

Operating System Lab



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Lab task 11

1. LangChain

What it is: A framework to **build apps using LLMs** (like ChatGPT) in a modular way.

Use case: Think of it as the “workflow manager” for AI — lets you chain prompts, tools, memory, etc., to make LLMs smarter and more interactive.

Analogy: LangChain = Jarvis for LLMs. It organizes and orchestrates AI steps behind the scenes.

2. RAG (Retrieval-Augmented Generation)

What it is: A technique where you **retrieve external knowledge** (like from a PDF or DB) and feed it into the LLM to generate better, more accurate answers.

Use case: Useful when LLMs don't know specific or upto-date stuff.

Analogy: RAG = Like giving your AI cheat sheets before an exam.

3. LLMs (Large Language Models)

What it is: AI models trained on huge amounts of text to understand and generate human-like language.

Examples: GPT-4, LLaMA, Claude.

Analogy: LLM = Super-smart parrot that actually *gets* what you're saying and responds with crazy accuracy.

4. FAISS (Facebook AI Similarity Search)

What it is: A library to **search for similar vectors** really fast — like nearest neighbor search on steroids.

Use case: Used in vector databases to quickly fetch relevant info for RAG setups.

Analogy: FAISS = Google Maps for AI memory — “find me what’s closest to this!”

5. Vector

What it is: A numeric representation of data (like text) in multi-dimensional space.

Why it matters: Helps the AI understand how similar different pieces of text are.

Analogy: Vector = Coordinates of meaning in AI-land. “Apple” and “fruit” will have vectors close to each other.

6. VectorDB

What it is: A database that stores vectors (a.k.a. embeddings) and lets you **search by similarity**.

Examples: Pinecone, Weaviate, Chroma, Milvus.

Analogy: VectorDB = AI's long-term memory, but with vibes. It remembers and finds stuff based on *meaning*, not exact words.

7. Generative AI

What it is: Any AI that can **create stuff** — text, images, music, code — based on input prompts.

Tools: ChatGPT, DALL·E, Midjourney.

Analogy: Generative AI = The creative cousin of AI that's always making memes, stories, or beats.

8. GANs (Generative Adversarial Networks)

What it is: A generative AI technique where **two neural networks battle** — one generates, one critiques — to create super realistic outputs.

Used in: Deepfakes, art generation, image upscaling.

Analogy: GAN = AI's internal “Shark Tank” — one AI pitches, the other roasts, and they both get better.

