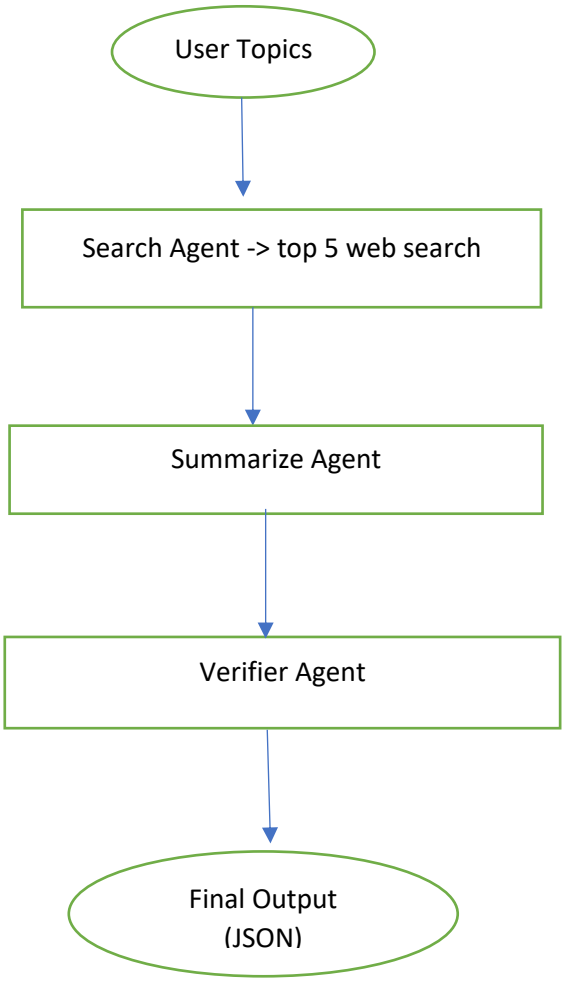
Multi-Agent Competitive Intelligence Research System

Objective:

This project is a multi-agent LLM system capable of retrieving competitive intelligence from online sources and presenting structured insights. This project helps for tracking product updates in the Consumer Electronics (e.g., latest phone/laptop releases).

Architecture Overview:



Components:

1. Search Agent: Retrieve top 5 revelant web source using SerpAPI and duckduckgo.
2. Summarize Agent: Summarize the information retrieve from the search agent using facebook/bart-large-cnn via Hugging Face Transformers.
3. Verifier Agent: Filter out unreliable or irrelevant summaries.

Tech Stack:

Tool	Purpose
Python	Core Programming Language
SerpAPI	Real-time search API 100 search limit
Transformers	Text summarization

Challenges:

During the project, I encountered several challenges, especially during the search and summarization phases. Initially, I only knew about using DuckDuckGo Search for retrieving information, but it did not provide satisfactory results in terms of relevance and reliability. After researching alternatives, I discovered SerpAPI, which offered more accurate and consistent search outcomes, significantly improving the quality of the data fetched for summarization. For summarization, I initially experimented with several Hugging Face models to find the best fit. After evaluating their performance in terms of summary quality, accuracy, and speed, I settled on using the facebook/bart-large-cnn model because it consistently produced more coherent and informative summaries compared to others.

Future Improvements:

- Use LLM-based VerifierAgent(eg GPT or Claude) for content validation.
- Use LLM-based for Summarization for good summarization.
- Export reports as PDF or Markdown.
- Enable user friendly UI.
- Enable using documents/PDFs as sources