Session 3 – Graph & Hybrid RAG (Goals)

• Understand when RAG needs structure: entities/relations + SQL facts.

• Implement Graph RAG (entity co-occurrence) and Hybrid RAG (Vector + SQL).

• Addons: PDF ingestion, metadata filters, transcript download.

Graph RAG (Lightweight)

• Build a simple entity graph from chunks (co-occurrence heuristic).

• Use graph nodes as hints, but ground answers only in retrieved passages.

• Great for discovering entities/themes across large corpora.

Hybrid RAG

- Combine unstructured vector passages with a structured SQL store.
- LLM merges signals; you keep citations for trust.
- Good fit for policy + product metadata, KYC rules + merchant attributes.

Demo Flow

- Upload PDF/TXT $\rightarrow$ Chunk/Embed $\rightarrow$ Vector Store & Graph Update.
- Query: choose mode (Vector/Hybrid/Graph), apply filters, get citations.
- Download JSON transcript for auditability.