Building LLM Powered Solutions

Module 5:
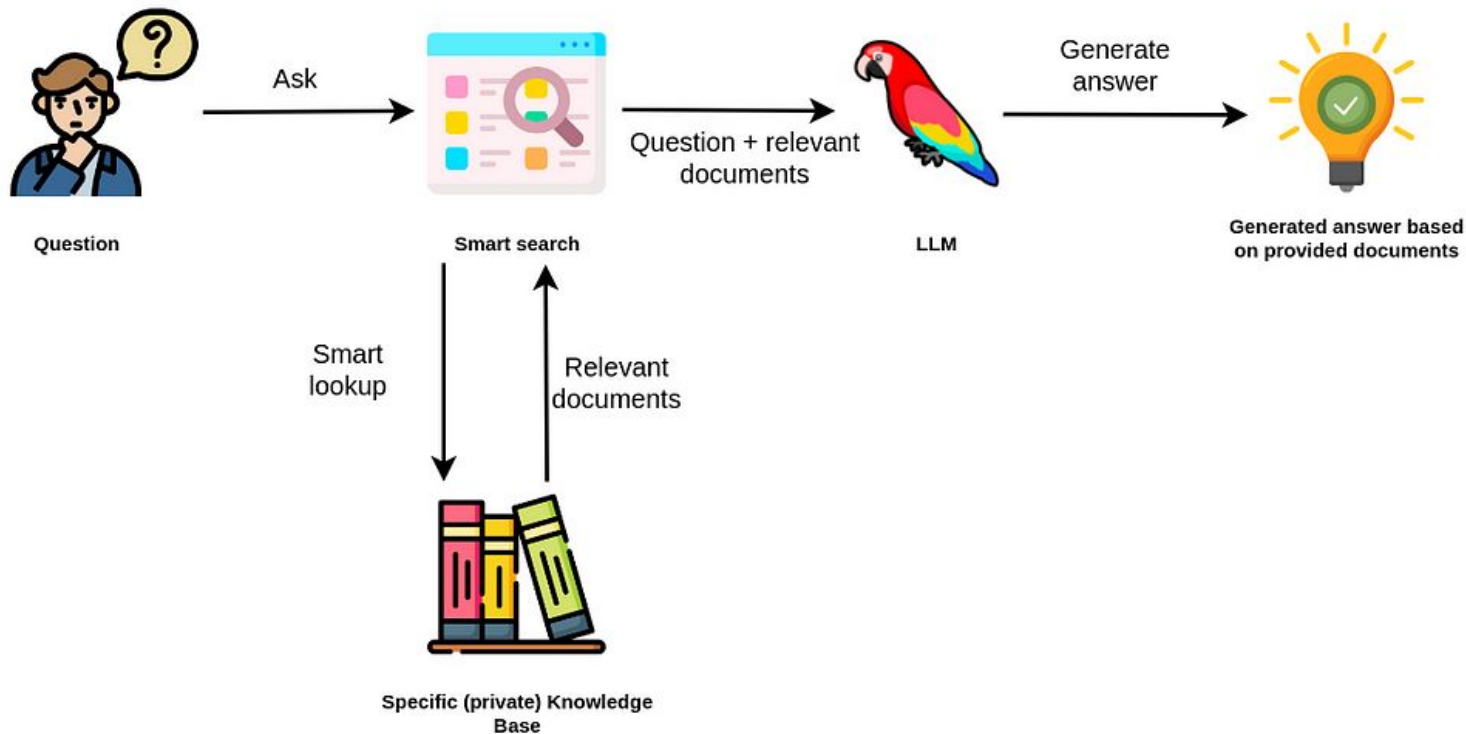## Adding Generation to Retrieval Systems

