A brief introduction to

Knowledge Graphs

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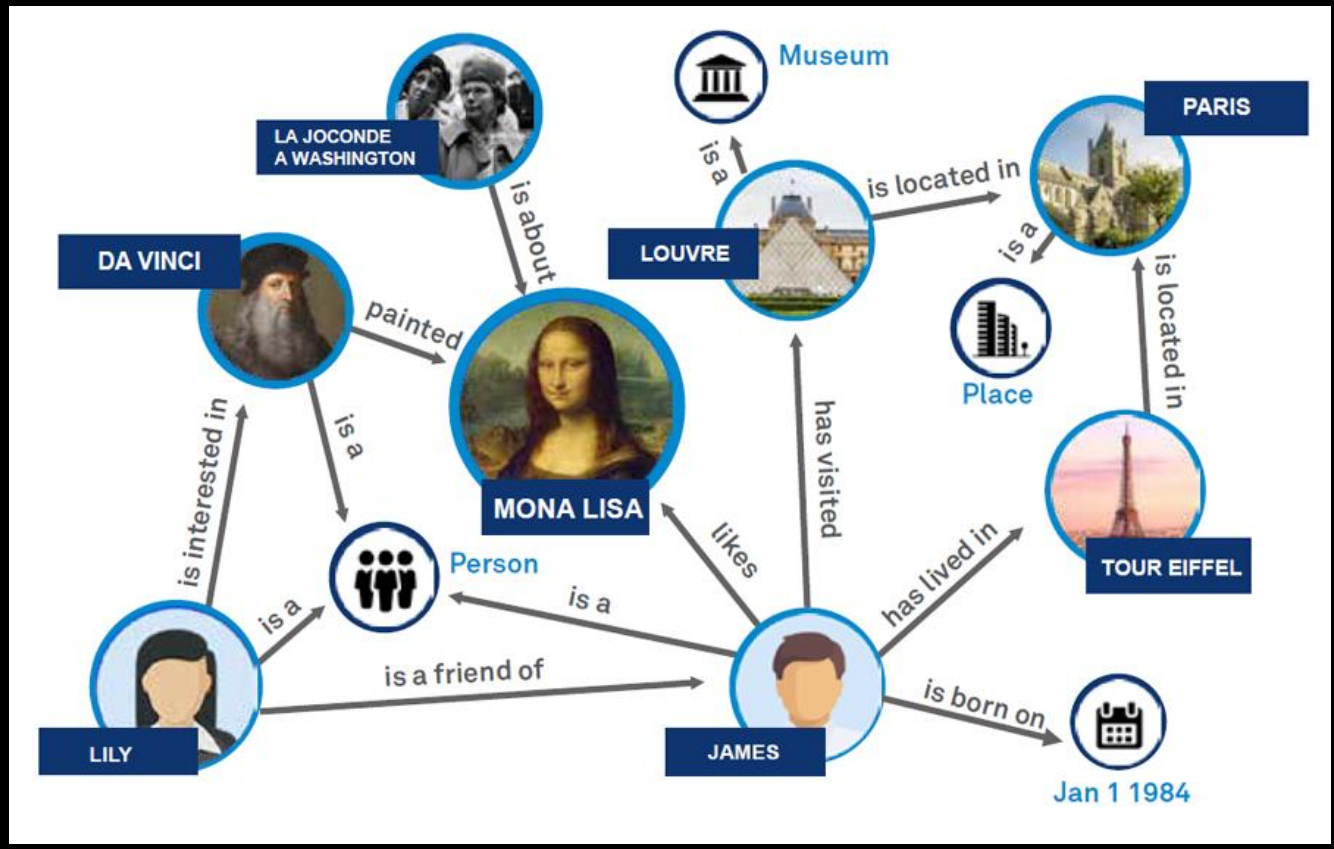
Understanding Knowledge Graphs

A Knowledge Graph is a structured representation of knowledge that captures entities, their attributes, and relationships between them.

Knowledge Graphs play a crucial role in enhancing search engines, recommendation systems, and various other applications.



