AI Agentic Deep Research System

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Overview

This project implements a Deep Research AI Agentic System designed to autonomously crawl websites for information using **Tavily** for online data gathering. The system leverages the capabilities of **LangChain** and **LangGraph** frameworks to organize and process the gathered information efficiently.

The architecture features a **dual-agent system**:

1. **Research Agent**: Focuses on crawling websites and gathering relevant research data.
2. **Answer Drafter Agent**: Processes the collected data and drafts answers to user queries.

These agents work collaboratively to automate the research process, providing a streamlined system for information gathering and answer generation.

Architecture & Collaboration of Agents

1. **Research Agent**:

  - Utilizes Tavily for crawling and scraping websites for relevant information.

  - Identifies potential sources of data based on predefined criteria.

  - Gathers articles, papers, or content that meet the research query requirements.

2. **Answer Drafter Agent**:

  - Uses the collected data to formulate answers to research queries.

- Organizes the information using LangGraph for effective knowledge representation.

  - Drafts clear, concise, and relevant answers based on the research data.

Frameworks Used:

- **LangChain**: Provides powerful utilities for chaining tasks, such as data gathering, processing, and answering generation.

- **LangGraph**: Organizes the gathered information for efficient processing and integration into the agent workflow.

- **Tavily**: A library used for crawling and gathering data from websites.

How the Agents Collaborate:

- The Research Agent crawls and collects relevant data from websites.

- The data is processed and organized using LangGraph and LangChain to prepare it for the Answer Drafter Agent.

- The Answer Drafter Agent uses the organized data to generate responses to user queries.

This system exemplifies the synergy between the agents, ensuring that each agent's strength is utilized at the appropriate stage of the process.

Setup Instructions

1. Install Dependencies:

Run the following command to install all the necessary libraries:

```bash
pip install -r requirements.txt
```

2. API Keys Setup:

Ensure you have set up the required API keys for LangChain, Tavily, and Google services.

3. Running the System:

Once the dependencies and API keys are set up, you can run the system using:

```bash
python main.py
```

Conclusion

The Deep Research AI Agentic System is a powerful tool for automating information gathering and answer drafting. By utilizing cutting-edge frameworks and technologies, it provides an efficient solution to deep research tasks.