GenAI Curriculum

Module No.	Module Name	Topics Covered
Module 0	**Basics**	- Data Collection - Data Preprocessing - Exploratory Data Analysis - Feature Engineering
Module 1	**Natural Language Processing (NLP)**	- Introduction to NLP - Typical NLP Tasks - Text Preprocessing in Python - What is Embedding? - Common Embedding Models - Word Embedding vs Sentence Embedding
Module 2	**Deep Learning Algorithms**	- Introduction to Deep Learning - Artificial Neural Networks (ANN) - Convolutional Neural Networks (CNN) - Recurrent Neural Networks (RNN) - Long Short-Term Memory (LSTM) - Bidirectional LSTM - Encoder-Decoder Model - Attention Mechanism - Transformer Architecture - BERT
Module 3	**Hugging Face Overview**	- Introduction to Hugging Face - Component of Hugging Face - Various Application of Hugging face along with practical - Using Hugging Face API for Model Inference

		- Pushing Models to the Hub & Deploying in Spaces
Module 4	**Introduction to Generative AI**	- Introduction to Generative AI - Types of Models (Foundational, Fine-Tuned, Base Models) - Large Language Models (LLM) - Small Language Models (SLM) - Difference Between LLM and SLM - Overview of Text, Image & Audio Generation Models
Module 5	**Prompt Engineering**	- Introduction to Prompt Engineering - How to Write Effective Prompts - Types of Prompting - General Framework for Prompting - Hands-on Practical Examples
Module 6	**Overview of Major AI Models**	- OpenAI (GPT-4, GPT-4o) and Setup - Learning About OpenAI Playground - Google Gemini and Setup - Google AI Playground - Facebook Llama models - Anthropic Claude and Setup - Anthropic AI playground - xAI (Grok) and Setup - DeepSeek R1
Module 7	**Vector Databases**	- Introduction to Vector Databases - Comparison with SQL and NoSQL Databases - Types of Vector Databases

		- Efficient Techniques for Fast Vector Retrieval - Exploring Popular Vector Databases (ChromaDB, Faiss, Quadrant, Pinecone, Weaviate)
Module 8	**Introduction to LangChain**	- Introduction to LangChain - Step-by-Step Approach - Creating End-to-End LangChain Applications Using Various Data Sources - Different Types of Conversations in LangChain - Deploying Models Using LangServe and Monitoring with LangSmith
Module 9	**Retrieval-Augmented Generation (RAG)**	- Introduction to RAG - Steps Involved in RAG Implementation - Creating an End-to-End RAG System from Scratch using various AI models - Learning about Query Transformation, RAG fusion and Decomposition - Building a Multimodal RAG Application
Module 10	**Fine-Tuning LLM Models**	- What is Fine-Tuning? - Various Fine-Tuning Techniques - Advanced Fine-Tuning Methods - Model Quantization Techniques (4-bit, 8-bit, 1-bit LLM Models) - Practical Fine-Tuning Examples
Module 11	**Introduction to LlamaIndex**	- Overview of LlamaIndex

		- How to Use LlamaIndex for Efficient Data Indexing - Integrating LlamaIndex with LLM Applications
Module 12	**Running LLM Apps Locally**	- Running LLM Locally - Learning About OLLAMA - OLLAMA with Langchain - Learning About LMStudio - Hugging Face Model Downloader
Module 13	**AI Agents**	- Introduction to AI Agents - Various Frameworks for AI Agents - Crew AI - Phi Data - LangGraph - OpenAI Agents SDK - SWARM - Google Agent Development Kit
Module 14	**Communication Protocols and Tips for cost optimization**	- MCP Server - A2A Protocols - Tips and Tricks for optimizing LLM
Module 15	**Security in LLM**	- Security in LLM
Module 16	**Capstone projects**	- Project 1 - Project 2 - Project 3

Contact us for more information

Cost of Training- Rs 42k inr (500 usd)

Duration- 45 Days

DM us on WhatsApp

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