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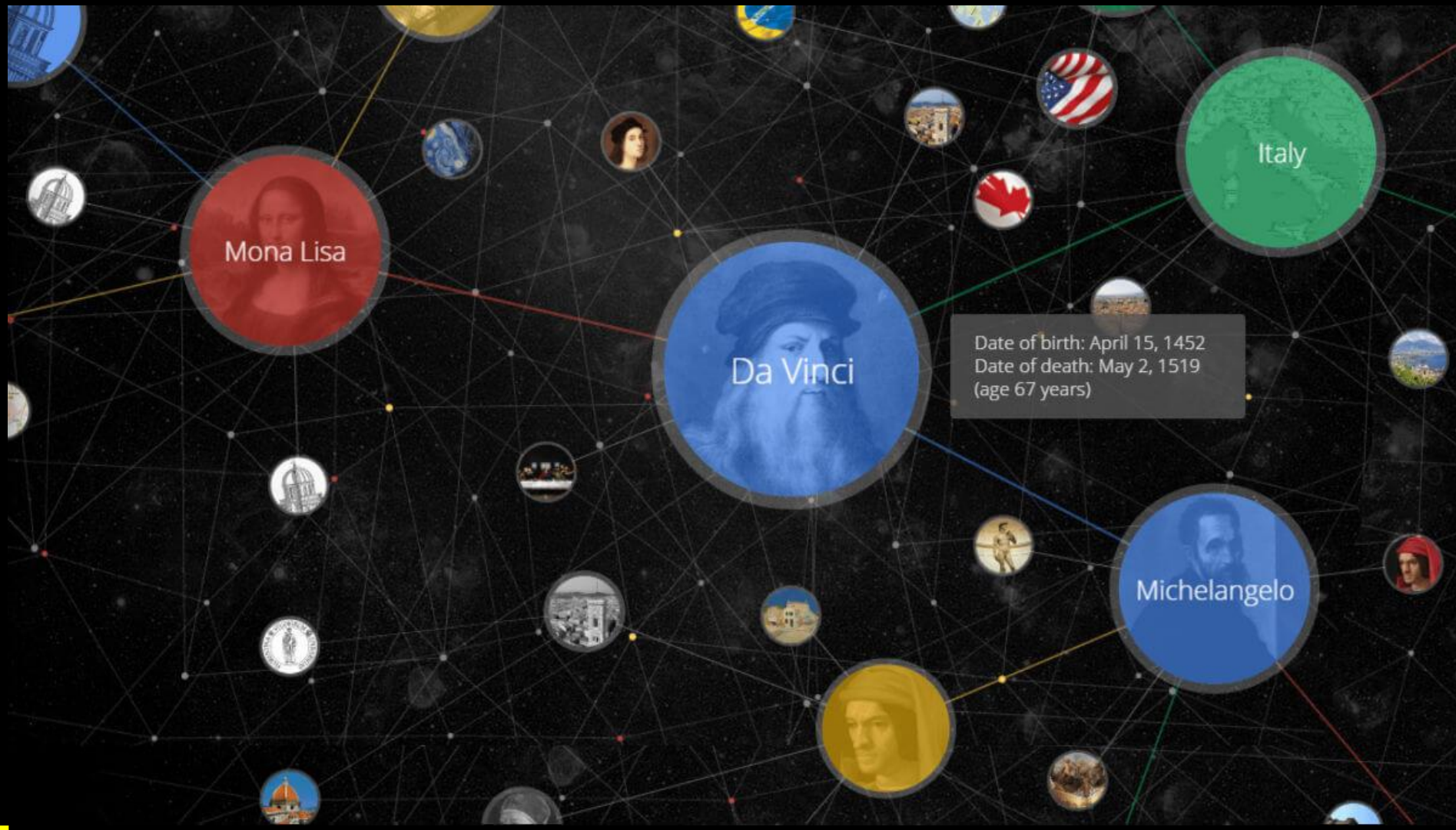
The Google Knowledge Graph



