GENERATIVE AI DEVELOPMENT

INTRODUCTION TO ARTIFICIAL INTELLIGENCE

- Introduction to Artificial Intelligence
- Life Cycle of Artificial Intelligence
- Difference between AI vs ML vs DL vs Gen AI
- Introduction to Generative AI
- Python Programming
- Pandas
- What is Machine Learning
- Supervised Learning / Unsupervised Learning /Reinforcement Learning

Deep Learning:

- Introduction to Deep Learning
- Introduction ANN
- Understanding of Tensorflow and Keras
- Forward Propagation
- Back Propagation
- Optimizer
- Regularization
- Introduction to CNN
- Implementation of CNN

Natural Language Processing

- Introduction to NLP
- History of NLP
- Embedding
- Word2Vec
- Bag of words
- TF-IDF
- Data Augmentation
- Vectorization
- Part-of-Speech
- Sentiment Analysis

- Implementation of RNN / LSTM / GRU

Large Language Models

- Introduction to Encoder / Decoder
- Understanding Self Attention
- What are Transformers
- Types of Transformers
- Implementation of Transformers
- What is LLMs
- Types of LLMs
- Pre-training
- Fine-training
- LLM Application

Working with Hugging Face Ecosystem

- Introduction to Hugging Face Ecosystem
- Hugging Face Transformers Library
- Exploring Hugging Face Models and Tokenizers.
- Performing Sentiment Analysis using pre-trained model
- Introducing to Trainer API
- Using Hugging Face Model hub to share models.
- Multi-Lingual and cross – lingual transfer learning.
- Using pipelines for different tasks (text generation, named entity recognition,)
- Integrating Hugging Face models with web application

Working with LangChain

- Introduction to the LangChain framework
- Understanding the purpose and core components of LangChain Framework
- LangChain Setup and necessary dependencies
- Basic configuration and setup for development
- Step-by-step guide to creating a simple application using LangChain Framework
- Detailed walkthroughs of real-world applications built with LangChain

Meta's LLaMA API

- Introduction of LLaMA .

- Comparison with other large language models like GPT-3 and GPT-4.
- Key features and capabilities of LLaMA
- Understanding the Model Architecture of LLaMA.
- Discussion on model sizes and capabilities.
- Environment setup: Installing necessary libraries and tools machines or cloud platforms (Meta LLaMa) .
- Intro to the architecture of LLaMA models
- Accessing LLaMA models: Overview of the download process and setup on local
- Understanding the differences between LLaMA model variants (8B, 13B, 30B, and 70B parameters)
- Implementing text generation using LLaMA

Open AI API

- Intro To Open Ai Working with Open AI API
- Utilizing OpenAI APIs
- Setting up and authenticating API usage.
- Practical exercises using GPT-3/GPT-4 for text generation.

Prompt Engineering and Working With LLM

- Intro to Prompt Engineering
- LLM with Prompt Engineering
- Introduction to GPT models.
- Understanding how GPT-3 and GPT-4 work
- Training on popular LLMs like GPT (Generative Pre-trained Transformer).
- Practical applications of LLMs in generating text, code, and more

Working with Google Gemini API

- Getting Started with Gemini
- How to obtain an API key for Gemini.
- Overview of the Gemini API and accessing its features.
- Detailed exploration of different Gemini models.
- Selecting and initializing the right model for specific tasks.
- Step-by-step project to create an AI-powered chatbot using Gemini.

Building Gen AI Apps Using LangChain

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Introduction To Stable Diffusion and Retrieval-Augmented Generation

- Introduction to Stable Diffusion
- Fundamentals of Diffusion Models
- Application of Stable Diffusion
- Modifying image attributes and styles using prompt engineering
- Parameters of image generation: seeds, prompts, and steps explained
- Tool For Stable Diffusion
- Fine-tuning and training Stable Diffusion on custom datasets
- Introduction to Retrieval-Augmented Generation
- Building applications using Retrieval-Augmented Generation

FINAL: Project Implementation