UNIVERSIDADE LUSÓFONA

Knowledge Extraction from Databases

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Knowledge Extraction from Databases

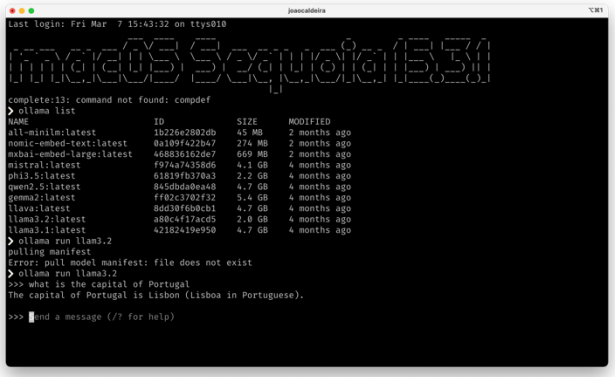
Architecture

Models (gpt4, etc…)

ChatGPT

Ollama

Models (llama3.2, etc…)



Questions 1

2 Answers

Knowledge Extraction from Databases

Foundational Models (LLMs)

- **AI Models for Language**
  - LLMs (Large Language Models) are advanced AI models trained to understand and generate human-like text.
- **Massive Training Data**
  - They learn from vast amounts of text data, including books, articles, and code, to improve their responses.
- **Context Awareness**
  - LLMs understand context, allowing them to answer questions, summarize text, and generate creative content.
- **Continuous Learning**
  - Though they don't learn in real time, they can be fine-tuned or updated with new data to improve accuracy.
- **Wide Applications**
  - They power chatbots, search engines, code generation, content creation, and many other AI-driven tools.

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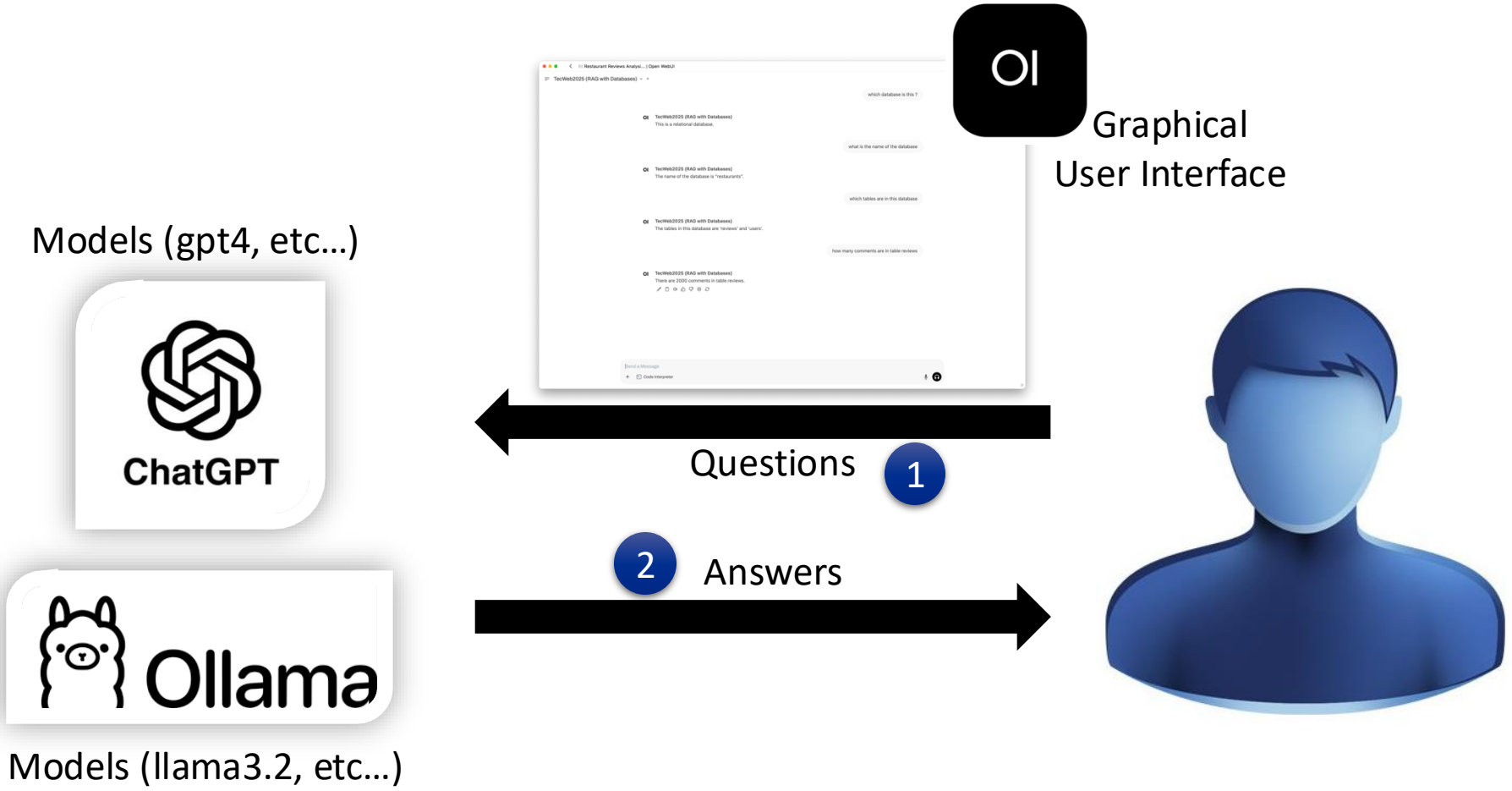

