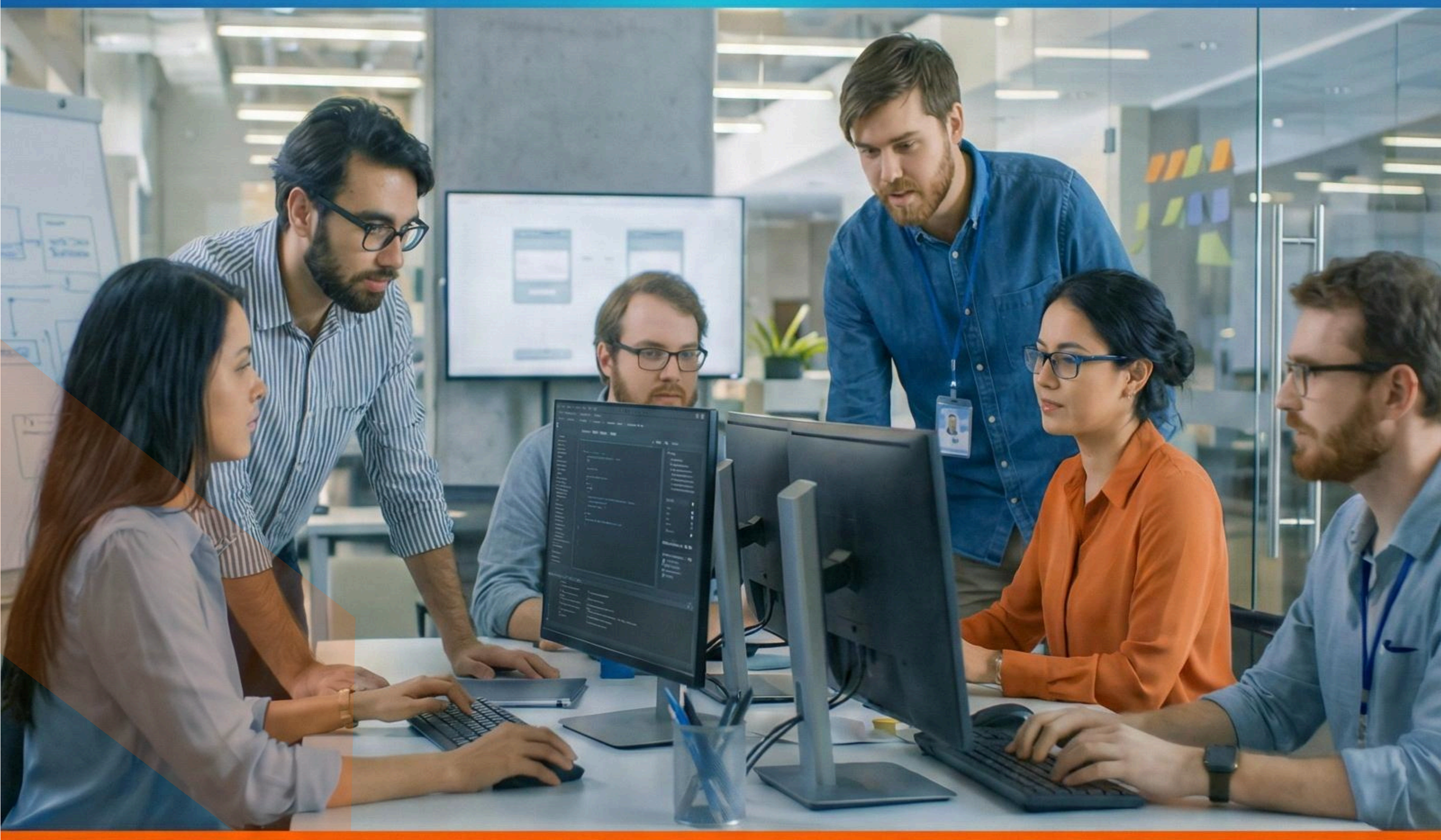
A Unique Approach to mould

NEXT-GEN AI PROFESSIONALS

ASTRA AI



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WHY SHOULD YOU LEARN THIS COURSE AT YugantaAI?

