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**Assignment no 11**

**Submitted to:**

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**QUESTION NO 1**

Describe the Difference between:

1. Lang-Chain

2. RAG

3. LLMs

4. FAISS

5. Vector

6. Vector DB

7. Generative AI

8. GANs

**ANSWER:**

* **Lang-Chain:**

Lang Chain is an open-source toolkit that helps developers build smart applications using powerful language models like GPT. Instead of just getting simple responses, Lang Chain lets you create apps that can remember conversations, connect to other tools or databases, and handle more complex tasks. It's designed to make working with AI easier, more flexible, and way more useful in real-world situations.

* **RAG:**

RAG helps language models look up relevant information from documents or databases before answering. This makes the answers more accurate and grounded in real facts.

* **LLMs:**

LLMs are powerful AI models trained on huge amounts of text (like books, websites, articles) to understand and generate human-like language. GPT is a popular example. They can write, translate, summarize, answer questions basically act like a really smart chatbot.

* **FAISS:**

FAISS is a tool developed by Facebook to help find similar things like finding documents, images, or sentences that are close in meaning. It’s super-fast and works great when you're dealing with a lot of data.

* **Vector:**

In AI, a **vector** is just a list of numbers that represents something like a sentence, image, or word in a way the computer can understand. These numbers capture the meaning or features of the item. Think of it like a fingerprint for data.

* **Vector DB:**

A Vector DB stores and manages all those "fingerprints" (vectors). When you want to find the most similar document or image to something, the vector DB helps you search through those fingerprints quickly and accurately. Popular ones include FAISS, Pinecone, and Weaviate.

* **Generative AI:**

Generative AI refers to AI that creates new stuff — like text, images, music, or even code. Tools like ChatGPT, DALL·E, and Midjourney are examples. They don’t just find information, they actually generate creative content based on what you ask.

* **GANs:**

GANs are a special kind of AI where two models work like rivals: one tries to create fake content (like fake images), and the other tries to spot the fakes. Over time, the generator gets better at fooling the other, leading to incredibly realistic results like deepfake videos or AI-generated art.