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LAB 11 TASK

Describe the Difference between:

1. **Lang-Chain:** LangChain is an open-source framework designed to build applications powered by large language models (LLMs). It enables the integration of LLMs into various applications, allowing developers to create more sophisticated and context-aware systems.

Example:

Building a customer support chatbot

2. **RAG (Retrieval-Augmented Generator):** RAG is a type of model that combines retrieval mechanisms with generative models. It retrieves relevant documents or information from a database and uses this information to generate more accurate and informed responses.

Example:

Who was Albert Einstein? Retrieves articles and generates a bio.

3. **LLMs (Large Language Models):** LLMs are AI models designed to process and understand human language at a large scale. They're trained on vast amounts of text data and can generate human-like text, answer questions, and perform various language-related tasks.

Example:

Write a poem about love. Generates a poem.

4. **FAISS (Facebook AI Similarity Search):** FAISS is a library for efficient similarity search and clustering of dense vectors. It's particularly useful for tasks like image similarity search, text embeddings, and other applications where vector similarity is crucial.

Example:

Finding similar images in a database

5. **Vector:** In the context of AI and machine learning, a vector is a numerical representation of data, such as text or images. Vectors can be used to capture semantic meaning, allowing models to understand and process the data more effectively.

Example:

Word embeddings (e.g., "king" and "queen" have similar vectors).

6. **VectorDB (Vector Database):** A VectorDB is a database designed to store and manage vector embeddings. It enables efficient similarity search, indexing, and retrieval of vectors, making it a crucial component in various AI applications.

Example:

Recommendation systems for personalized content.

7. **Generative AI:** Generative AI refers to models that can generate new, original content, including text, images, and music. These models learn patterns and structures from existing data and use this knowledge to create novel outputs.

Example:

Generating new artwork or product designs.

8. **GANs (Generative Adversarial Networks):** GANs are a type of generative model that consists of two neural networks: a generator and a discriminator. The generator creates new data samples, while the discriminator evaluates the generated samples and tells the generator whether they're realistic or not. Through this process, GANs can generate highly realistic data.

Example:

Creating synthetic faces or deepfakes.