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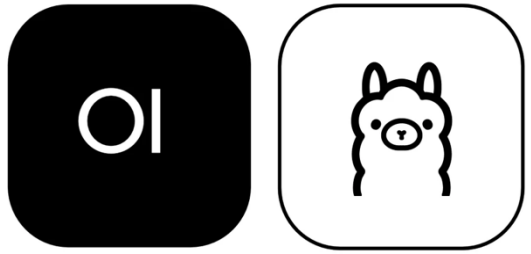
Graphical User Interface (OpenWeb UI)



- **Install & Set Up**
  - OpenWebUI is a frontend to connect to your preferred LLM (like OpenAI, LLaMA, or Mistral).
- **User-Friendly Chat Interface**
  - Provides a web-based chat interface where users can interact with LLMs through natural language.
- **Supports Multiple Models**
  - Works with various open-source and API-based LLMs, allowing easy switching between models.
- **Customizable & Extendable**
  - Allows users to modify UI settings, manage access, and integrate with other tools via APIs.
- **Self-Hosted & Private**
  - Runs on your own infrastructure, ensuring data privacy and control over AI interactions.

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Databases

- **Relational Database**
  - Is a structured way to store and manage data using tables.

1. **Data is Stored in Tables**
   - Information is organized into rows and columns, like a spreadsheet. Each table represents a specific entity (e.g., customers, orders).
2. **Each Row is a Record**
   - A row (or record) contains data for one instance of an entity (e.g., a single customer's details).
3. **Each Column is a Field**
   - Columns store specific types of information (e.g., "Name," "Email," "Phone Number").
4. **Relationships Connect Tables**
   - Tables are linked using keys (e.g., a "Customer ID" in the orders table links to the customers table).
5. **SQL is Used to Manage Data**
   - Structured Query Language (SQL) is used to insert, update, delete, and retrieve data efficiently.

