aiengg.dev

AiEngg

# AI Engineering 2027: Master RAG & Agents

---

AIENGG

Cohort Instructor

**Debjit Paul, Vinay Kumar**

Primary Student Base

**Software / AI Engineers**

# Program Overview



## The Problem

90% of developers try and adopt AI, but only 15% successfully deploy systems that deliver ROI[1]. The gap is due to implementation challenges, such as RAG accuracy ceilings, Agent Orchestration, Hallucinations, and Lack of production-grade evaluation.

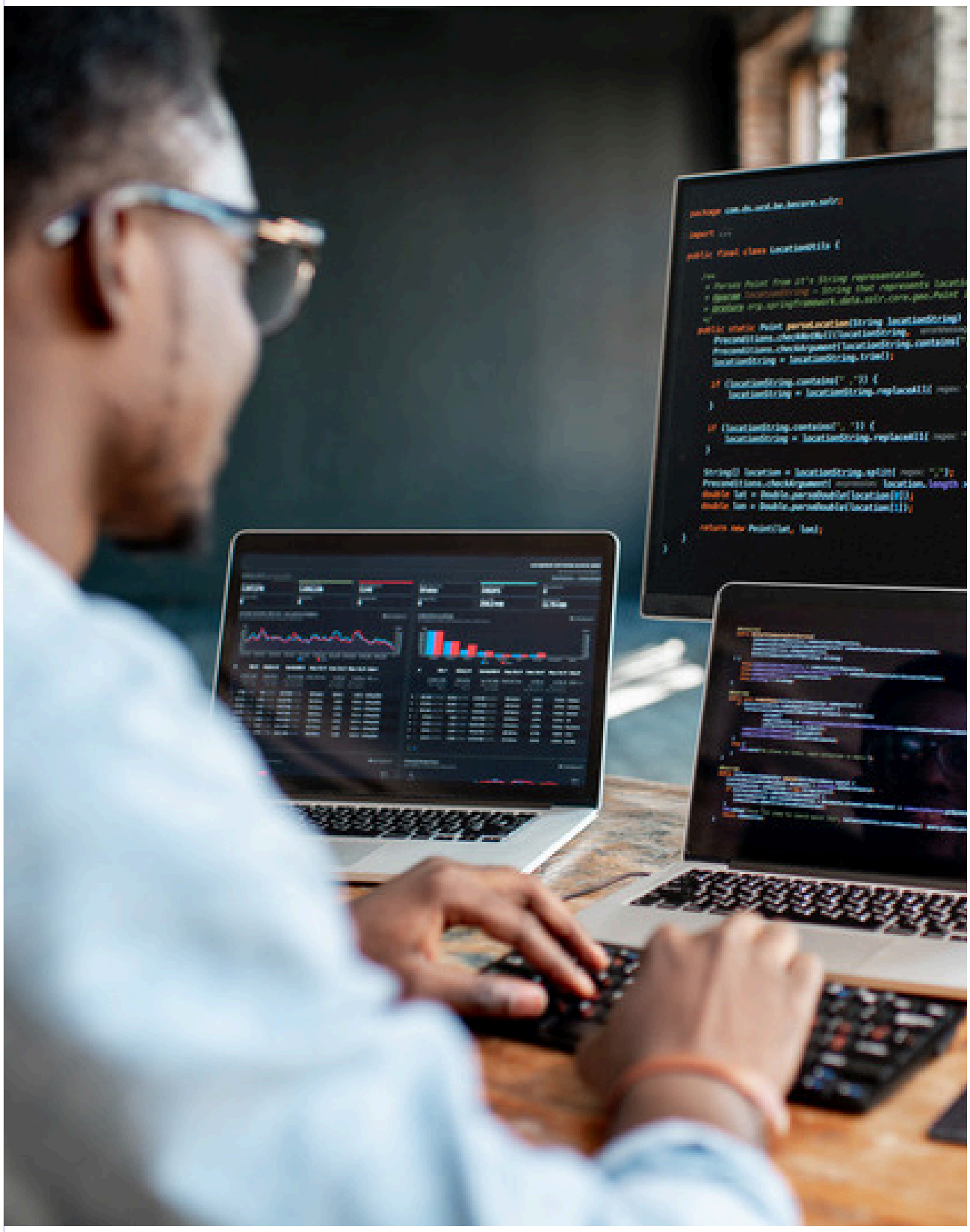
Addressing these challenges requires a system-level design perspective. That is why this 8-week intensive cohort is designed to teach software engineers how to build, evaluate, and ship reliable RAG and agentic AI systems.

