but not required.

Recommendations

Optional prerequisites:

- Practical knowledge of GitHub Actions
- Familiarity with Azure CLI
- Basic understanding of Bicep
- Experience with MLflow

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- Understanding of Responsible AI dashboards
- Knowledge of Azure Machine Learning pipelines
- Basic familiarity with Microsoft Foundry
- Prior experience with ML experiment tracking
- Understanding of advanced CI/CD workflows
- Familiarity with GitHub Actions environments

Microsoft complementary courses:

- DP 100 — Designing and Implementing an Azure Machine Learning Solution
- AI 200 — Develop AI cloud solutions on Azure
- AZ 400 — Designing and Implementing Microsoft DevOps Solutions
- AI 103 — Develop AI apps and agents on Azure
- AZ 305 — Designing Microsoft Azure Infrastructure Solutions

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