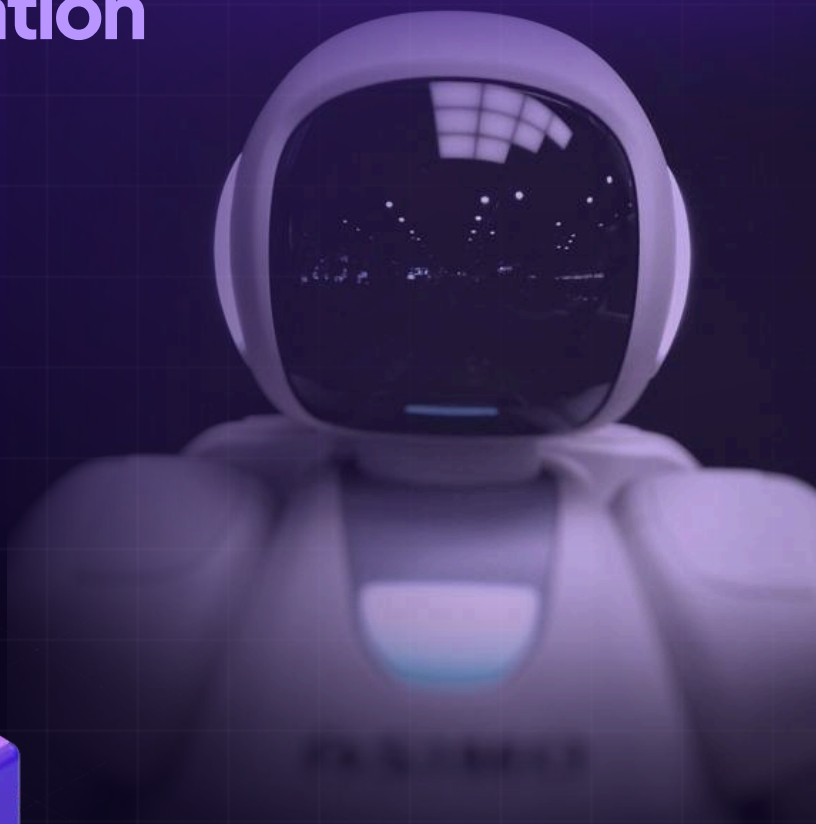
samcommunity.in

✦ ARTIFICIAL INTELLIGENCE · ADVANCED

LangChain & LlamaIndex Application Development

Build real LLM applications.





64
HOURS

8
MODULES

SAM-LANGCHAIN
CERTIFICATION

SAMCOMMUNITY ACADEMY

academy@samcommunity.in

samcommunity.in

✦ INSIDE THIS BROCHURE

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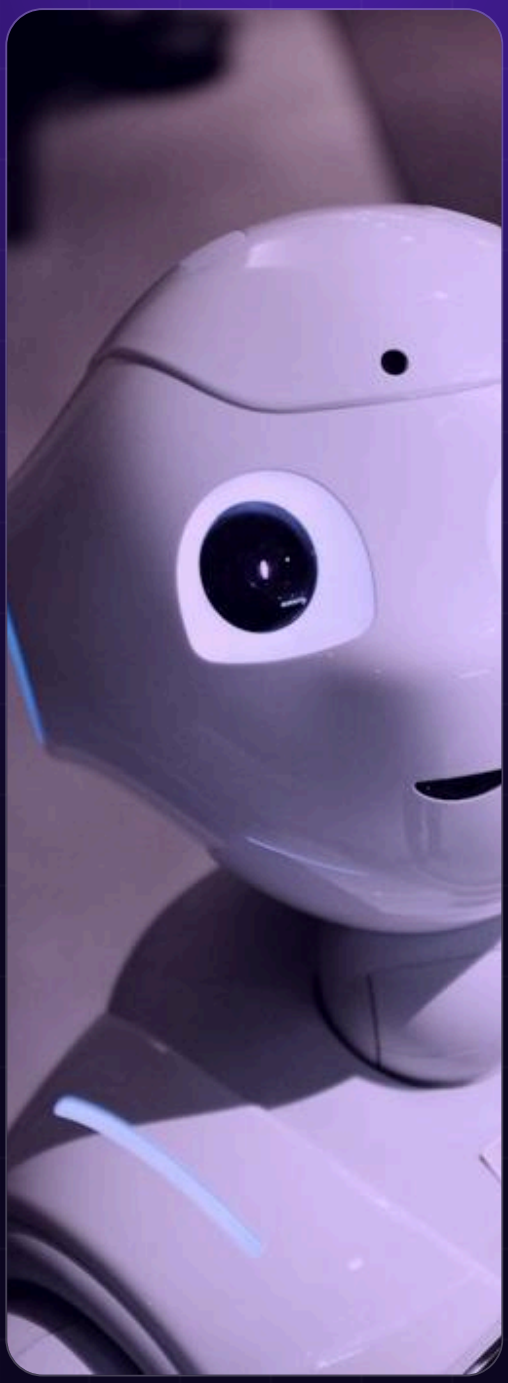
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AT A GLANCE