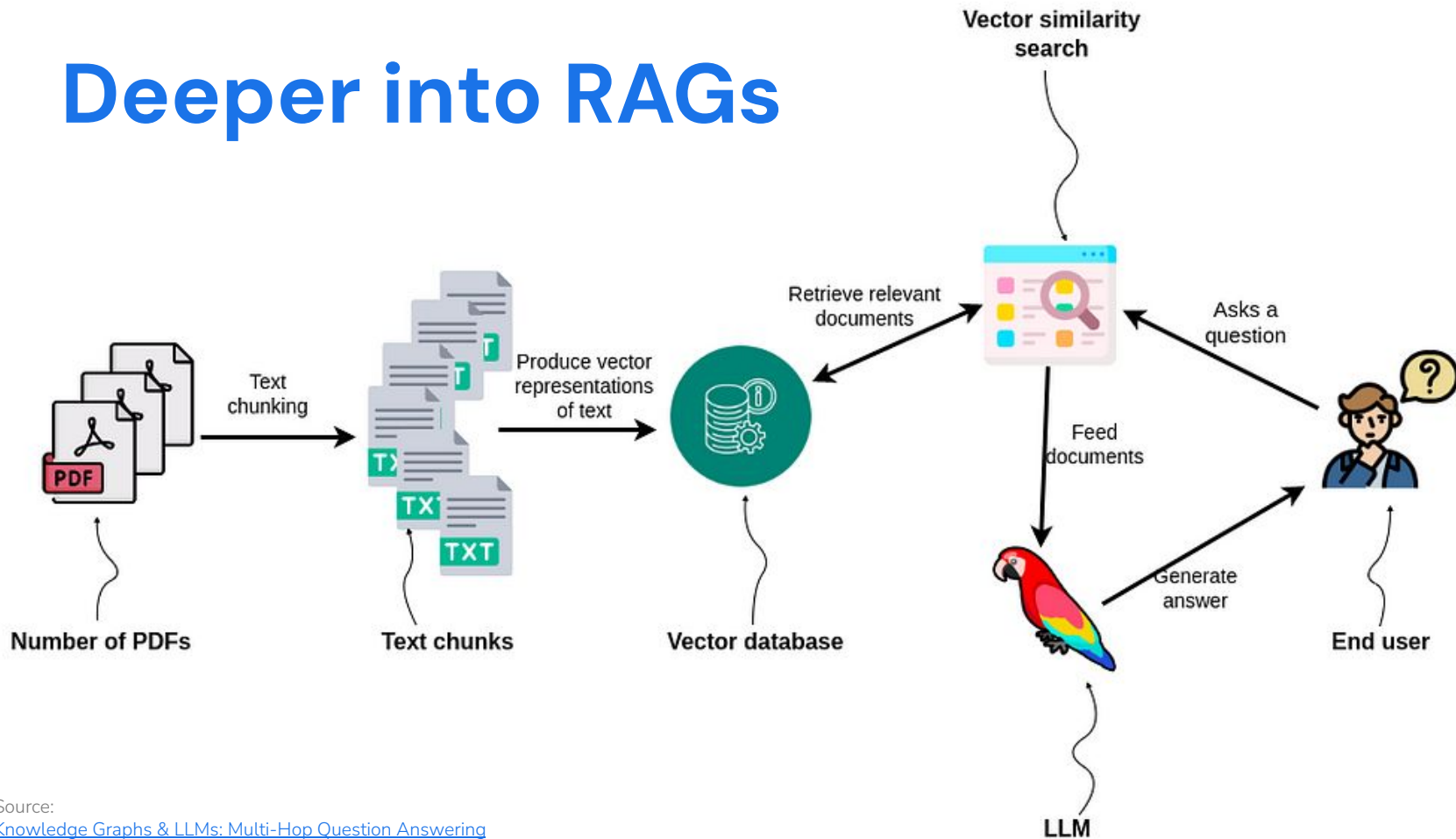**Hamza Farooq**

Learning Outcomes

We will be covering topics on:

- Handling large corpus

- Using Langchain for RAG

- Building a Document Reader

- Knowledge Graphs

- Evaluation of LLMs

Retrieval Augmentation

Question → Ask → Smart search → Question + relevant documents → LLM → Generate answer → Generated answer based on provided documents

Smart search → Smart lookup → Specific (private) Knowledge Base → Relevant documents → Smart search

Deeper into RAGs

Vector similarity search

Number of PDFs → Text chunking → Text chunks → Produce vector representations of text → Vector database