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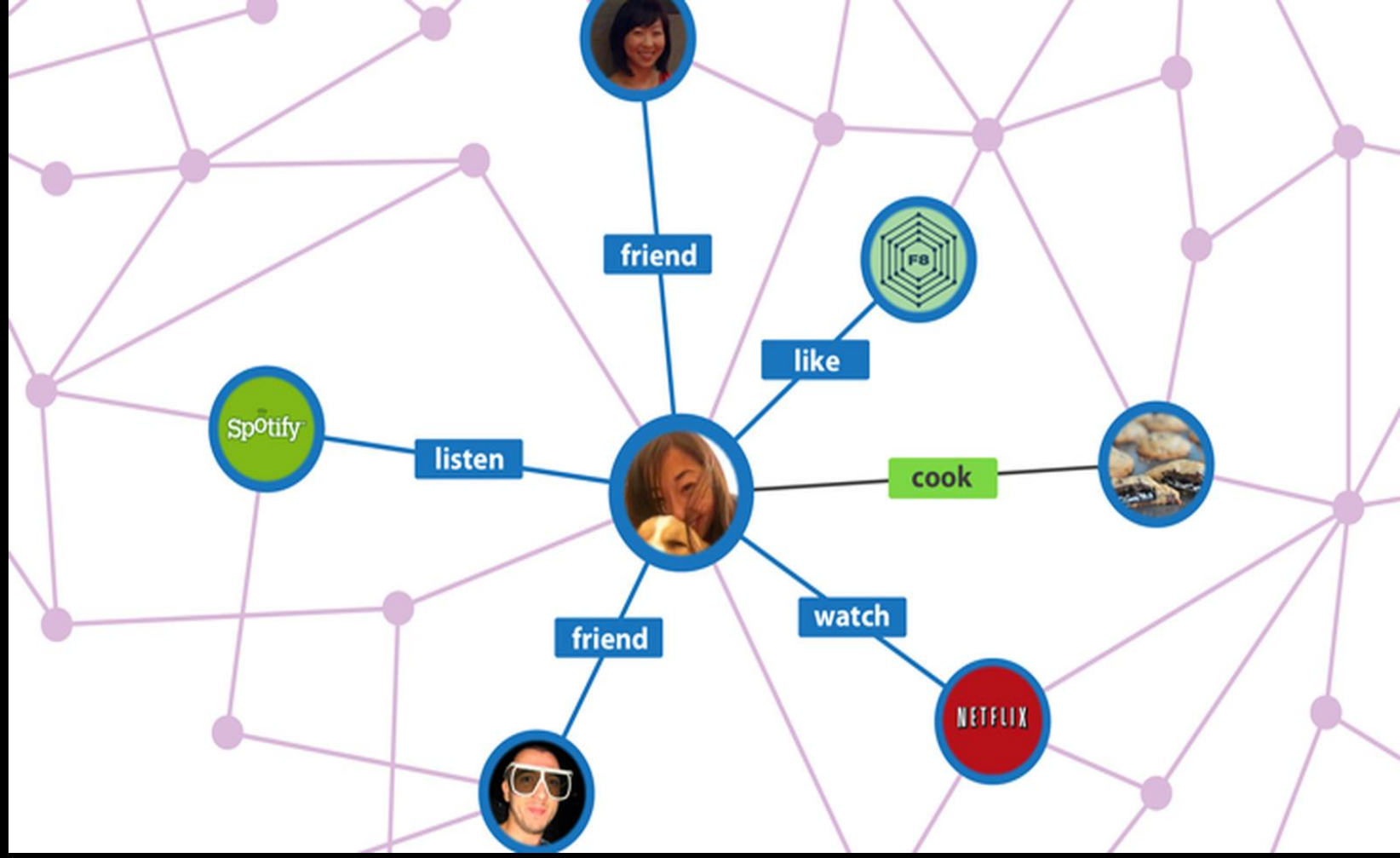
The Facebook Knowledge Graph



