GradTensor

AI Engineering & Agentic Foundations

Build production-ready AI agents in 6 weeks

Duration: 6 weeks
Effort: 24 live hours + 24 project hours (~8 hrs/week)
Ideal for: Final-year students & working professionals adding AI skills

Format: Live sessions (not recorded)
Prerequisites: Basic Python knowledge
Next Batch: April 2026

WEEKLY CURRICULUM

WEEK 1: How LLMs Actually Work (4 hrs)

The conceptual spine

Live Session:

- Transformers, attention, tokenization (intuitive, not math-heavy)
- Inference parameters: temperature, top-p, system prompts, context windows
- Live demo showing how parameters change outputs

Project:

- Structured prompt experiments - same task, varying parameters
- Document what changed and why

Portfolio outcome: Understanding of how LLMs work at a product-decision level.

WEEK 2: Working with APIs & Embeddings (4 hrs)

The engineering foundation

Live Session:

- OpenAI/Anthropic API fundamentals (auth, rate limits, cost management, structured outputs)
- Embeddings and vector similarity search
- Build a semantic search engine live

Project:

- Build a personal knowledge base from 20-30 documents with simple query interface

Portfolio outcome: Foundation for Week 4's RAG system.

WEEK 3: Prompt Engineering as a Discipline (4 hrs)

What separates good AI engineers from great ones

Live Session:

- Chain-of-thought, few-shot learning, structured outputs (JSON/XML)
- Prompt injection risks and defenses
- Introduction to evaluation - how do you know if prompts work?

Project:

- Design and evaluate a prompt pipeline
- Write 3 variants, build a 10-example eval set, score them systematically

Portfolio outcome: Evaluation discipline that companies actually want.

WEEK 4: Building a RAG Pipeline (4 hrs)

Most in-demand pattern in production

Live Session:

- Full RAG architecture - ingestion, chunking strategy, embedding, retrieval, reranking, generation
- Chunking tradeoffs, why naive RAG fails, handling hallucination
- Build working RAG chatbot live

Project:

- Extend Week 2's knowledge base into a full RAG chatbot with UI (Streamlit/Gradio)

Portfolio outcome: Portfolio piece #1 - deployed RAG system you can demo.

WEEK 5: Building Agents from First Principles (4 hrs)

Understanding agents before using frameworks

Live Session:

- Agent anatomy - ReAct loop, tool calling with native APIs, memory types
- Multi-step reasoning, failure modes, prompt engineering for agents

Project:

- Build a research agent with 3+ tools that searches, synthesizes, and saves output

Portfolio outcome: Working agent from scratch with clear understanding of the loop.

WEEK 6: Agent Frameworks & Production Patterns (4 hrs)

When and how to use frameworks

Live Session:

- LangGraph - state machines, rebuild Week 5 agent in framework
- Multi-agent patterns (delegation, collaboration, supervision)
- Ecosystem tour (LangChain/CrewAI/MCP)
- Production considerations: cost control, latency, observability, safety

Project (Choose one:)

- Option A: Migrate to LangGraph with state management
- Option B: Build multi-agent system (researcher + writer)
- Option C: Real integration (GitHub/Notion/Slack agent)

Portfolio outcome: Portfolio piece #2 - production-grade agent with framework.

DEPLOYED PROJECTS

You graduate with two deployed, demo-ready projects - not notebooks.

1. RAG Chatbot with Custom Knowledge Base

Ingest documents, chunk, embed, retrieve, generate answers. Deployed with a web interface (Streamlit/Gradio).

2. AI Agent with Tool Orchestration

Agent that can search the web, call APIs, and take actions on its own. Deployed and demo-ready for interviews.

WHAT MAKES THIS DIFFERENT

• First principles, not just frameworks

You understand WHY things work, not just how to call them.

• Explain and defend your work

You graduate able to explain your architecture and defend your design decisions in interviews.

• Live sessions, not recordings

Direct instructor access with real-time Q&A and feedback.

• Deployed projects

Live projects you can demo in interviews, not notebooks on your laptop.

• Cumulative learning

Each week builds on the last - Week 2's knowledge base becomes Week 4's RAG system.

WHO IS THIS FOR

- Final-year students who need an AI edge in campus interviews
- Working professionals adding agentic AI skills quickly
- Anyone who needs to build and demo AI systems fast

Next Batch: April 2026