Multi-Agent System for AI & GenAI Use Case Generation

Date:October28,2024
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1. Introduction

Background

With the growth of AI and Generative AI (GenAI) applications, companies are increasingly adopting these technologies to enhance efficiency, customer satisfaction, and competitiveness. This project aims to create a multi-agent system that generates AI and GenAI use cases tailored to specific industries and companies, with Deloitte as a use case.

Objectives

- Conduct industry-specific market research.
- Identify AI/GenAI applications for Deloitte's operational and strategic goals.
- Collect relevant resources and datasets.

Scope

The focus is on automating market research and use case generation, leveraging web scraping, and data aggregation.

2. Methodology

Research Approach

A multi-agent system was designed, where each agent performed a specific function:

- **Research Agent**: Gathers company information using web scraping tools.
- **Use Case Agent**: Analyzes industry standards and trends to generate AI/GenAI use cases.
- **Resource Agent**: Identifies datasets related to proposed use cases.

Data Collection

Data was collected from Wikipedia, industry reports, and open dataset platforms such as Kaggle and GitHub.

Analysis

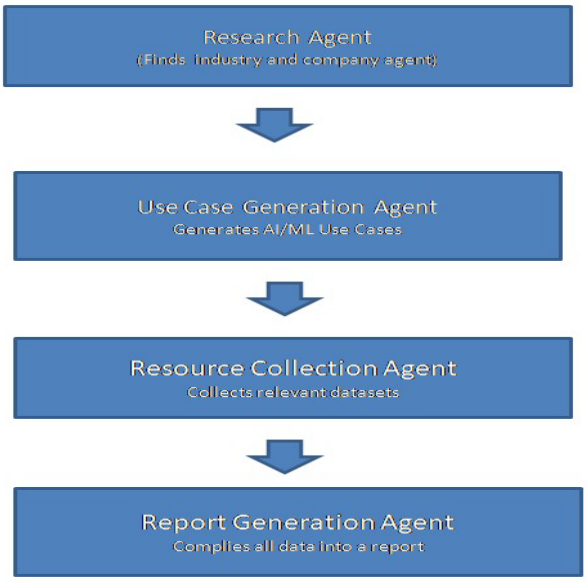
- Extracted industry trends using text analysis.
- Evaluated use case feasibility by assessing data availability and alignment with industry standards.

3.Implementation

System Design

The system was designed using a multi-agent architecture, with agents communicating via

shared files. Below is a simplified flowchart:



Code Overview

- **Research Agent**: Scrapes Wikipedia for Deloitte's company information.
- **Use Case Agent**: Analyzes research output and generates relevant AI/GenAI use cases.
- **Resource Agent**: Searches for datasets on platforms like Kaggle and HuggingFace.

Tools and Technologies

- **Programming Language**: Python
- **Libraries**: Requests, BeautifulSoup, LangChain
- **Dataset Sources**: Kaggle, GitHub

4. Results

Findings

- The research agent successfully retrieved industry insights.
- Generated 10+ potential AI use cases for Deloitte, including:
    - Customer segmentation for targeted marketing.
    - Predictive analytics for risk management.

Use Cases

- **Customer Segmentation**: Using unsupervised learning for personalized campaigns.
- **Risk Management**: Leveraging predictive analytics for operational efficiency.

5. Discussion

Interpretation
The system successfully demonstrated its capability to generate actionable use cases by retrieving relevant industry information and datasets.

Limitations

- **Data Quality**: Limited data from open sources could restrict accuracy.
- **Scalability**: The system currently targets a single industry at a time.

Future Work

- Implement real-time data updates.
- Expand the system to cover multiple industries simultaneously.

6. Conclusion

Summary
This project demonstrates a multi-agent approach for AI use case generation, tailored to specific industry needs. By automating market research and dataset sourcing, this system can provide valuable insights for companies seeking to adopt AI.

Final Thoughts
Expanding this system for broader industry coverage and real-time updates could further improve its utility for strategic decision-making.

7. References

1. *Deloitte AI Industry Reports*. Retrieved from Deloitte Insights.
2. *McKinsey on AI in Industry*, McKinsey & Company.
3. Kaggle. (n.d.). Retrieved from Kaggle Datasets.