

Advances Gen AI Modules

Techcult

Module 1 : Intro To Artificial Intelligence

- What is LLM
- Difference between Traditional AI and Generative AI

Module 2 : Python

- Intro to Python, Conditional statements
- List, Tuple
- Set, Dictionaries
- Strings
- Functions and Modules
- Class and OOP features
- Generators, Iterators, Decorators
- Any Python Library
- Assignment

Module 3 : Prompt Engineering

- Prompt Engineering and Prompt Elements,
- Zero shot Prompting, Few shot Prompting
- Chain of Thought Prompting , Tree of Thoughts (ToT), ReAct Prompting
- Retail Use Case (Creating, Evaluating, and Optimizing a Prompt)
- ChatGPT in Various Applications

Module 4 : LangChain

- Introduction, Chat Models Overview, Example Overview, Basic Conversation, Real Time Conversation, Save Message History, Prompt Templates, Basic With Chat Model
- Chain – Basic example, Under The Hood , Extended, Parallel, Branching
- RAG – Basic Example, Text Splitting, Embedding, Retriever, One - off Question, Conversational, Web Scraping Agents and Tools – Basic, React Chat, React Docstore, Constructor Base Tools

Module 5 : Intro to LLMs & Its APIs

- What is API
- Groq API
- Transformer Architecture

Module 6 : Vector Embeddings & Vector DB

- What is Vector Embeddings
- Different Vector Embedding Algorithms
- Vector DB & Types of Vector DB

Module 7 : RAG & Advanced RAG Architecture

- Creating RAG pipeline
- Advanced RAG concepts
- Use case on one domain Day
- Architecting AI applications Day
- RAG Pain Points & their solutions
- Tips and Tricks for Productionizing RAG

Module 8 : LLM Fine-Tuning

- Introduction to fine-tuning models
- Data preparation techniques for fine-tuning
- LORA and QLORA
- Decision-making frameworks for choosing between finetuning and RAG
- Evaluating LLMs
- Intro to AWS , AWS Sage Maker , AWS BedRock

Module 9 : Cloud & Lang Graph & Intro to Agents

- Intro to Azure and Open AI,
- Google Vertex AI , Big Query
- Intro to Lang Graph Day
- Creating Application using LangGraph to send an Auto Reply mail.
- What is Agent and Its Frameworks

Module 10 : Crew AI

- What is CrewAI
- How CrewAI Works
- Agent Overview, Tool Overview
- Task Overview
- Process Overview
- Newsletter generation using CrewAI

Project

Project 1 : Fine Tuning LLM

- Choose an Use Case Day
- Building an Architecture Day
- Create an ETL jobs , Vector DB and Create user-define prompts
- Fine tuning using LORA or RAG
- Evaluation / Retraining
- **PROJECT PRESENTATION**

Project 2 : Agentic AI

- Choose an Use Case
- Building an Architecture
- Create an AI Agents
- Create task for each agent
- Evaluation / Retraining
- **PROJECT PRESENTATION**

INTERVIEW TIPS & FINAL WRAP