



Program Overview

This is a focused 78-hour program designed to build practical, industry-ready skills in modern Generative AI. The bootcamp covers the complete GenAI workflow from Python fundamentals to LangChain, LangGraph, FastAPI backend development, Docker-based deployment, AWS cloud workflows, and LLM fine-tuning. The training is fully hands-on, enabling participants to build and deploy real-world AI applications.

Through guided labs and mini-projects, learners will gain practical experience in RAG systems, AI agents, production-grade APIs, and custom LLM pipelines developing the essential engineering skills required in today's AI-driven industry.

Modules in Snapshot

Module 1: Advanced Python

Module 2: LangChain

Module 3: LangGraph & MCP

Module 4: FastAPI, n8n & Deployment

Training Outline

Module 1: Advanced Python

- Basics of Python
- Basic Data Types & Operators
- Modules & Github
- Lists, and Operators
- Container Data Types
- Conditional Statements
- Loops
- Comprehensions & Basic Function
- Functions
- Lambda Functions & Generators
- Exception & File Handling
- Type Hinting & Functions
- *Use Case HR Function: Employee Attendance System Using Python*
- *Use Case E-Commerce Inventory Management: Interactive Grocery Ordering & Management System Using Python*



Module 2: LangChain

- Introduction to GenAI & LangChain
- Prompt Engineering & Structured Output
- Document Loaders & Chunking
- Runnables & Chains
- VectorDB & Retrievers
- RAG
- Tools
- Agent
- Build Agent
- *Use Case General: AI-Powered Historical Fact-Checker*
- *Use Case Banking: Chatbot*



Module 3: LangGraph & MCP

- Introduction to Agentic AI & LangGraph
- Stateful AI Engineering in LangGraph
- Intelligent Memory & Output Design in LLM Workflows
- Tool Calling & API-Enabled Workflows
- LLM Workflows
- Agentic Workflows
- Agent Demo
- MCP
- MCP Server
- *Use Case Tourism: Travel Agent*
- *Use Case Education: Autonomous School Administration Agent*



Module 4: FastAPI, n8n & Deployment

- FastAPI & Streamlit
- HTTP Methods, Streaming & CRUD Operations
- Pydantic
- Docker Compose
- AWS
- n8n
- *Use Case AI-Powered Document Q&A API*

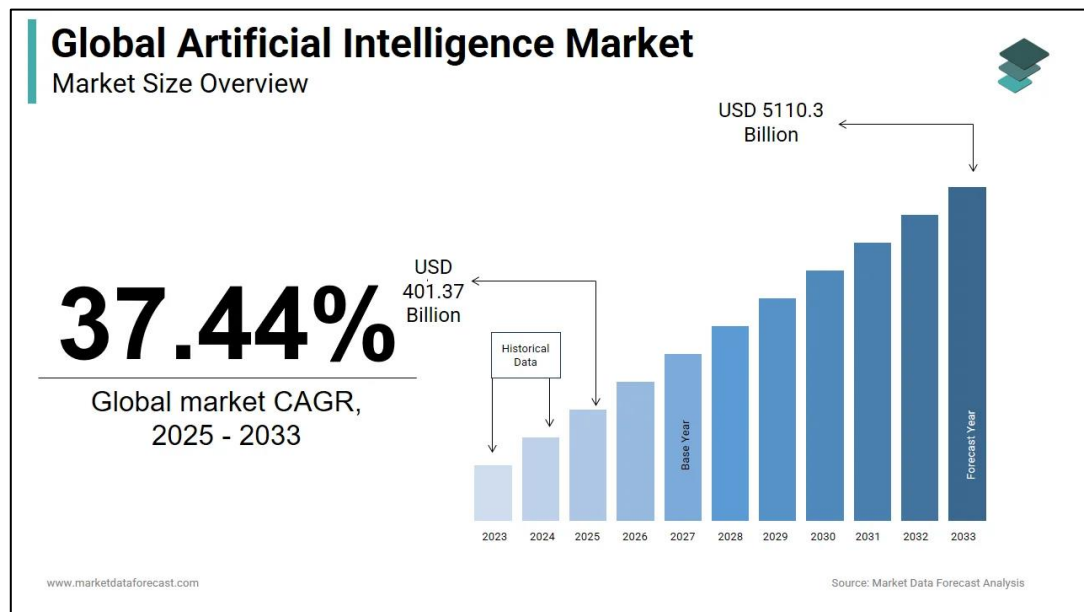


n8n



Learning Outcomes

- ✓ Build strong Python foundations and write clean, modular code for real-world AI and automation use cases
- ✓ Design and implement Generative AI solutions using Prompt Engineering, LangChain, RAG pipelines, and Vector Databases
- ✓ Create autonomous AI agents and intelligent workflows using modern agent frameworks
- ✓ Develop and integrate production-ready backend APIs and AI services
- ✓ Containerize, deploy, and manage scalable GenAI applications using Docker and cloud platforms (AWS)
- ✓ Deliver an end-to-end Generative AI capstone project covering development, fine-tuning, deployment, and automation



Duration 78 hours in 3 Months

Difficulty Level Basic to Advanced

Recommended For Anyone from any background

Pre-Requisite Basic computer literacy

Trainer Profile

Muhammad Osama is a skilled AI Engineer with over 3 years of professional experience in designing and developing intelligent AI-driven applications. He has worked extensively across Computer Vision, Generative AI, and Agentic AI systems, delivering practical, real-world solutions.

He possesses strong expertise in Large Language Models (LLMs) and Python, with hands-on experience using LangChain, LangGraph, FastAPI, and Dockerization to build scalable, production-ready AI applications. His work focuses on creating robust, efficient, and deployment-ready AI systems that solve complex business and automation challenges.



Value Added Services

- 100% job and business-oriented training
- **Certificate of completion recognized from Trade Testing Board, Government of Pakistan**
- Claim Continuing Professional Development (CPD) hours for the training
- Video recorded session with personalized Learning Management System (LMS) access login id for 12 months
- Fully equipped training center venue for on-campus trainings readily available with laptops, projectors and air-conditioning
- Live physical on-campus and online sessions

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Muhammad Riaz
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24th May 2024



Ifza Ghani
★★★★★

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12th March 2023



Ilyas Ahmed
★★★★★

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