

Training Program: Agentic AI Mastery: RAG, Knowledge Graphs & Beyond

Duration: 6 Days (48 Hours)

Day 1 - AI for Everyone (Generic Session)

- Introduction to AI & Generative AI – 2 Hrs
 - AI vs. ML vs. Generative AI
 - Industry use cases across domains
- How Generative AI works – 2 Hrs
 - Large Language Models (LLMs) in simple terms
 - RAG (Retrieval-Augmented Generation) concept explained with demo
- Hands-on Demo: Conversational chatbot / Document Q&A bot – 2 Hrs
- Responsible AI – 1 Hrs
 - Ethical considerations, risks, and governance
- Interactive Activity: Build a prompt-driven mini-bot – 1 Hr

Day 2 – Agentic AI Foundations (Data Science Track)

- Introduction to Agentic AI – 3 Hrs
 - Why agents? What problems do they solve?
 - MCP (Model Context Protocol), ACP (Agent Communication Protocol) overview
- LangGraph Basics – 3 Hrs
 - State & Memory Management in multi-agent systems
 - Building agent workflows with LangGraph
- Hands-on Lab: Create a simple reasoning agent with memory – 2 Hrs

Day 3 – Advanced Agentic AI Architectures

- Agentic AI with Autogen – 3 Hrs
 - Multi-agent orchestration, collaboration & task decomposition
- Agentic AI with OpenAI Agents – 3 Hrs
 - Function calling, planning, and execution workflows – 2 Hrs
- Hands-on Lab: Build a multi-agent pipeline that solves a task collaboratively

Day 4 – Retrieval & Knowledge Systems

- Agentic RAG – 3 Hrs
 - Beyond vanilla RAG – planning, tool use, and adaptive querying
- Knowledge Graphs – 3 Hrs
 - Graph-based reasoning and knowledge-enhanced LLMs
- Hands-on Lab: Build a hybrid RAG + Knowledge Graph pipeline – 2 Hrs

Day 5 – AI Workflow Automation & Fine-Tuning

- Langflow for Workflow Automation – 3 Hrs
 - Visual interface for building AI pipelines & chatbots
 - Connecting data sources, APIs, and agents
- Fine-tuning LLMs – 3 Hrs
 - LoRA, QLoRA techniques
 - RLHF with DPO and PPO
- Hands-on Lab: Fine-tune a small LLM for domain-specific tasks – 2 Hrs

Day 6 – Applied AI Projects & Computer Vision

- Real-time AI Applications – 1 Hrs
 - Object detection & tracking (SORT, DeepSORT, YOLO integrations)
- Capstone Project – 6 Hrs
 - Choose between:
 - Agentic chatbot with workflow automation
 - RAG + Knowledge Graph assistant
 - Real-time object tracking app
- Wrap-up & Next Steps – 1 Hr
 - Scaling AI in enterprise
 - Open Q&A, feedback session