**Report**

**Introduction**

This report outlines the development and implementation of a market research and use case generation agent utilizing generative AI and machine learning. The objective of this project was to create a Streamlit application that enables users to input a company name and receive detailed reports on market positioning and AI/ML use cases tailored to that company.

**Methodology**

The project was structured into several key components, which include the development of a Streamlit application, the configuration of AI agents for research and analysis, and the integration of necessary tools for data retrieval and processing.

1. **Streamlit Application**:
   * A user-friendly interface was created using Streamlit to allow users to input the name of a company.
   * A custom class, StreamToContainer, was developed to capture and display system output in the Streamlit UI, providing real-time feedback during the execution of the agent processes and getting references links on Streamlit UI.
2. **AI Agents**:
   * Two AI agents were defined using the **CrewAI** library:
     + **Researcher Agent**: Responsible for conducting comprehensive research on the provided company and its industry, focusing on market position, products, technology infrastructure, and operational challenges.
     + **Analyst Agent**: Tasked with generating high-impact AI/ML use cases based on the research findings, considering industry trends, technical feasibility, expected ROI, and integration requirements.
   * The agents utilized a language model (LLM) from **Groq**, configured with an API key stored in environment variables.
3. **Tasks Definition**:
   * The research and analysis tasks were structured to guide the agents:
     + **Research Task**: Detailed instructions were provided to conduct market analysis and produce a structured report containing relevant findings.
     + **Analyst Task**: A specific prompt was formulated to generate actionable AI/ML use cases based on the research, ensuring structured output that highlights the business value and feasibility of each use case.
4. **Tool Integration**:
   * The **TavilySearchResults** tool from the LangChain community was integrated for data retrieval. This tool enables the agents to gather reliable information from various sources, enriching the research process.
5. **Execution Flow**:
   * Upon submission of the company name, the application initiates the research process using the researcher agent, followed by the analyst agent's evaluation of the research results to generate use cases.
   * The entire process was designed to be sequential, ensuring that the output of the research task is utilized by the analyst task.

**Results**

The implementation successfully produced detailed reports based on the company name provided by the user. The reports included:

* A comprehensive analysis of the company’s market position, key products, technology infrastructure, and operational challenges.
* 5-8 high-impact AI/ML use cases tailored to the company, highlighting objectives, specific AI applications, and cross-functional benefits.

The reports were well-structured, making it easy for stakeholders to understand the potential of AI/ML technologies within the context of the company.

**Conclusion**

The Market Research and Use Case Generation Agent demonstrates the effective integration of generative AI in market analysis and the generation of practical use cases along with references.