- placement assistance.
- Specialized grooming sessions.

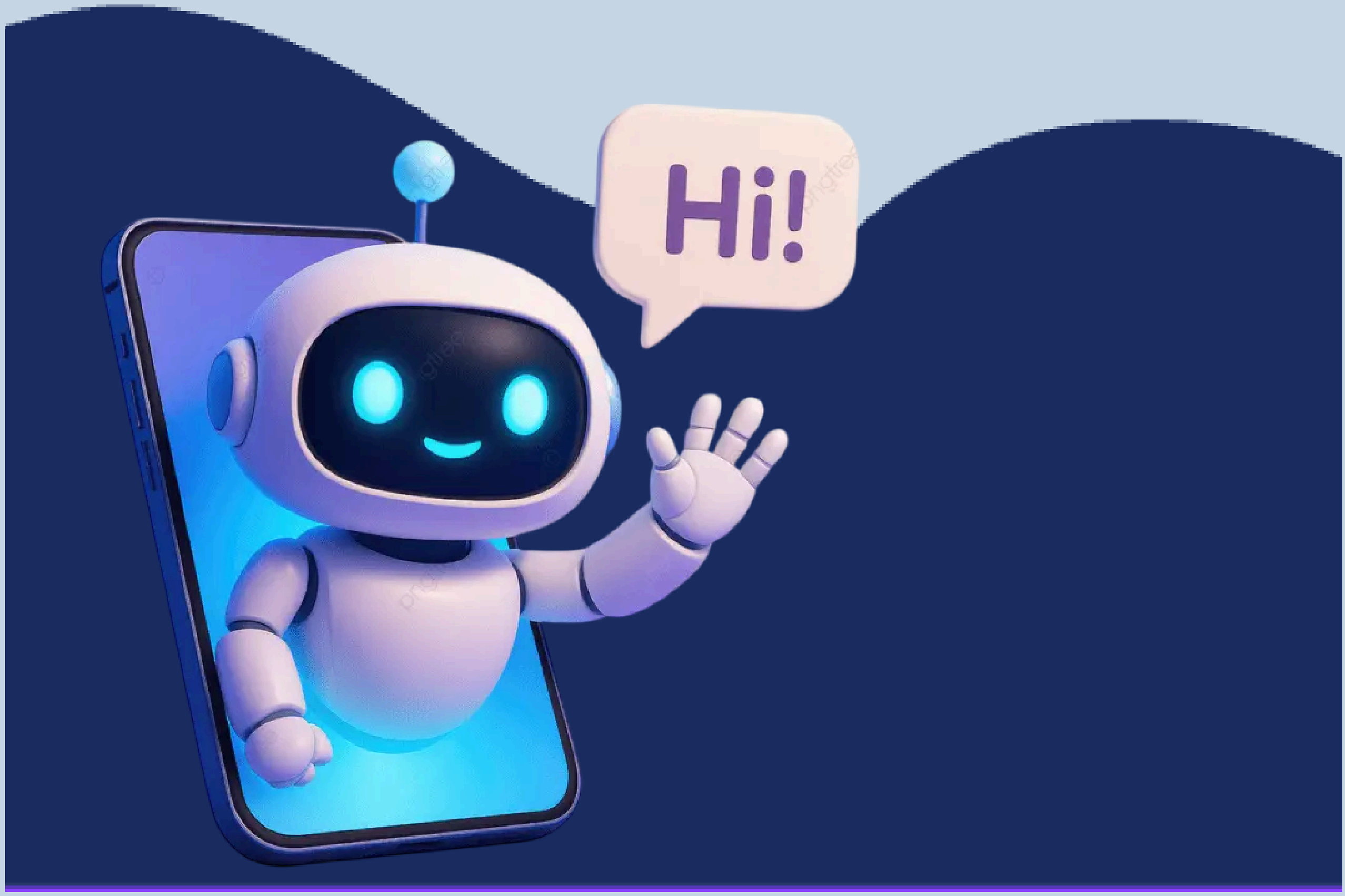
What Inside this Course?