Level	Advanced
Duration	64 Hours
Modules	8
Certificate	SAM-LANGCHAIN

✦ PROGRAM OVERVIEW

Build real LLM applications.



Develop production LLM apps with LangChain and LlamaIndex — chains, retrieval, agents and tools.

Building useful LLM applications requires more than a single API call: prompts, retrieval, tools, memory, agents and evaluation must work together reliably. LangChain and LlamaIndex are two of the most widely used open-source frameworks for this work. This advanced program teaches developers to build, evaluate and deploy production LLM applications using both frameworks and their surrounding ecosystems.

LEVEL	DURATION	CERTIFICATION	DELIVERY
Advanced	64 Hours	SAM-LANGCHAIN	Instructor-led · Live virtual · Blended



✦ WHAT YOU'LL PRACTISE

Build chains and pipelines	01
Add retrieval over company data	02
Create tool-using agents	03
Deploy LLM applications	04

✦ WHO IT'S FOR

Built for people ready to grow.

01

Every professional

AI Fundamentals, ChatGPT, Copilot, Gemini, Claude

02

Developers & data teams

ML, deep learning, NLP, computer vision, MLOps

03

AI engineers

LLM fine-tuning, RAG, vector DBs, AI agents

04

Leaders & public sector

AI for C-suite, government and governance

PREREQUISITES

Strong Python programming skills	01
Experience with LLM APIs and prompting	02
Familiarity with REST APIs and Git	03

ROLES YOU CAN TARGET

- LLM Application Developer ↗
- AI Engineer ↗
- Backend Developer (AI) ↗
- RAG Systems Engineer ↗
- AI Solutions Developer ↗

✦ LEARNING OUTCOMES

What you'll be able to do.

01 Build composable chains with LangChain Expression Language

02 Create document ingestion and indexing pipelines with LlamaIndex

03 Implement retrieval, query engines and chat over data

04 Develop tool-using agents with LangGraph and LlamaIndex workflows

05 Evaluate and trace applications with LangSmith and Langfuse

06 Deploy LLM applications as FastAPI services

HOURS PER MODULE



✦ PROGRAM RUNWAY

Your journey, module by module.

