Gen AI Engineering with Databricks Training

Duration: **2 Day**

BİLGİNÇ IT Academy
info@bilginc.com
+44 20 3807 0925
+90 212 282 7700

Overview

Generative AI is transforming the way organizations build intelligent applications, automate complex processes, and extract value from enterprise data. This course provides a practical approach to designing, developing, deploying, and managing Generative AI solutions using the Databricks Data Intelligence Platform.

Participants will learn how to combine large language models (LLMs), Retrieval-Augmented Generation (RAG), vector search, and modern AI engineering practices to create scalable applications that deliver accurate, context-aware responses. Through hands-on exercises and real-world scenarios, learners will gain experience with the complete GenAI lifecycle—from data preparation and application design to deployment, governance, and operational monitoring.

The course emphasizes production-ready AI engineering, helping participants move beyond experimentation and build reliable, secure, and maintainable AI solutions for enterprise environments.

Prerequisites

Participants should have experience with:

- Python programming
- Natural Language Processing (NLP) fundamentals
- Prompt engineering concepts
- Large Language Models (LLMs)
- Retrieval-Augmented Generation (RAG)
- Embeddings and vector databases
- Databricks notebooks and workflows
- Basic ML lifecycle concepts

Experience with LangChain or similar orchestration frameworks is beneficial but not mandatory.

Who Should Attend

This course is designed for professionals involved in developing and operating AI-powered applications, including:

- Data Scientists
- Machine Learning Engineers
- AI Engineers
- MLOps Engineers
- Data Engineers
- Solution Architects
- Software Developers working with LLMs
- Technical teams implementing enterprise AI solutions

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What You Will Learn

By the end of the course, participants will be able to:

- Understand the architecture of modern Generative AI systems.
- Prepare enterprise data for AI applications.
- Build scalable RAG solutions.
- Work with embeddings and vector search technologies.
- Develop compound AI workflows using orchestration frameworks.
- Design autonomous AI agents.
- Evaluate response quality, accuracy, and cost efficiency.
- Deploy AI applications using Databricks serving capabilities.
- Monitor AI performance and operational health.
- Apply LLMOps best practices throughout the AI lifecycle.

Outline

Module 1 – Designing Enterprise Generative AI Solutions

This module introduces the core architectural concepts behind enterprise-grade Generative AI applications.

Topics

- Generative AI architecture
- Enterprise AI solution design
- Retrieval-Augmented Generation concepts
- Preparing enterprise knowledge sources
- Embedding strategies
- Vector databases
- Semantic search
- Building reliable retrieval pipelines

Practical Lab

- Preparing knowledge data
- Creating vector indexes
- Building a basic RAG solution

Module 2 – Developing Intelligent AI Applications

Participants learn how to build advanced AI applications capable of handling complex business scenarios.

Topics

- Large Language Model integration
- Multi-step reasoning workflows
- Prompt orchestration
- AI workflow design

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- LangChain fundamentals
- Agent-based architectures
- Tool integration
- Autonomous decision workflows

Practical Lab

- Building reasoning chains
- Creating AI agents
- Integrating external tools

Module 3 – AI Quality, Governance and Responsible AI

This module focuses on ensuring AI applications remain accurate, secure, and trustworthy throughout their lifecycle.

Topics

- AI evaluation frameworks
- Response quality assessment
- Hallucination detection
- Responsible AI principles
- Governance policies
- Security considerations
- Cost optimisation
- Performance benchmarking

Practical Lab

- Evaluating AI responses
- Measuring application performance
- Implementing governance controls

Module 4 – Deployment, Operations and Monitoring

Participants learn how to operationalize Generative AI solutions within enterprise environments.

Topics

- Model deployment strategies
- Batch inference
- Real-time inference
- Model Serving
- LLMOps lifecycle
- Workflow automation
- Lakehouse Monitoring
- Observability
- Operational best practices

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Practical Lab

- Deploying AI services
- Configuring monitoring dashboards
- Tracking application performance

Hands-on Exercises

Throughout the course participants will complete practical exercises covering:

- Building RAG applications
- Creating vector search indexes
- Implementing embedding pipelines
- Developing AI agents
- Constructing reasoning workflows
- Evaluating GenAI outputs
- Deploying production AI services
- Monitoring AI systems
- Applying governance policies
- Optimising enterprise AI applications

Skills Gained

Upon successful completion of this course, participants will be able to design, build, deploy, and operate enterprise Generative AI applications using the Databricks platform. They will understand how to combine LLMs, RAG architectures, vector search, orchestration frameworks, and LLMOps practices to create scalable, secure, and production-ready AI solutions capable of supporting modern business requirements.