This course takes learners from the fundamentals of NLP and Transformers to building real-world LLM applications, RAG systems, and AI agents. It covers prompt engineering, fine-tuning and training LLMs from scratch, and working with frameworks like LangChain and LlamaIndex. By the end, students will design and deploy production-ready AI agents using modern agentic architectures such as CrewAI and LangGraph through hands-on projects.

PHASE-1

NATURAL LANGUAGE PROCESSING USING - PyTorch

- NLP Pipeline including text preprocessing, feature extraction methods like Bag-of-Words & TF-IDF.
- Working of sequence models like RNN (Recurrent Neural Nettwork), LSTM (Long-Short Term MEMORY), GRU (Gated Recurrrent Unit).
- Understanding the architecture of Transformers and the Attention mechanism.



BUILDING LLM APPLICATION USING - PROMPT ENGINEERING

- Fundamentals of Prompt Engineering including zero-shot, few-shot prompting techniques and design prompt templates.
- Exploring Chain-of-Thought prompting, instruction tuning.
- How to use LLM APIs and design prompt-based applications including building chatbots.
- Prompt tuning vs Fine tuning

FINE TUNING LLM'S

- Understand why Finetuning needed, how Instruction finetuning works and learn modern efficient methods like LoRA, QloRA.
- Prompt tuning vs Fine-tuning and learn how to adapt LLMs to specific domains like Health care, finance.
- Explore how to scale fine-tuning efficiently and apply cost optimization techniques.

TRAINING LLM's FROM SCRATCH

- Concepts for Training LLM's from Scratch (Chinchilla scaling Laws, Parallel and Distributed Paradigm).

- Steps for Training LLM's from Scratch (Data Curation, Data Preprocessing, Tokenization, Model Architecture and Model Evaluation.).

- Estimate cost of Training LLM's from Scratch (Computational, Hardware).

- Training your own LLLM's from Scratch.

PHASE-2

INTRODUCTON TO LANGCHAIN

- Introduction to the LangChain Ecosystem
- Essentials of LangChain Expression Language (LCEL)
- Handling LLM Inputs and Outputs
- Projects on Prompt Engineering and Advanced LLM Chains

RAG SYSTEMS ESSENTIALS

- Introduction to Retrieval-Augmented Generation (RAG) Systems
- Building Retrieval Systems: Data Loading, Splitting & Chunking
- Implementing Vector Databases and Retrievers
- Projects on Document Retrieval & Advanced RAG Systems