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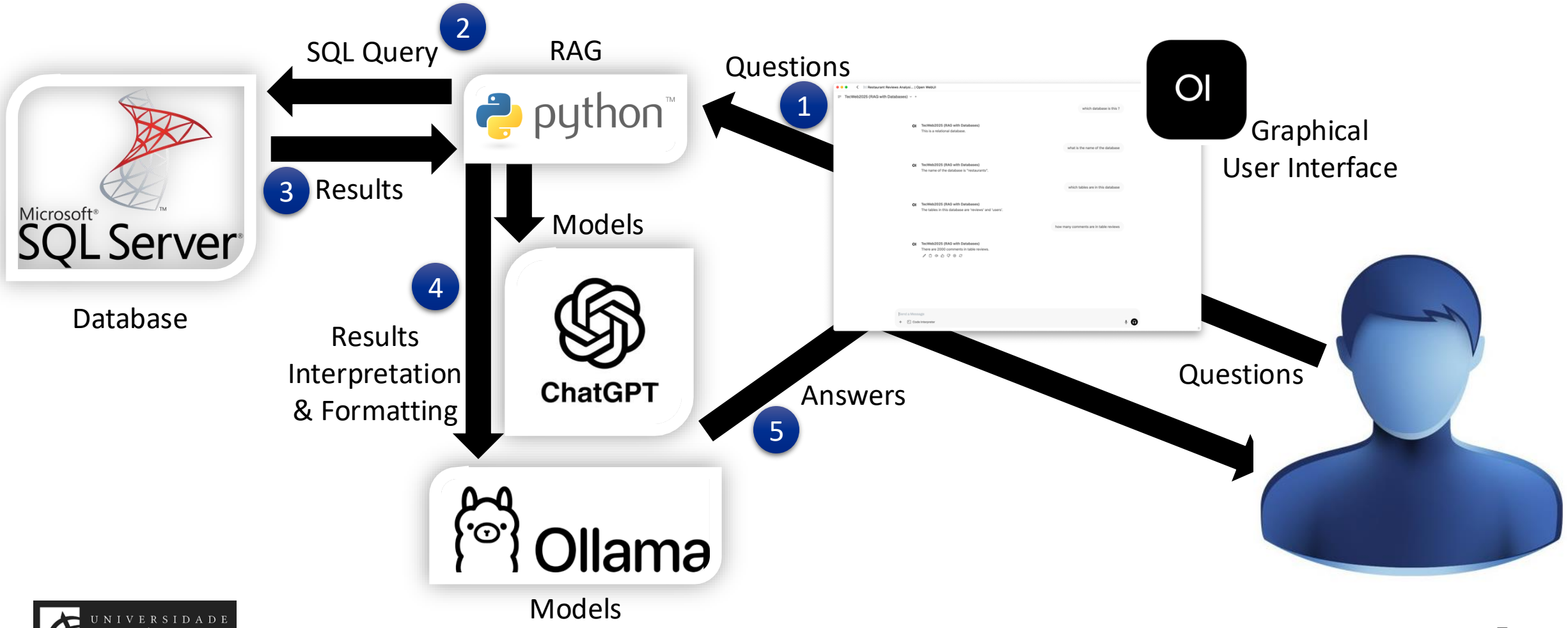
Architecture



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Retrieval Augmented Generation (RAG)

- **Retrieval Augmented Generation (RAG)**
  - Enhances language models by incorporating external knowledge retrieval.

1. **User Query**
   - The user provides a question or prompt to the system.
2. **Retrieve Relevant Information**
   - The system searches a knowledge base (e.g., documents, databases) to find relevant context.
3. **Augment the Prompt**
   - The retrieved information is added to the original query to provide more context.
4. **Generate a Response**
   - The language model (LLM) uses both the query and retrieved data to generate a more accurate answer.
5. **Deliver the Answer**
   - The system returns a response that is more factual, relevant, and grounded in the retrieved data.

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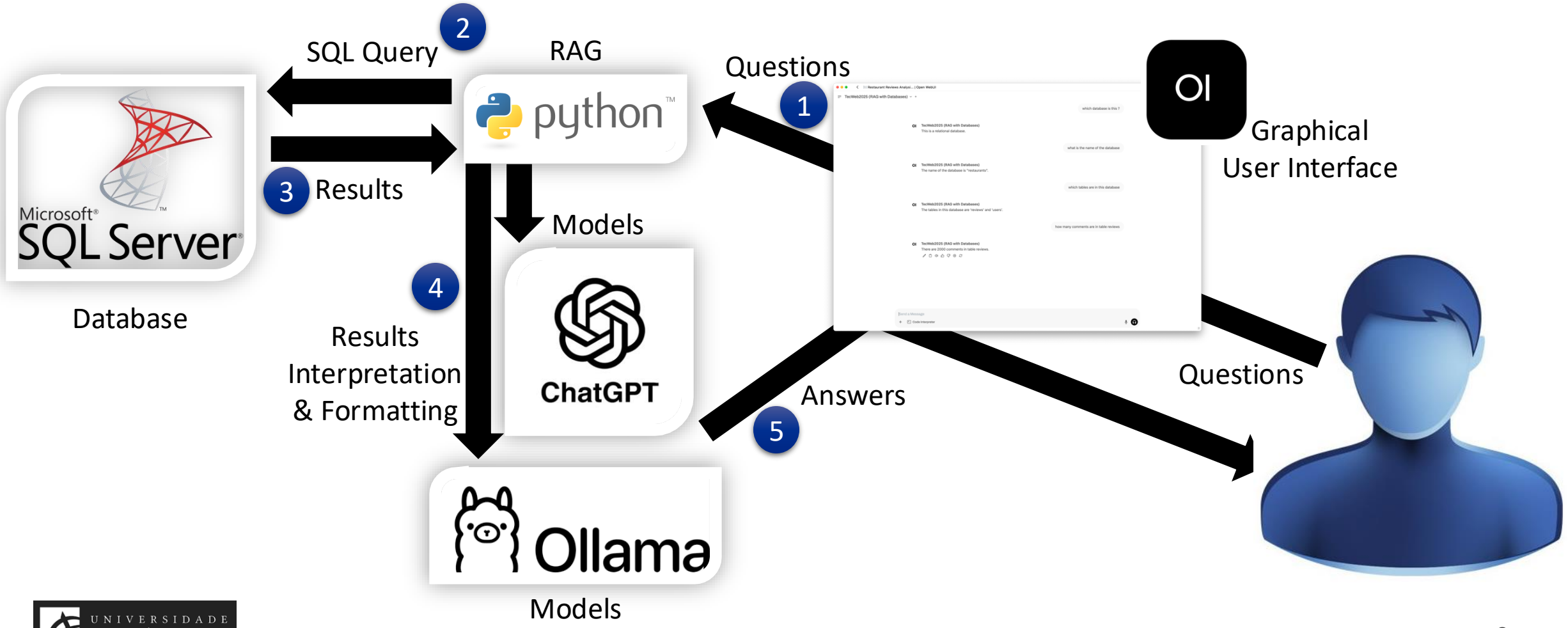
Architecture