Retrieve relevant documents

Feed documents

Generate answer

Asks a question

End user

LLM

Introducing: Knowledge Graphs

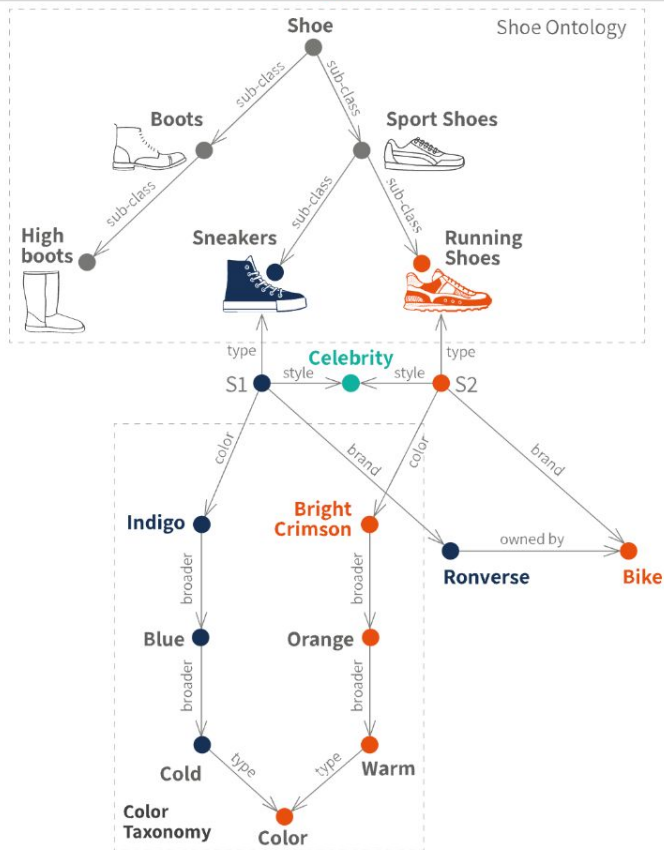The heart of the knowledge graph is a knowledge model:

A collection of interlinked descriptions of concepts, entities, relationships and events.