8
MODULES · 64 HRS

01	**Framework Landscape and Setup** LangChain ecosystem overview, LlamaIndex architecture, When to use which	6 hrs
02	**LangChain Core and LCEL** Chat models and prompt templates, LangChain Expression Language, Output parsers and structured output	10 hrs
03	**LlamaIndex Data Pipelines** Readers and LlamaHub connectors, Nodes and node parsers, Ingestion pipelines	8 hrs
04	**Retrieval and Query Engines** Retrievers in both frameworks, Vector store integrations, Query engines and chat engines	10 hrs
05	**Agents and Tools** Tool definitions, LangGraph agents, LlamaIndex agents and workflows	10 hrs
06	**Evaluation and Observability** LangSmith tracing, Langfuse integration, Evaluation datasets	8 hrs
07	**Deployment and Production** FastAPI service design, LangServe and streaming endpoints, Caching and cost control	8 hrs
08	**Advanced Patterns** Multimodal applications, Structured data and SQL agents, Graph-based retrieval	4 hrs
★	**Capstone · Production LLM Application with Evaluation** Assessment, capstone review and certification	

✦ DETAILED CURRICULUM

The syllabus.

Modules 01–03

MODULE 01

Framework Landscape and Setup

6 hours

Hands-on lab
Set up both frameworks and run a first chat application with each.

TOPICS COVERED

- LangChain ecosystem overview
- LlamaIndex architecture
- When to use which
- Environment and model providers
- Project structure

LangChain

MODULE 02

LangChain Core and LCEL

10 hours

Hands-on lab
Build a multi-step LCEL chain with structured output and streaming.

TOPICS COVERED

- Chat models and prompt templates
- LangChain Expression Language
- Output parsers and structured output
- Runnables, batching and streaming
- Fallbacks and retries

LangChain

MODULE 03

LlamaIndex Data Pipelines

8 hours

Hands-on lab
Ingest mixed documents into a LlamaIndex vector index with metadata.

TOPICS COVERED

- Readers and LlamaHub connectors
- Nodes and node parsers
- Ingestion pipelines
- Index types
- LlamaParse for complex documents

LangChain

LEARN BY DOING

8 guided labs, one in every module.



✦ DETAILED CURRICULUM

Syllabus, continued.

Modules 04–06

MODULE 04

Retrieval and Query Engines

10 hours

Hands-on lab
Build a router query engine across multiple document collections.

TOPICS COVERED

- Retrievers in both frameworks
- Vector store integrations
- Query engines and chat engines
- Hybrid retrieval and reranking
- Sub-question and router engines

MODULE 05

Agents and Tools

10 hours

Hands-on lab
Create a LangGraph agent that combines retrieval with external API tools.

TOPICS COVERED

- Tool definitions
- LangGraph agents
- LlamaIndex agents and workflows
- Memory and conversation state
- Human-in-the-loop steps

LangChain

MODULE 06

Evaluation and Observability

8 hours

Hands-on lab
Trace an application and run automated evaluations on a test set.

TOPICS COVERED

- LangSmith tracing
- Langfuse integration
- Evaluation datasets
- LlamaIndex evaluation modules
- Regression testing prompts

LangChain

LEARN BY DOING

8 guided labs, one in every module.

✦ DETAILED CURRICULUM

Syllabus, continued.

Modules 07–08

MODULE 07

Deployment and Production

8 hours

Hands-on lab
Deploy a LangChain application as a containerised FastAPI service.

TOPICS COVERED

- FastAPI service design
- LangServe and streaming endpoints
- Caching and cost control
- Docker packaging
- Security and secrets management