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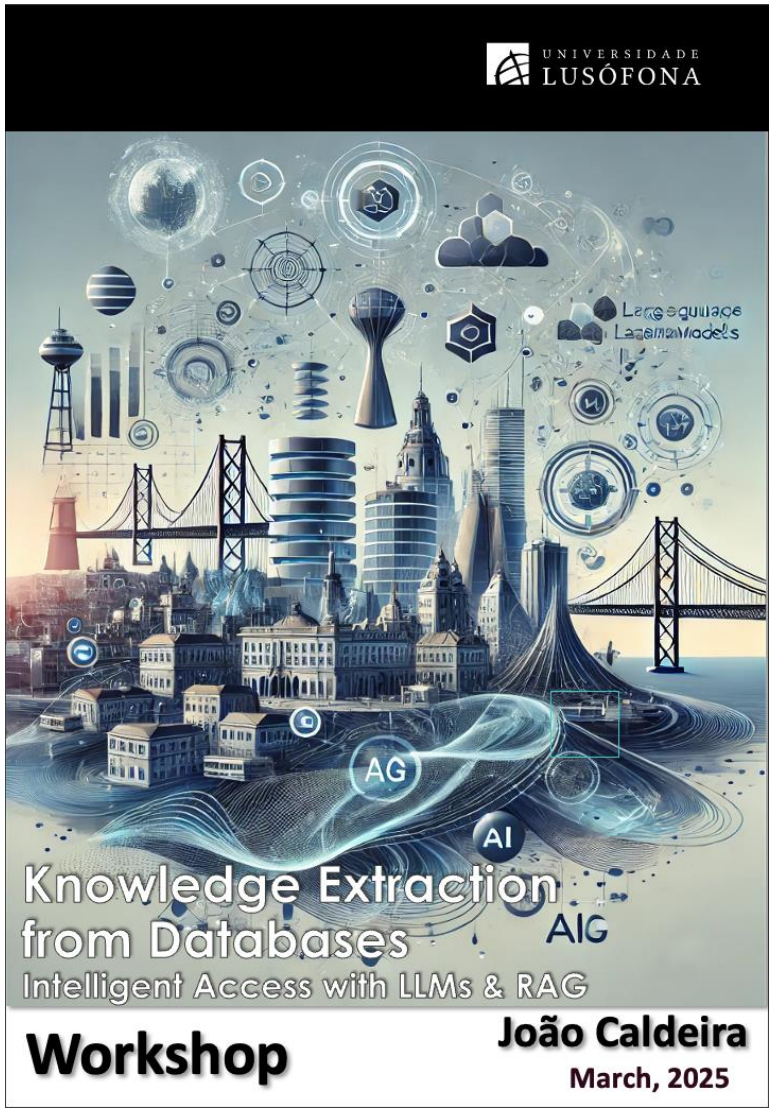
Documentation

- **Access the documentation here:**
  - **http://tecweb.kiion.com/2025**
  - **Download in Pdf and Epub.**



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