## The Solution

- An 8-week intensive cohort designed for software and AI engineers
- Hands-on workshops with Python, RAG, and Agents
- Deep dive into RAG architectures, multi-agent systems, and evaluation frameworks
- Lifetime access to all recordings and course material post-cohort completion.
- Attendance tracking (on request), Wednesday office hours and Certificate of Completion for all students

[1] Coderpad 5000+ Developer Survey

# Program Highlights



16
Live Classes

in 8 weeks

Retrieval-Augmented Generation & Agents

production-focused curriculum

Hands-on Capstone Project

Industry-relevant project for AI engineers

**Start Date**: January 2nd, 2027

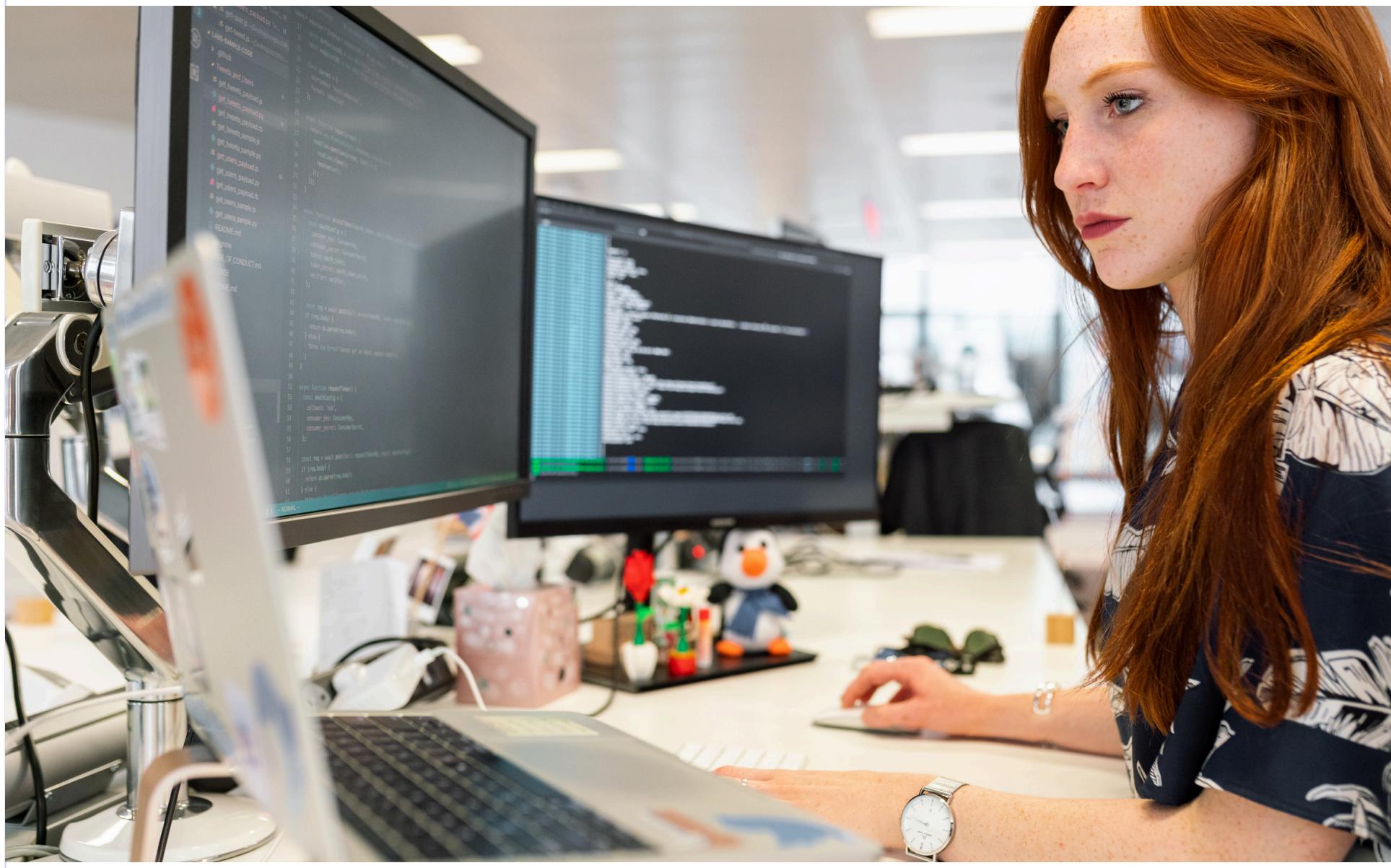
**End Date**: February 21st, 2027

**Class Time :** 9 AM – 10:30 AM IST, Saturday & Sunday

**Primary Audience**: Engineers with a technical background.

**Coding Expected**: Yes.

# What You'll Learn



## Key Skills

**1. You Master AI Frameworks**
Learn LangGraph, Pydantic AI, and vector databases to build production-grade RAG and agentic systems.