Docker · LangChain · FastAPI

MODULE 08

Advanced Patterns

4 hours

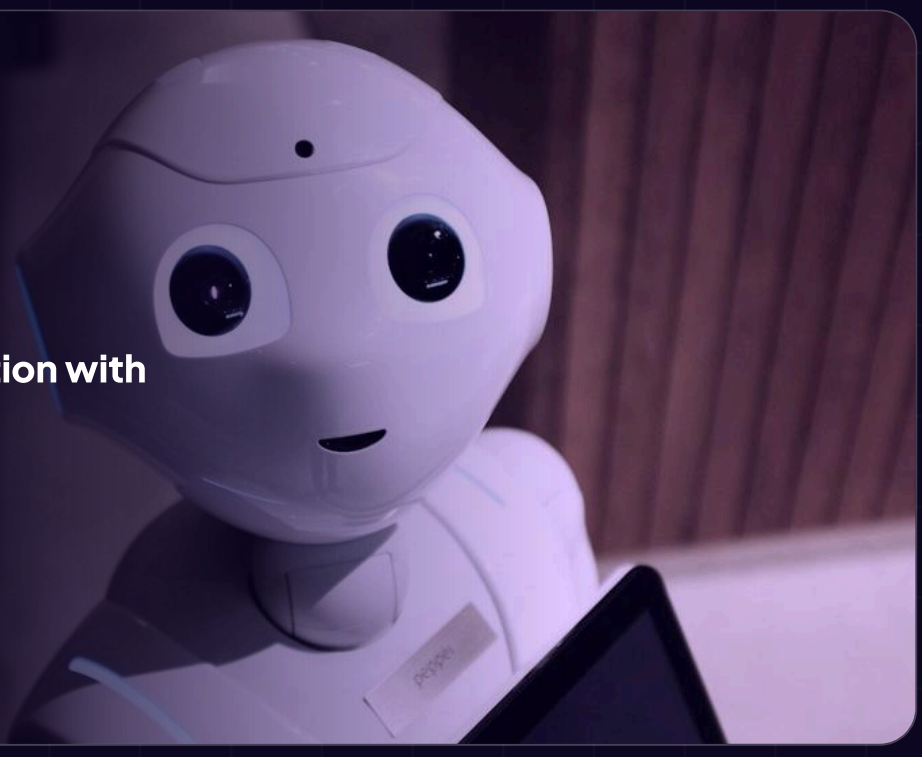
Hands-on lab
Build a natural-language-to-SQL assistant with read-only access and safety checks.

TOPICS COVERED

- Multimodal applications
- Structured data and SQL agents
- Graph-based retrieval
- Framework upgrade strategies
- Choosing production architecture

CAPSTONE

Production LLM Application with Evaluation



✦ YOUR STACK

Tools you'll build with.

Real platforms and frameworks — the same stack modern teams ship with, practised in cloud-hosted labs.

