

In The Name of Allah

AI Agent: Prof Recommender

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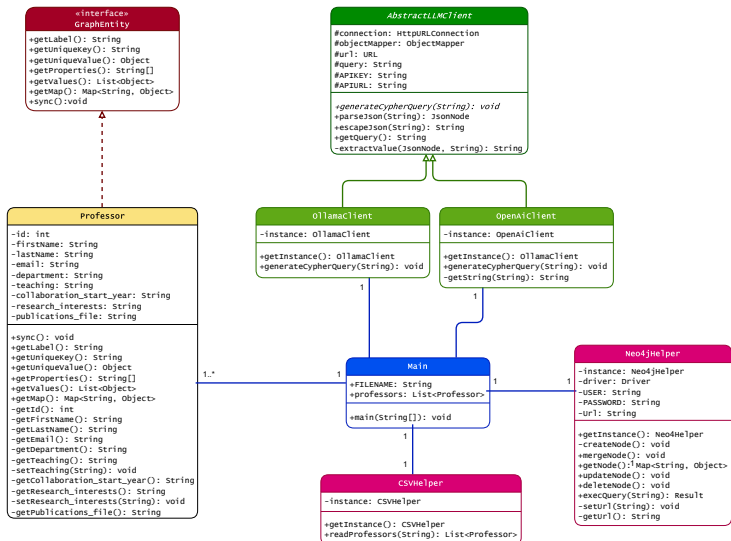
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Presentation Overview

- 1 Class Diagram
- 2 Neo4j
- 3 OpenAI and Ollama as LLMs
 - OpenAI API
 - Ollama API
 - Extra Query
- 4 Input/Output

UML (Structured) Class Diagram



Neo4j as Knowledge Base

Graph Nodes



Neo4j as Knowledge Base

Node Properties

neo4j\$ MATCH (p:Professor) return p

The screenshot displays the Neo4j interface. The main area shows a graph with purple circular nodes representing professors. The nodes are arranged in a circular pattern around a central node labeled 'Abam'. The nodes include: Bayat, Rohban, Asadi, Kasaei, Fazli, Hessabi, Jalili, Soleyma..., Jafari Siahva..., Ejlali, Izadi, Jahangir, and Sarbazi.... The 'Abam' node is highlighted with a larger, darker purple circle and a lock icon. On the right side, the 'Node properties' panel is open for the 'Professor' node. It shows the following properties:

| Property | Value |
|--------------|---|
| <elementid> | 4:d55834f0-4172-42f3-9870 |
| > | -d1bf416c7530:0 |
| <id> | 0 |
| collaboratio | 1389 |
| n_start_year | |
| department | Computer Engineering |
| email | abam@sharif.edu |
| first_name | Mohammad Ali |
| last_name | Abam |
| professor_id | 1 |
| publication | abam_pb.txt |
| s_file | |
| research_in | Discrete and |
| terests | Computational Geometry, Massive Data Algorithms, Randomized and |

OpenAI API Query Format

gpt-4

- {
 - "model": "gpt-4",
 - "messages": [
 - {"role": "system", "content": " PROMPT_1 "},
 - {"role": "user", "content": " PROMPT_2 "}
 -],
 - "max_tokens": 200
 - }
- 1 PROMPT_1 = "You are a Cypher query generator. Only provide Cypher queries in a single line, without any line breaks or extra formatting."
 - 2 PROMPT_2 = "i want to take Computer Vision course this term, Which professor you suggest?"

Ollama API Query Format

codellama:7b

- {
 - "model": "codellama",
 - "prompt": " PROMPT_1 ",
 - "stream": "false"
- }

- 1 PROMPT_1 = "USER_REQUEST='%s' Please create a Cypher query based on USER_REQUEST for a graph in Neo4j where nodes represent Professors."

Explain Graph nodes and their properties for LLMs

- 1 Graph nodes represent Professors. Each Professor node has the following properties: `professor_id` (which is unique and should be used to identify the professor), `first_name`, `last_name`, `email`, `department`, `teaching`, `collaboration_start_year`, `research_interests`, and `publications_file`. The `professor_id` should be used as the unique identifier for each node, and the query should create nodes for Professors with the given properties. **IMPORTANT:** When filtering based on the request, the query should not require an exact match for fields like 'teaching' or 'research_interests', but should instead search for partial matches (e.g., using the `CONTAINS` operator) for the keyword. Additionally, the results should be sorted by `collaboration_start_year` in ascending order (i.e., from the smallest number upward)

Show The Code