**2. You build AI Projects**
Identify use cases where AI can help improve your product and business.

**3. You make AI Reliable**
Productionize reliable AI applications using guardrails, LLM-as-a-Judge evaluations, and observability.

This is a live, interactive cohort with a dedicated instructor. Students are expected to code and implement AI systems during the program. You'll leave interview-ready on RAG and agentic AI, with the vocabulary, tradeoffs, and design patterns that come up in real AI Engineering interviews.

# Cohort Curriculum

## Week 1-4: Foundations & RAG

### Week 1: Terminology & Prerequisites

Core LLM terminology (tokens, vectors, attention), how LLMs are trained, and prompting basics. Make your first LLM call and compute vector similarity.

### Week 2: RAG Components & Architecture

What is RAG, chunking strategies, embedding models, and vector databases (indexing, similarity scoring).

### Week 3: Advanced RAG

Why naive RAG hits accuracy ceilings, Hybrid search, query rewriting (HyDE, multi-query), cross-encoder reranking, and RAG-specific evals.

### Week 4: RAG Architectures

Common pitfalls in RAG, types of architectures (GraphRAG, KAG, Agentic RAG, etc), and choosing the right one.

## Weeks 5–8: Agents & Capstone

### Week 5: Single-Agent Systems

What is an agent, tool/function calling, the ReAct pattern, and Pydantic AI. Failure points for Single-Agent systems.

### Week 6: Multi-Agent Systems

What are multi-agent systems, agentic design patterns, building agents with LangGraph, and problems unique to multi-agent (orchestration, information isolation, planning).

### Week 7: Context Engineering, Memory & Evals

Context engineering vs. prompt engineering, memory systems (short-term, long-term), managing memory in multi-agent systems, and evals. Run a full eval suite on your Week 6 pipeline.

### Week 8: Capstone Project

AI engineering best practices, tradeoffs (cost vs. accuracy vs. latency), architecture reviews, and capstone scoping. Live capstone demos with peer Q&A and structured feedback.

| 4 | 4 | 60 | ∞ |
|---|---|---|---|
| Weeks of RAG Mastery | Weeks of Agents & Evals | Days of teacher support | Unlimited Community access |

# Your Instructors



## Debjit Paul

Senior AI Researcher | PhD
Heidelberg, Ex-EPFL

**Debjit Paul** is a Senior Researcher at a leading global AI lab, working on AI and NLP. He earned his PhD in Computer Science from Heidelberg University (summa cum laude) and was a Postdoctoral Researcher at EPFL, Switzerland, improving the reasoning abilities of LLMs. Before that, he built deep-research AI agents for multi-step reasoning, retrieval and synthesis at Huawei's research lab in London. His work is published at ACL, EMNLP, EACL and ICLR, including DeepSynth, a benchmark for evaluating LLM agents.

LinkedIn



## Vinay Kumar

AI Engineer & Educator |
MS, IIT Kharagpur

**Vinay Kumar** is an AI engineer and educator with 13+ years across data science, NLP, Generative AI and Agentic AI. He holds an MS by Research from IIT Kharagpur (CGPA 9.69/10), where his work on NLP and information retrieval was published in IEEE. He previously led Data Science Research at SyTrue, building production NLP systems on clinical records for health plans and providers. Today he teaches Agentic AI at IIT Madras's Pravartak program and is an Adjunct Professor of Practice at Atria University, covering RAG, multi-agent systems, LangGraph, MCP, evaluation and LLMOps.

LinkedIn

# Who Should Attend?

**This program is for software engineers who want to build production-grade AI systems.** We expect prior coding experience, and a basic understanding of software systems.