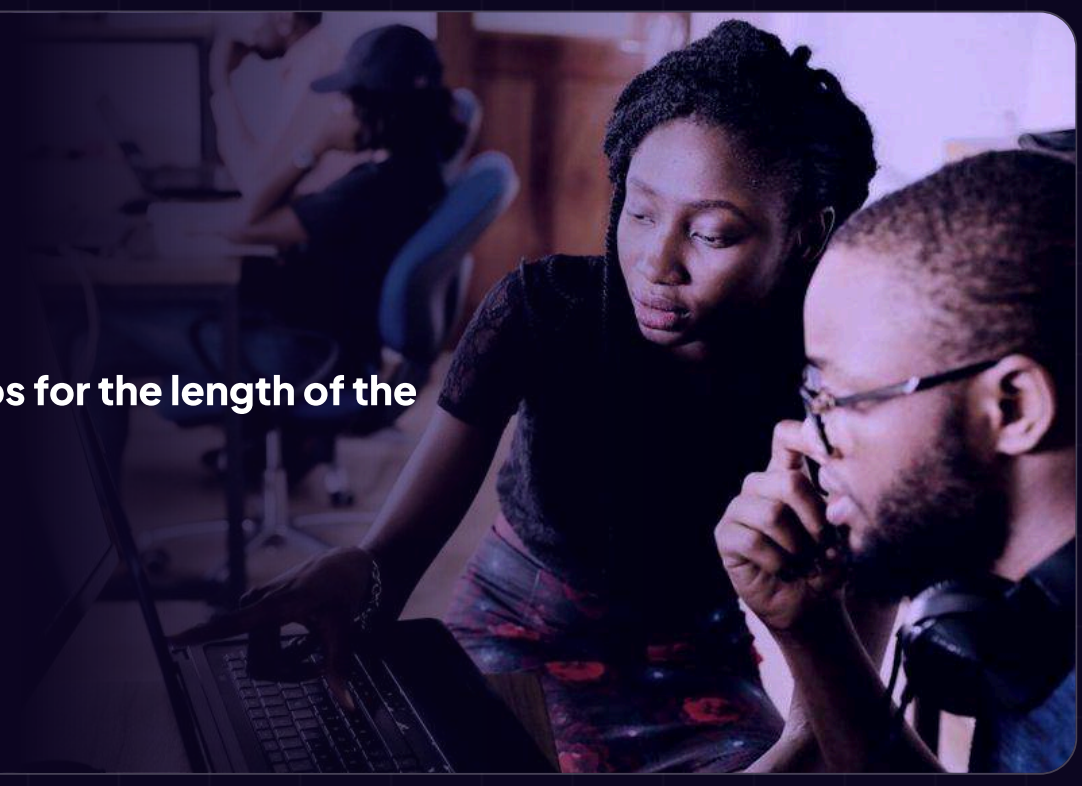
LangChain
LLM apps & agents

Python
Automation & scripting

OpenAI
GPT models & APIs

FastAPI
Modern Python APIs

Docker
Containers & images



LAB ACCESS

24×7 cloud labs for the length of the program

✦ HANDS-ON WORK

Projects that prove you can do it.

01

Document Chat Application

Build a chat-over-documents app with LlamaIndex ingestion, hybrid retrieval and cited answers in a simple UI.

02

Tool-Using Support Agent

Create a LangGraph agent that looks up orders, searches FAQs and escalates issues to humans.

03

SQL Analytics Assistant

Develop an assistant that converts business questions into safe SQL queries and explains results in plain language.

CAPSTONE PROJECT

Production LLM Application with Evaluation

Build and deploy a full LLM application combining LlamaIndex data pipelines, LangChain or LangGraph orchestration, tools and memory, with automated evaluation, tracing, containerised FastAPI deployment and a technical design document.

Real-world scenario | Mentor review | Portfolio ready



CERTIFICATION

SAM-LANGCHAIN

Awarded on successful completion of the program assessments.

- MCQ assessments
- Practical lab evaluation
- Project & capstone review
- Final presentation



✦ HOW YOU LEARN

The SAM Learning Framework™

PHASE 01

S

Scenario

Real-world attack and use-case scenarios open every module.

PHASE 02

A

Apply

Hands-on lab work, CTF challenges and live projects.

PHASE 03

M

Master

Assessment, peer review and certification prep.

PHASE 04

M

Mentor

Post-program career guidance and support.

DELIVERY MODELS

- Instructor-Led (ILT)
- Virtual Instructor-Led
- Self-Paced Online
- E-Learning Licensing
- Blended Learning
- Corporate Onsite
- Bootcamp Intensive
- Hackathon / CTF
- Mentorship

✦ LEARNING PATH · AI AUTOMATION & ENTERPRISE INTEGRATION

Where this program fits.