BUILDING PRODUCTION - READY RAG SYSTEM USING - LLamaIndex

- Introduction to RAG Systems and LlamaIndex
- Core Components and Setup of LlamaIndex
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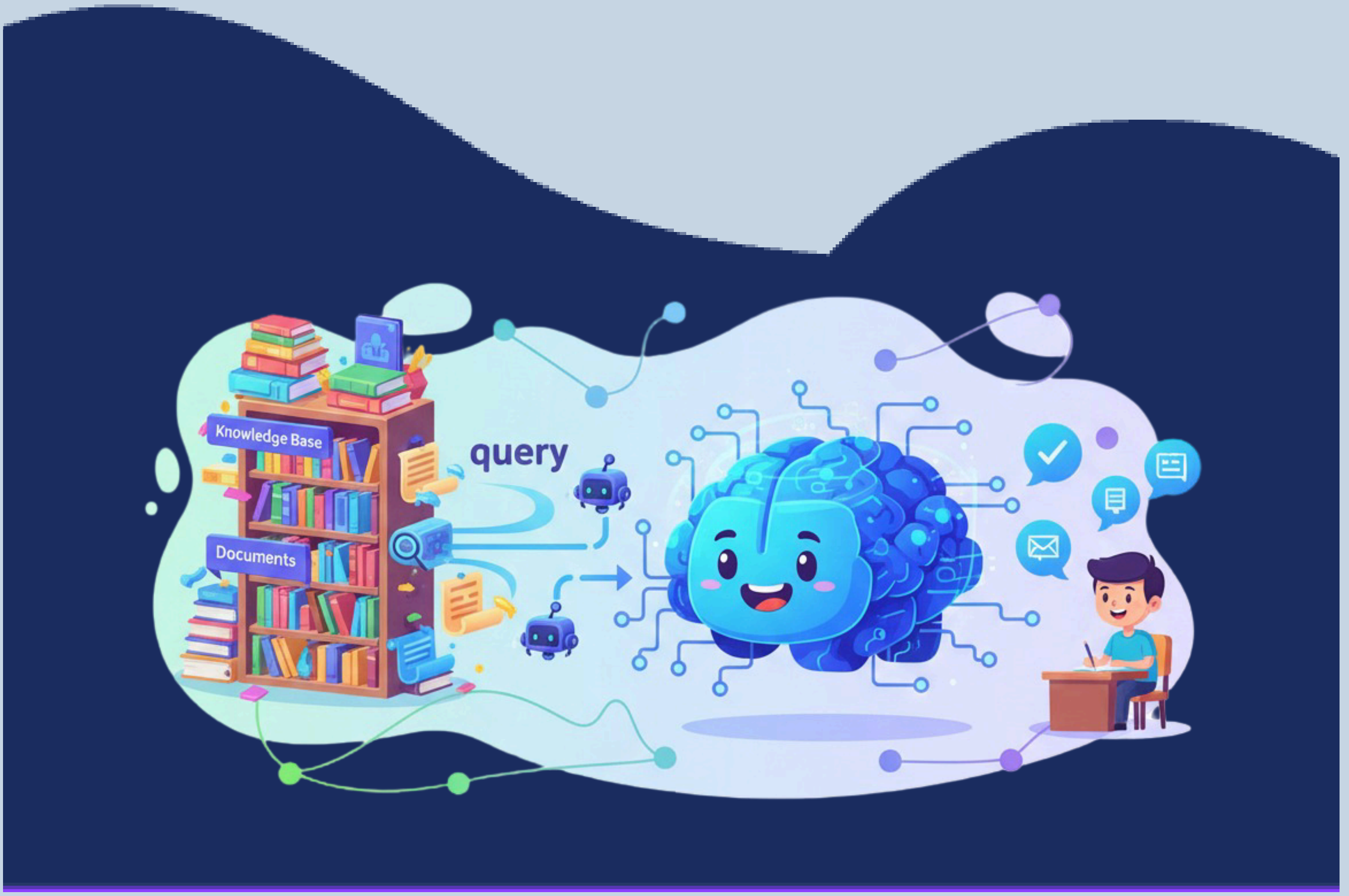
- Evaluating RAG System Performance



PHASE-3

AGENTIC AI SYSTEM ARCHITECTURES

- Introduction to Agentic Design Patterns
- The Reflection Pattern in Agentic AI
- The Tool Use Pattern in Agentic AI
- The Planning Pattern in Agentic AI
- The Multi Agent Pattern in Agentic AI
- Best Practises and Key Takeaways

BUILDING AI AGENTS WITH LANGCHAIN

- Introduction to Tools and Tool Calling
- Essentials of AI Agents with LangChain
- Memory and Conversational Agents Agent
- Project: Build a Text2SQL AI Agent
- Project: Build a Financial Analyst AI

BUILDING YOUR FIRST AI AGENT WITH CrewAI

- Introduction to CrewAI
- Core components of CrewAI
- What sets CrewAI apart?

BUILDING ADVANCED AI AGENTS WITH - LangGraph

- course Introduction
- Core Components of Agentic Systems & LangGraph
- Building Tool Use Agentic AI Systems
- Project: Build a Financial Analyst Tool Use AI Agent
- Memory & Conversational Agentic AI Systems

Tools, Libraries & Frameworks