Ideal Role

## Software Engineer, Staff Engineer, Tech Lead, Senior Managers

Coding Experience

## Proficient in one programming language.

Prerequisites

## Prerequisites of ML and AI are contained in the course.

# Cohort Seat Pricing



| | |
|---|---|
| **Cohort Fee** | **₹1,25,000 / $1400** |
| **Expected ROI**<br>(In the next 12 months) | • *10-20 hrs saved per month*<br>• *2-5 AI opportunities recognized*<br>• *2-5 AI projects built or improved* |

# What's Included?



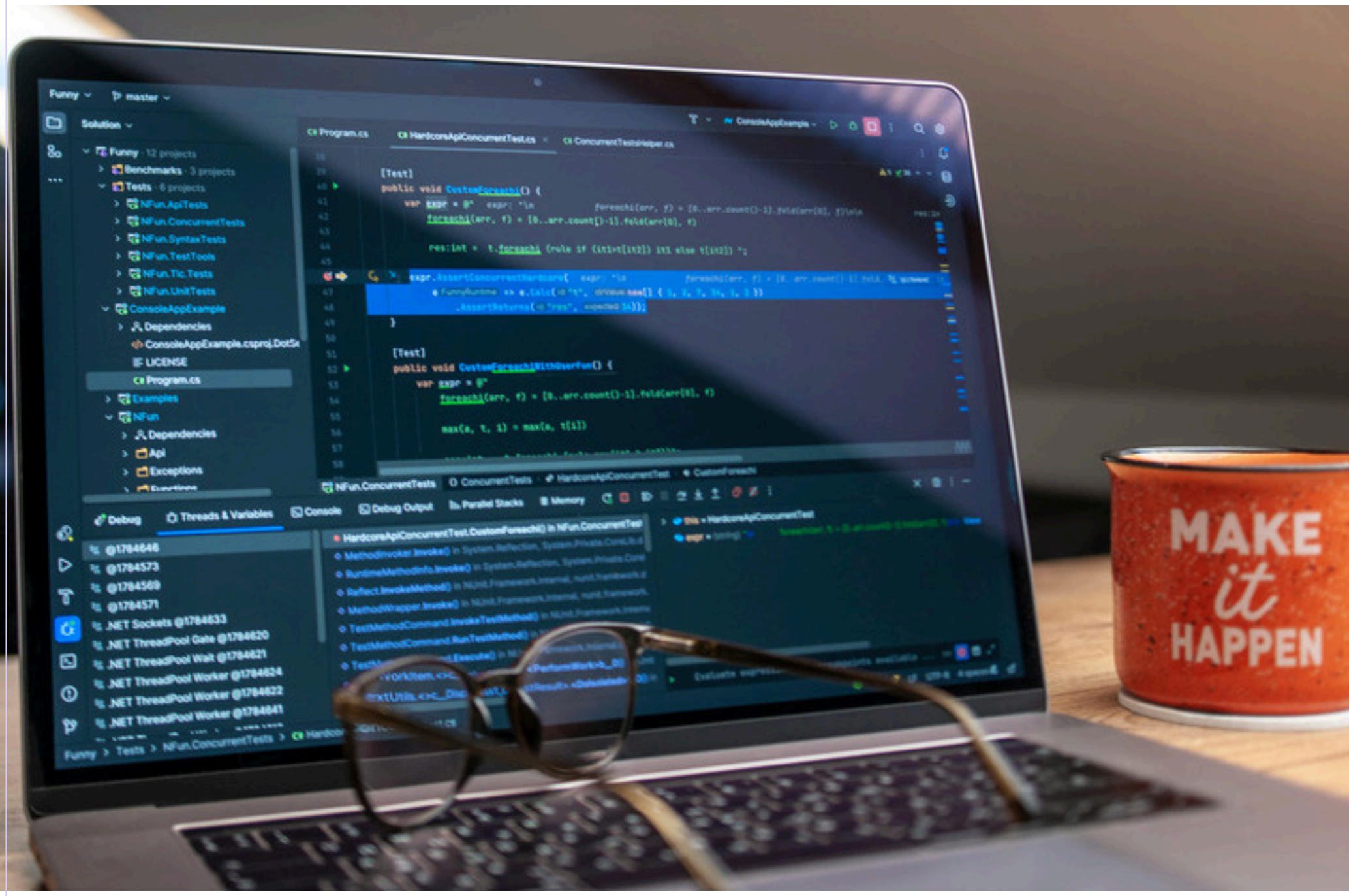

## Workshop & Materials

- Interactive live classes with code and diagrams
- Class notes for every topic
- Weekly assignments: hands-on code labs and conceptual exercises
- Curated resource library and reading list

## Ongoing Support

- Wednesday office hours (1 hour, open Q&A)
- Lifetime access to recordings and course material
- Peer accountability groups.
- Certificate of Completion.

# Ready to Build AI Systems?




aiengg.dev

**Duration**

2nd January - 21st February 2027

**Class Time**

9 AM - 10:30 AM IST
on Saturday & Sunday

**Email**

hello@aiengg.dev

**Website**

www.aiengg.dev