Intermediate

2 programs

Advanced

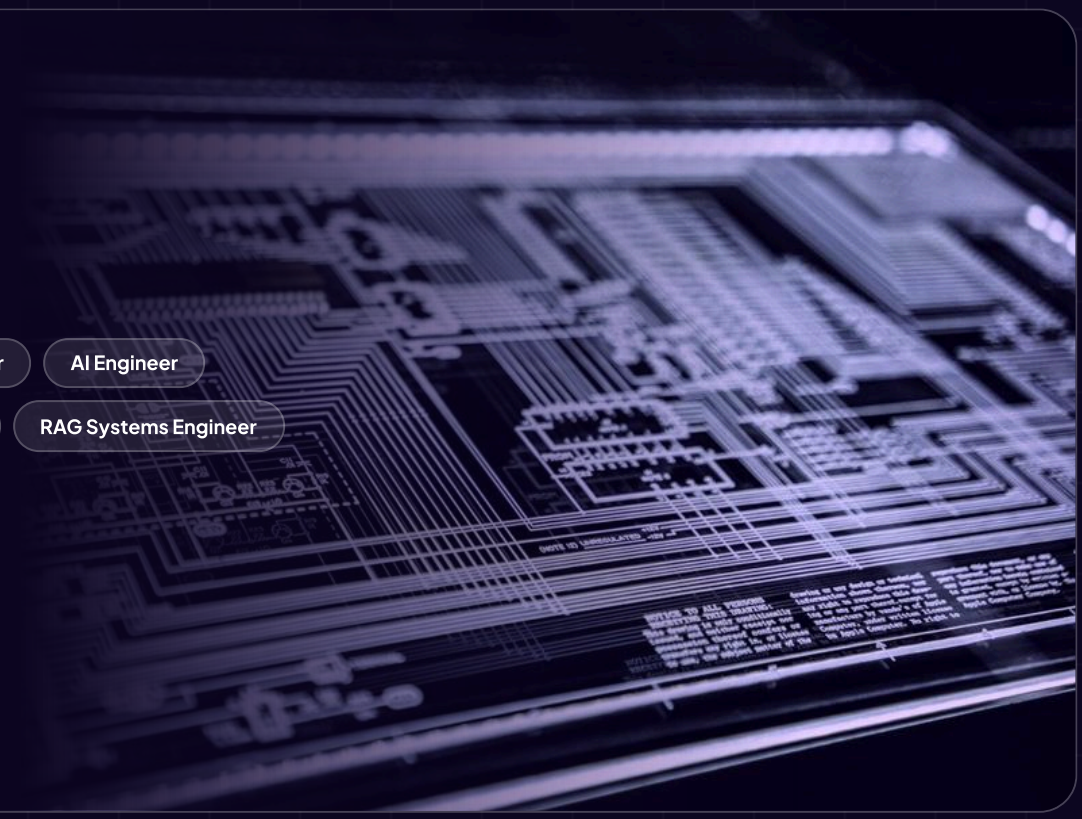
You are here

BEFORE THIS

AI Automation with n8n / Make / Zapier	32 Hours
Microsoft Power Platform + Copilot Studio	40 Hours

UP NEXT

The top of this pathway — explore related tracks.



CAREER ROLES

- LLM Application Developer
- AI Engineer
- Backend Developer (AI)
- RAG Systems Engineer
- AI Solutions Developer

✦ FAQS

Questions, answered.

Q01

Do I need prior experience to join?

Yes. You should write Python confidently, understand LLM APIs and prompting, and be familiar with REST APIs and Git. This advanced program focuses on building real applications rather than introducing LLM basics.

Q02

How is the program delivered and scheduled?

The program is instructor-led and delivered as live virtual or blended sessions. Batch timings, weekday or weekend schedules and session lengths are shared at enrolment, and recordings or notes support revision between sessions.

Q03

What certification will I receive?

Learners who complete the sessions, labs and final assessments are awarded the Samcommunity Academy SAM-LANGCHAIN certificate. It is issued after successful assessment, not on attendance alone, and reflects the practical skills covered in the program.

Q04

Will I get access to labs and tools?

Yes. Labs use LangChain, LangGraph, LlamaIndex, vector databases, FastAPI and Docker, mostly open source and runnable locally. LLM API credits are usually required, and local model options through Ollama are also demonstrated.

Q05

Is there career support after the program?

Learners receive guidance on portfolio projects, resume positioning and interview preparation related to the skills covered. Career support is advisory; the program does not guarantee job placement, specific roles or salary outcomes.



✦ LET'S TALK

Start LangChain & LlamaIndex Application Development with Samcommunity.

INDIVIDUALS

academy@samcommunity.in

Batches, enrolment & career guidance

CORPORATE & INSTITUTIONS

corporate@samcommunity.in

Team batches & custom programs

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