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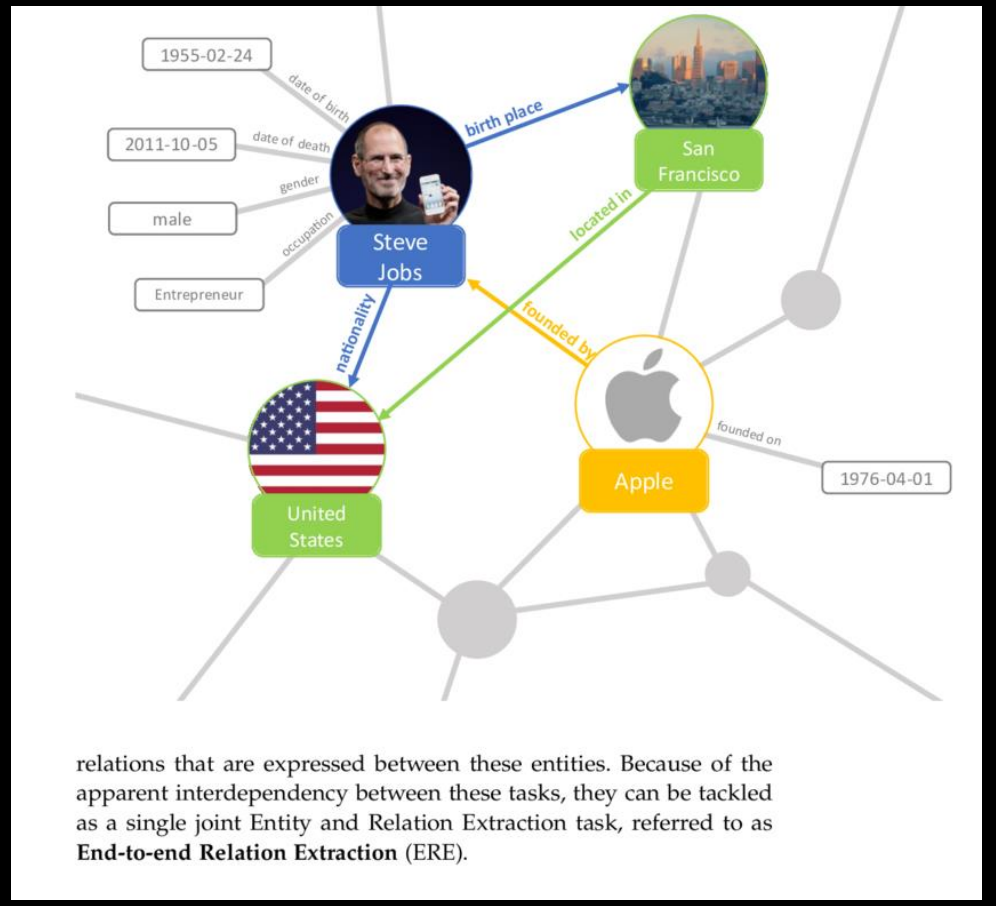
Key Components

Nodes: Entities represented in the graph, such as people, places, or concepts.

Edges: Connections or relationships between nodes, providing context and meaning.

Properties: Attributes or characteristics associated with each entity, adding depth to the representation.



relations that are expressed between these entities. Because of the apparent interdependency between these tasks, they can be tackled as a single joint Entity and Relation Extraction task, referred to as **End-to-end Relation Extraction** (ERE).

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Constructing a Knowledge Graph

Data sources: Gathering information from diverse sources such as databases, text, or web scraping.

Entity extraction: Identifying entities from the collected data using techniques like Named Entity Recognition (NER).

Relationship extraction: Determining and establishing connections between entities to create meaningful relationships.

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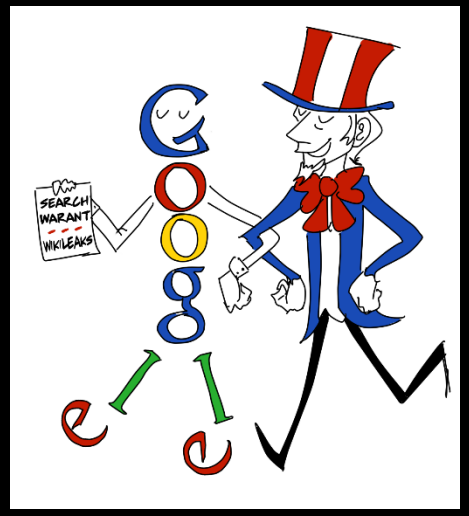
Applications in Real-World Scenarios

Semantic search: Enhancing search results by understanding the context and relationships between keywords.



