

The Superior University

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| Semester: 4th | Section: BSAI 4A | Department: |
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**Lab 11**

**Task: Describe the Difference Between the Following Terms**

1. **LangChain**  
   LangChain is a framework designed to assist developers in building applications powered by large language models (LLMs). It simplifies the integration of LLMs with external data sources, APIs, and custom workflows, enabling the creation of complex and interactive AI systems.
2. **RAG (Retrieval-Augmented Generation)**  
   RAG is a technique that combines information retrieval with text generation. Instead of generating responses from scratch, it retrieves relevant documents from a knowledge base and uses them as context to generate more accurate and informative responses using an LLM.
3. **LLMs (Large Language Models)**  
   LLMs are AI models trained on vast amounts of text data to understand and generate human-like language. Examples include GPT, BERT, and LLaMA. They are used in various natural language processing tasks such as translation, summarization, question answering, and chatbots.
4. **FAISS (Facebook AI Similarity Search)**  
   FAISS is an open-source library developed by Facebook AI for efficient similarity search and clustering of dense vectors. It's commonly used in applications that require fast nearest neighbor search in high-dimensional spaces, such as vector databases and recommendation systems.
5. **Vector**  
   In the context of AI and machine learning, a vector is a numeric representation of data (e.g., text, images) in a multi-dimensional space. Vectors allow machines to compare and analyze similarities or differences between various data points.
6. **VectorDB (Vector Database)**  
   A VectorDB is a specialized database designed to store and search vectors efficiently. It supports similarity search and is often used with machine learning models to enable semantic search and recommendation functionalities.
7. **Generative AI**  
   Generative AI refers to AI systems that can create new content, such as text, images, music, or code. These systems learn patterns from existing data and use them to generate novel outputs. Examples include ChatGPT, DALL-E, and MusicLM.
8. **GANs (Generative Adversarial Networks)**  
   GANs are a class of generative models consisting of two neural networks: a generator and a discriminator. The generator creates fake data, while the discriminator evaluates its authenticity. Through this adversarial process, GANs learn to produce highly realistic data, commonly used in image and video generation.