Tech Interview Challenge – AI Engineer: Conversational Multi-Agent Chatbot for Multi-Document Grant QA

Scenario

The GrantSpider team aims to improve how users extract and understand information from complex grant documentation. Each grant is typically described across several unstructured PDF documents (e.g., call text, FAQ, proposal template, evaluation guide). Currently, it is difficult and time-consuming to manually find and cross-reference information in these materials. As part of the team, you will build a LangGraph-based multi-agent conversational assistant. This assistant must be able to semantically search across multiple PDFs, reason over the results, answer user questions, maintain conversational memory, and clearly indicate which documents its answers are based on. The assistant will help users get accurate, traceable, and iterative answers without having to read each document themselves.

Task Requirements

Develop a **multi-agent chatbot system** that:

- Accepts a directory of unstructured PDF files (attached, the file name before 'separator' identifies which documents pertain to the same grant)
- Ingests, parses, and indexes these documents for semantic search.
- Accepts user questions via a conversational interface (CLI or Streamlit).
- Answers questions by retrieving and reasoning over multiple documents.
- Clearly indicates the source document(s) for each piece of information returned.
- Maintains conversational memory for follow-up and context-dependent questions.

Expected Deliverables

- A fully working LangGraph-based prototype of the chatbot.
- A clean and modular codebase with appropriate separation of agents, memory, ingestion, and interface.
- A README.md file including:
    - Installation and usage instructions
    - Assumptions made
    - Description of the agent architecture and memory design
    - Example user queries and sample answers

Evaluation Criteria

- **Correctness and completeness** of answers
- **Code quality, modularity,** and LangGraph structure
- **Reusability** and maintainability of the codebase
- Quality of **documentation** and explanation of design choices
- **Timeliness**, as we would expect this task to take no longer than two weeks from the moment it was first received

Final remarks

Though we are aware that fitting this challenge in the schedule of some candidates might be complicated, please **understand that speed and flexibility are among the fundamental characteristics that we are looking for** in our prospective co-founder. Hence, the decision to test them with something like a real-life scenario.

We really encourage and appreciate your commitment. Best of luck!