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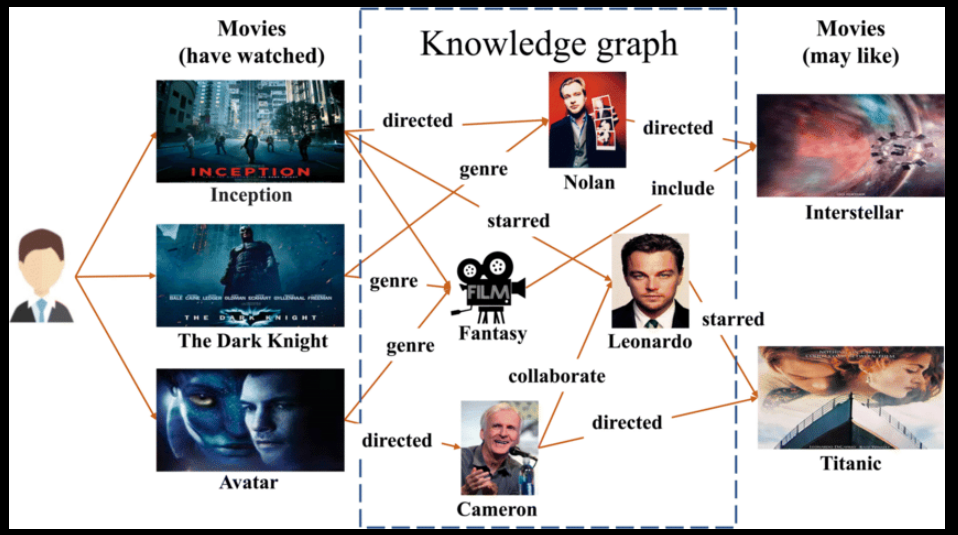

Recommendation systems: Suggesting relevant content or products based on user preferences and connections in the graph.

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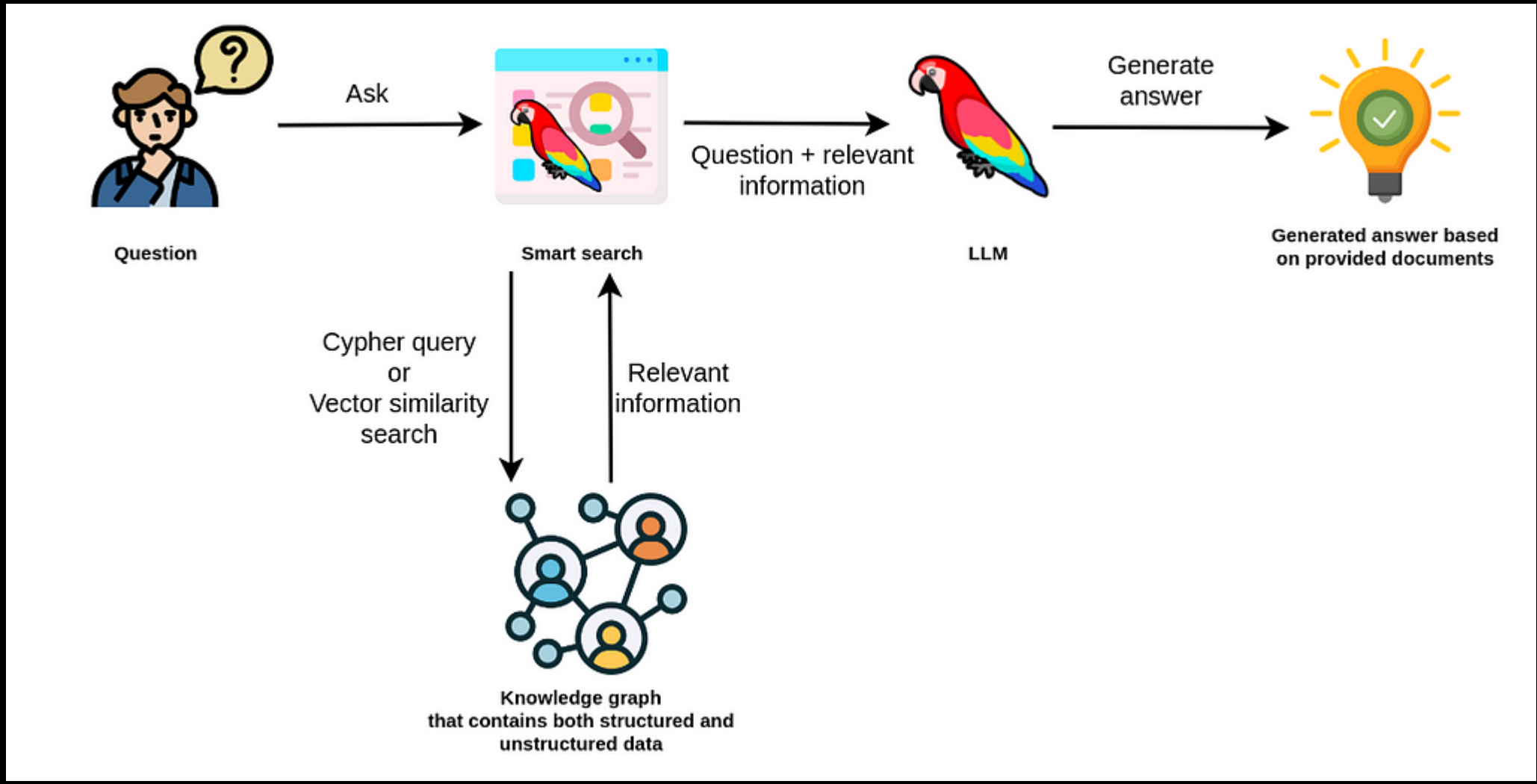
Integration with LLMs & RAG