Knowledge graphs put data in context via linking and semantic metadata and this way provide a framework for data integration, unification, analytics and sharing.
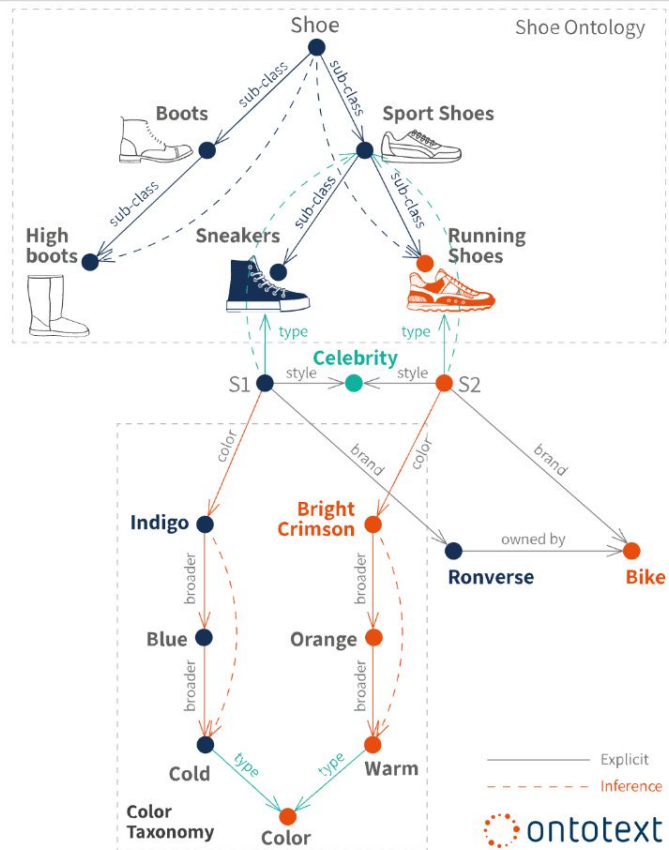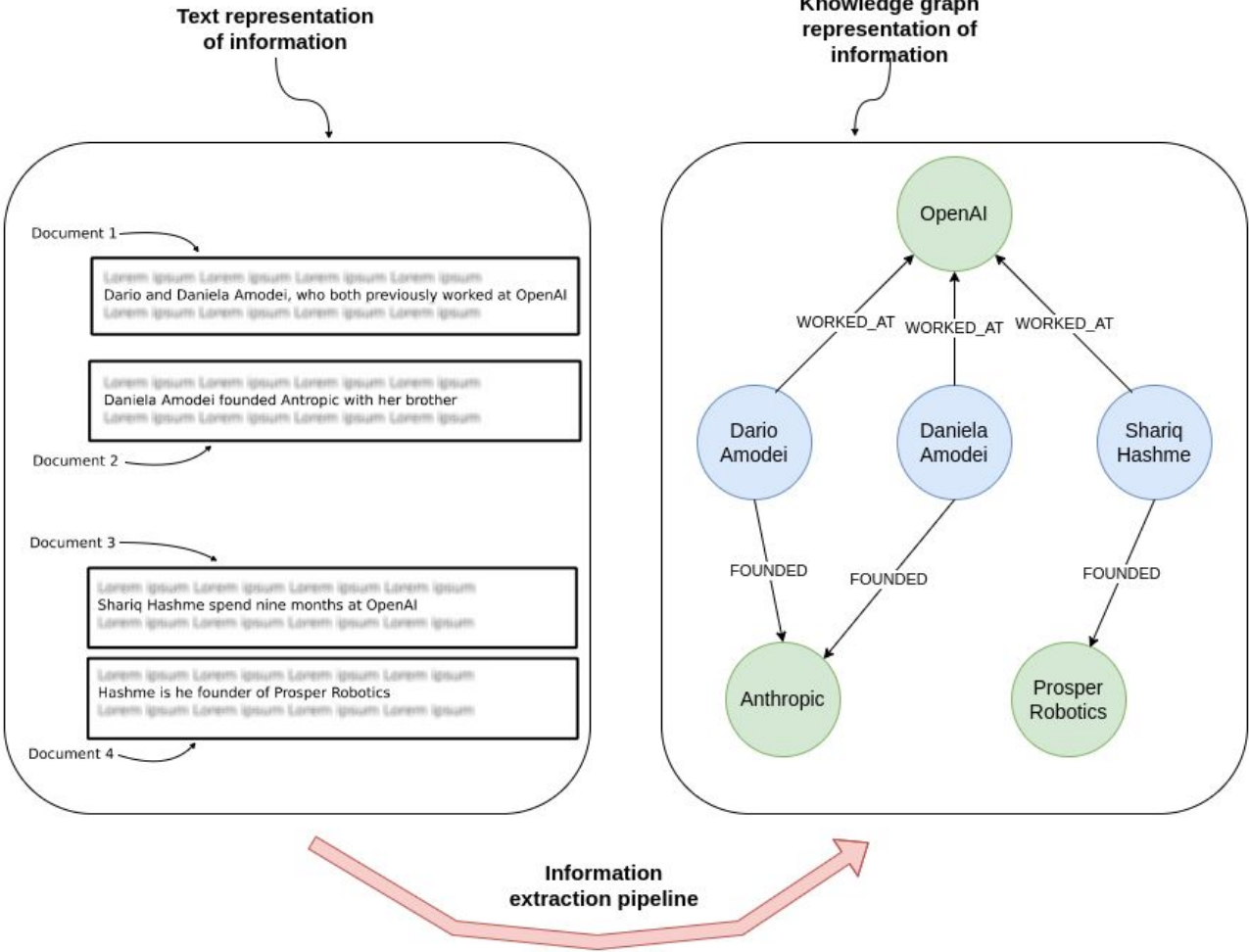
Plain Graph

