Programming For AI(LAB)

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1. LangChain

- LangChain is a framework for building applications with LLMs (Large Language Models).
- It connects LLMs to external data, APIs, tools, and memory.
- Example: Using LangChain to make a chatbot that can search your database and answer questions.

2. RAG (Retrieval-Augmented Generation)

- RAG is a method where the LLM retrieves information from a database or documents before generating an answer.
- It improves accuracy because the model doesn't rely only on its training — it fetches fresh info too.
- Example: A chatbot that finds information from Wikipedia before replying.

3. LLMs (Large Language Models)

- LLMs are huge AI models trained on tons of text data to understand and generate human-like text.
- Examples of LLMs: GPT-4, LLaMA, Claude.
- They are the core brain behind many AI apps (like ChatGPT).

4. FAISS (Facebook AI Similarity Search)

- FAISS is a library created by Facebook to quickly search for similar vectors (data points).
- It's used to find similar documents or similar embeddings fast.
- Example: When you search for similar resumes in a database, FAISS finds the nearest matches.

5. Vector

- A vector is just a list of numbers that represents something (like a sentence, image, or document) in a way that machines can understand.
- Example: "I love ice cream" $\rightarrow$ [0.5, -0.3, 0.8, ...]

6. VectorDB (Vector Database)

- A VectorDB is a special database designed to store and search vectors.
- It allows fast similarity search using embeddings (vectors).
- Examples: Pinecone, ChromaDB, Milvus.

7. Generative AI

- Generative AI is AI that can create new content like text, images, music, or videos.
- It generates new things rather than just analyzing old things.
- Example: DALL-E makes new images; ChatGPT writes new essays.

8. GANs (Generative Adversarial Networks)

- GANs are a type of Generative AI that uses two neural networks — a generator and a discriminator — that fight each other to create realistic content.
- They are mostly used for image generation, deepfakes, etc.
- Example: GANs can create realistic fake human faces that don't exist.