Lab 11 Task

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| Lang Chain | RAG | LLMs | FAISS |
| A Python framework to build applications using LLMs (Large Language Models). | A technique that retrieves relevant data from external sources (e.g., a VectorDB), then passes it to the LLM to generate more accurate answers. | Deep learning models (e.g., GPT, PaLM) trained on vast text data to understand and generate human-like language. | A library for fast, efficient vector similarity search. |
| Helps connect LLMs to tools like VectorDBs, APIs, search engines, or memory, making apps like chatbots, RAG pipelines, or agents easier to build. | Solve the “hallucination” problem of LLMs by grounding answers in real documents. | Text generation, summarization, code completion, translation, chatbots, etc. | Enables searching through millions of embeddings (e.g., finding similar documents or images). |
| Think of it as: An orchestration layer or glue between LLMs and external data/tools. | LLM + Search Engine = Reliable Q&A. | GPT-4, Claude, Gemini, LLaMA, Mistral. | A tool to power vector-based search (often used inside VectorDBs). |

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| Vector | Vector DB | Generative AI | GANs |
| A numeric representation (embedding) of data (text, image, etc.) in multi-dimensional space. | A database designed to store, index, and search vectors (embeddings). | AI models that generate new content text, images, code, music often using deep learning. | A specific type of generative model where two neural networks (generator + discriminator) |
| Used in similarity search closer vectors more similar meaning. | Retrieve semantically similar documents/images. | ChatGPT, DALL·E, Stable Diffusion. | Photo-realistic images, deepfakes, super-resolution. |
| A sentence like "I love cats" might become a 384-dimensional vector via an embedding model. | Pinecone, Weaviate, Chroma, Qdrant, Milvus. | AI that creates instead of just predicting or classifying. | Invented by: Ian Goodfellow (2014). |