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Overcoming Hurdles

Data quality: Ensuring accuracy and reliability in the information within the Knowledge Graph.

Scalability: Handling and processing large volumes of data to maintain efficiency.

Privacy: Implementing measures to protect sensitive information and adhere to privacy regulations.

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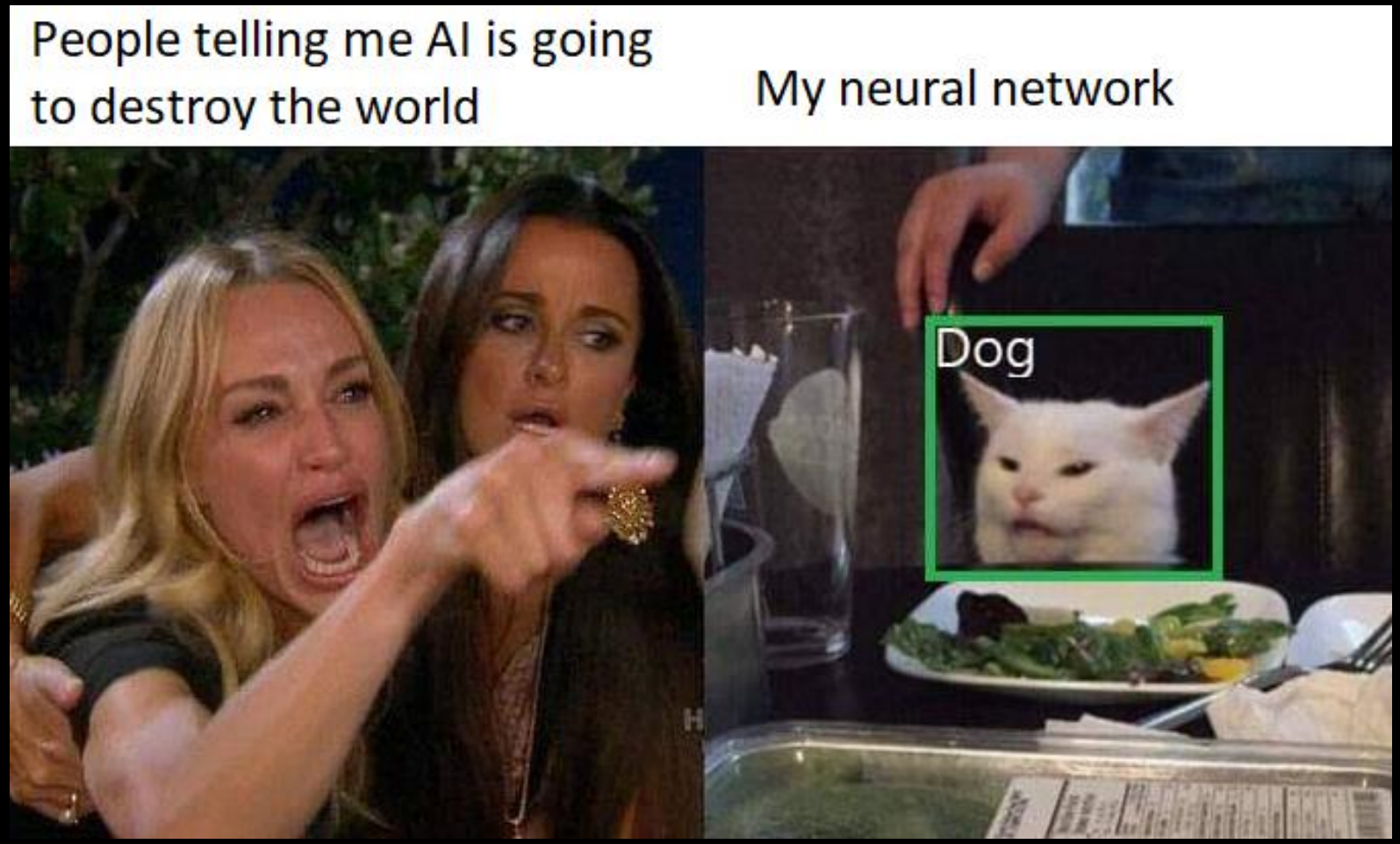
Responsible AI