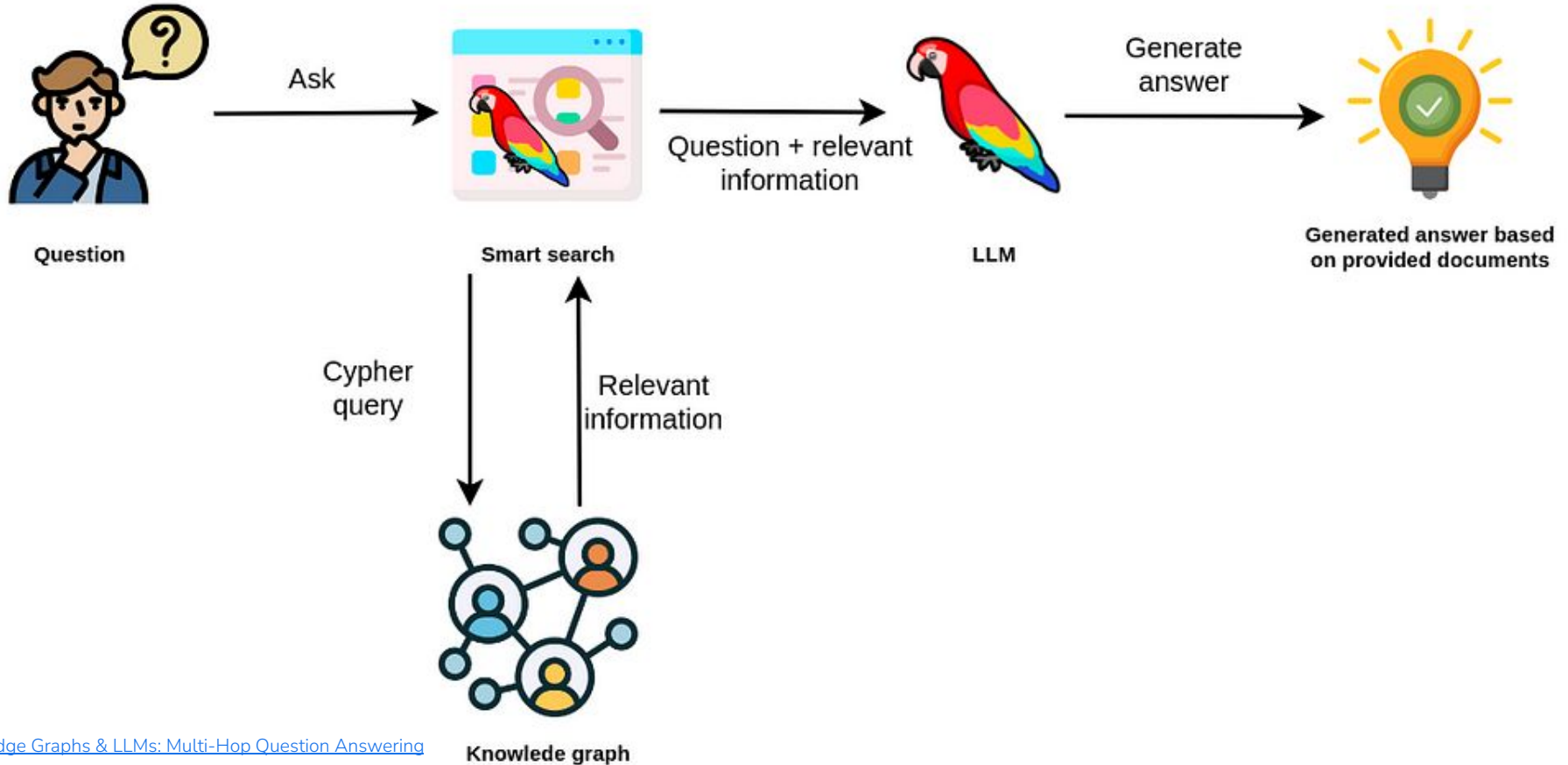## Knowledge Graph

Shoe Ontology

Knowledge Graph with Inference

Shoe Ontology

Explicit
Inference

Knowledge Graphs

Knowledge Graphs

Question → Ask → Smart search → Question + relevant information → LLM → Generate answer → Generated answer based on provided documents

Cypher query → Knowlede graph → Relevant information

Thank you.

Appendix