ARCUS: Automated Research and Creation of Use Case Solutions

Introduction

ARCUS is a Multi-Agent System designed to streamline the process of identifying AI and Generative AI (GenAI) use cases tailored to specific industries or companies. By integrating advanced AI capabilities, ARCUS conducts market research, understands industry landscapes, and identifies actionable use cases alongside relevant datasets to enhance operational efficiency and customer experiences.

System Features

The ARCUS system comprises the following agents:

1. Industry/Company Research Agent

This agent analyzes the target company's industry segment and key offerings. It identifies strategic focus areas such as operations, supply chain, and customer experience.

2. Market Standards & Use Case Generation Agent

This agent focuses on analyzing AI, ML, and automation trends within the target company's sector. It proposes actionable use cases by leveraging GenAI, Large Language Models (LLMs), and ML technologies.

3. Resource Asset Collection Agent

This agent identifies relevant datasets for the proposed use cases by searching platforms like Kaggle, HuggingFace, and GitHub. It organizes the resource links into a structured file for future use.

Workflow

The following diagram illustrates the workflow of the ARCUS system: Fig.1

Workflow Explanation

The ARCUS system workflow operates as follows:

- **Start (`__start__`)**: The process begins with initializing the workflow.
- `generate_co_info`: This step involves gathering company or industry-specific information as the starting point for data collection and research.
- `search_web` **and** `search_wiki`: These two parallel paths collect detailed information:
  - `search_web`: Utilizes web-based searches for comprehensive information.
  - `search_wiki`: Focuses on structured resources like Wikipedia.
- `save_result`: Aggregates and stores the collected information into a central repository for further use.

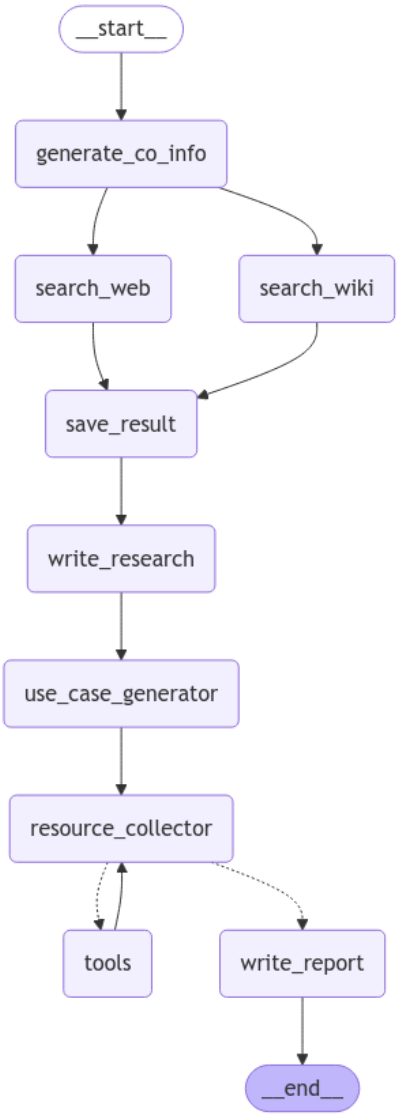

Figure 1: Workflow of the ARCUS System

- `write_research`: Generates a research summary based on the stored results, forming the basis for actionable insights.

- `use_case_generator`: Processes the research summary to identify potential AI or automation use cases relevant to the target company or industry.

- `resource_collector`: Gathers the necessary datasets, tools, or resources required to implement the identified use cases. A feedback loop connects this module to `tools`, suggesting continuous resource refinement or updates.

- `tools`: Represents additional tools (ReACT Architecture) that may aid the `resource_collector`.

- `write_report`: Combines all collected information, insights, and use cases into a structured report, marking the final deliverable.

- **End** (`__end__`): The workflow concludes once the report is generated and delivered.

Conclusion

ARCUS provides an innovative solution for businesses to harness the power of AI and GenAI technologies. By automating the identification of use cases and the collection of relevant resources, it enables organizations to enhance their operations and customer experiences effectively.