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Looking Ahead

Recap: Knowledge Graphs serve as a powerful tool in organizing and leveraging information for various applications.

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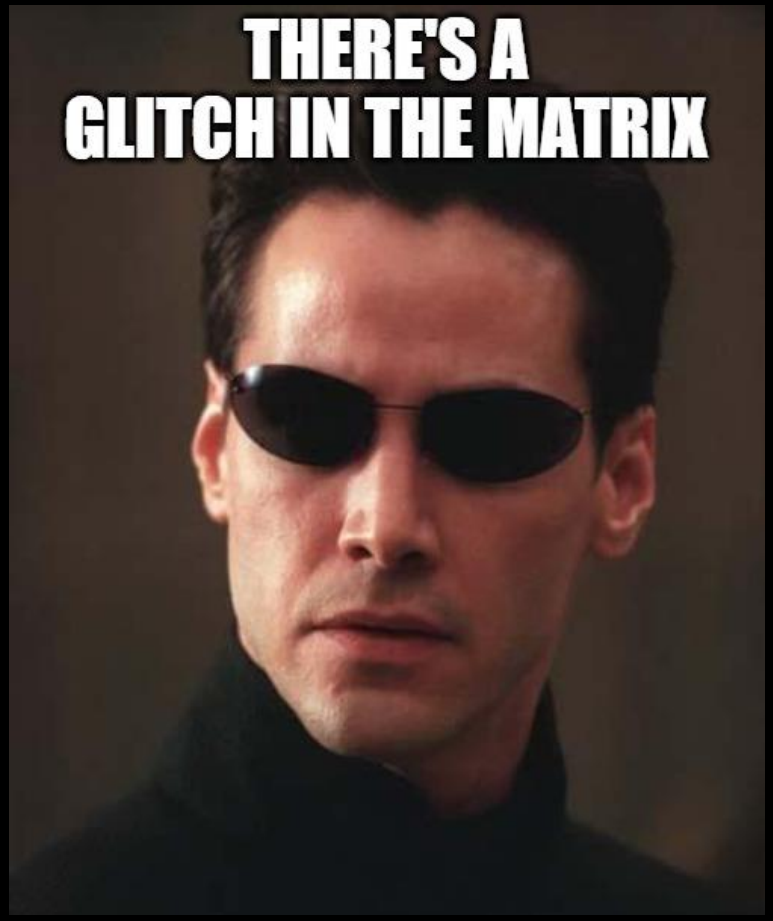
Ontology ,CQL, SPARQL, rdf, svo triplets, Neo4j, ...

Future trends: Explore ongoing advancements, such as the integration of AI and machine learning in Knowledge Graphs.



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Thank You !

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