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Enhancing underwriting efficiency with LLM integration

Our client, a financial institution specializing in underwriting services, faced a significant challenge in their verification processes. The Underwriting Team had to manually gather and analyze publicly available information about prospective clients—an effort that was both time-consuming and repetitive.

They turned to VirtusLab to explore the potential of leveraging large language models (LLMs) to optimize this process. The result? A POC solution that reduced data-gathering time from 20 minutes to just one minute per case, freeing the team to focus on more strategic tasks.

The Challenge

Underwriting processes require collecting and analyzing various client-related data points, such as:

- **Ownership structure of companies**
- **Major corporate events**
- **Revenue trends**
- **Stock value insights**

Traditionally, this required extensive manual web-surfing and cross-referencing information across multiple online sources. The challenges included:

1. **Repetitive Effort:** The same types of queries were conducted repeatedly for different clients.

2. **Interconnected Data:** One piece of information often led to others, requiring a multi-step investigation.

3. **Time-Intensive:** On average, each case took 20 minutes of manual work to gather and cross-check the required data.

4. **Scattered Information:** Synthesizing insights from multiple sources into a cohesive summary was both challenging and prone to errors.

5. **LLM Limitations:** Large language models are inherently limited to knowledge available during their training time. This knowledge gap made it crucial to dynamically incorporate up-to-date resources.

The client chose VirtusLab to explore whether integrating LLMs into this process could streamline information gathering and summarization, ultimately increasing efficiency and accuracy.
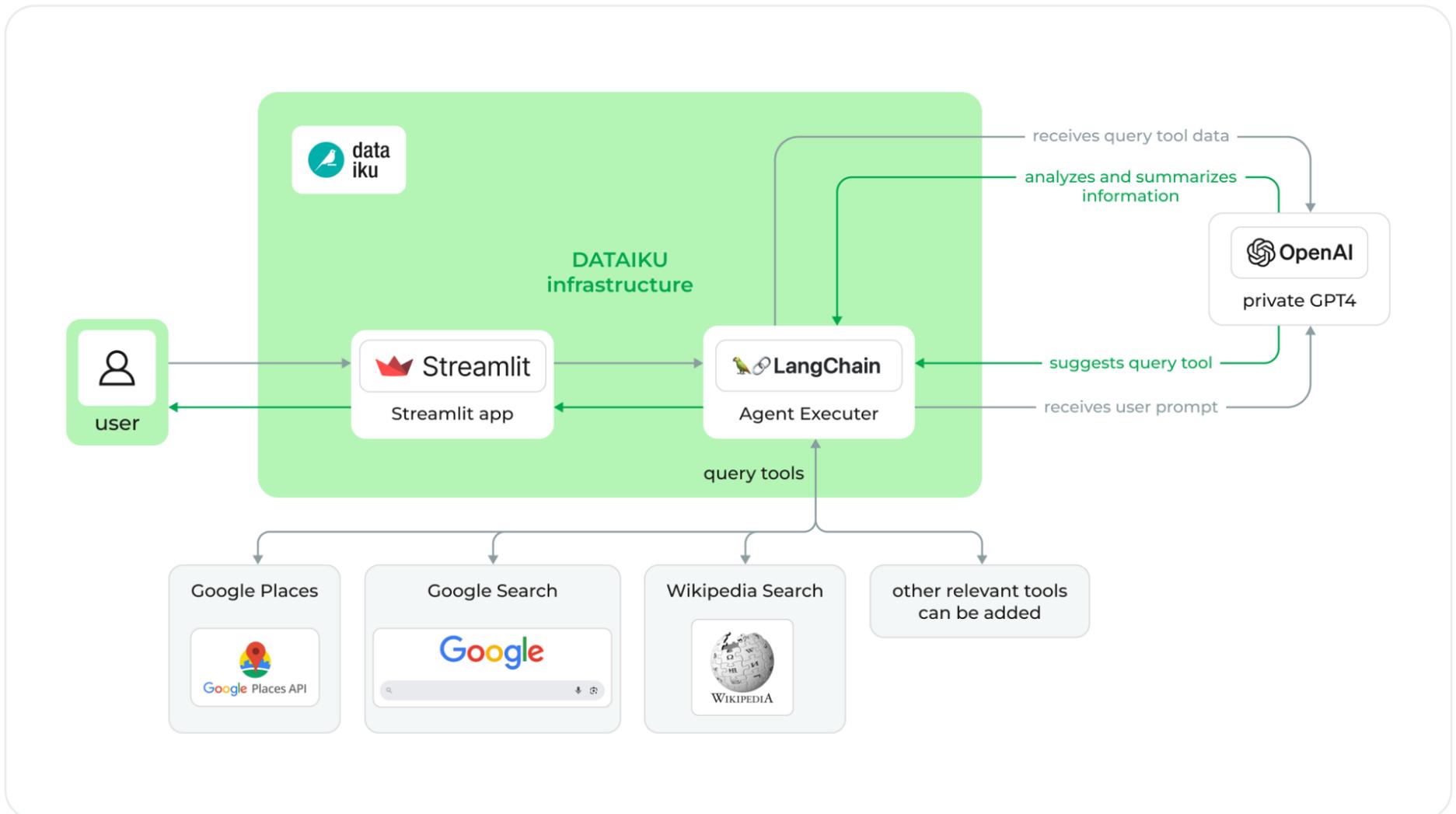
The solution

VirtusLab worked closely with the client to develop a POC that showcased the use of LLMs in the underwriting process. The solution addressed key challenges by implementing the concept of **LLM Agents**, enabling the automation of information gathering and summarization. The POC was developed using the LangChain framework and involved three key components:

1. **Agent:** Served as the decision-making engine, managing the steps needed to fulfill a query based on LLM-generated instructions.

2. **Tools:** Modular components designed to execute specific tasks, such as performing Google searches or retrieving online data.

3. **AgentExecutor:** Orchestrated the process, calling the agent, gathering input from tools, and delivering consolidated results.

How it Works:

- A **Streamlit-based interface** allows users to input a client's name.
- The system queries various online sources, dynamically retrieving and synthesizing relevant data.
- The final report presents a cohesive overview, combining insights from multiple sources into an easy-to-digest format.

By integrating internet resources into the process, the solution overcame LLMs' knowledge gap, enabling the generation of real-time, accurate, and comprehensive summaries.

⭐ The results

This solution exemplified how cutting-edge AI technologies can address practical business challenges, delivering measurable value in operational efficiency.

- **Drastic Time Savings:** Reduced information gathering time from ~20 minutes to ~1 minute per client.

- **Enhanced Efficiency:** Freed underwriters to focus on complex tasks, such as in-depth background checks and nuanced analyses, rather than manual data collection.

- **Improved Accuracy:** Automated merging and summarization of data from multiple sources ensured consistent and error-free reports.

- **Optimized Resource Allocation:** Time savings allowed teams to handle more cases or dedicate additional effort to higher-value strategic activities.

- **Streamlined Workflow:** The intuitive Streamlit interface provided a seamless experience for users, requiring minimal training.

The tech stack

/	**Frameworks:**	🦜🔗LangChain	🔺 Streamlit
/	**Infrastructure:**	data iku	
/	**LLM:**	OpenAI	

About VirtusLab

At VirtusLab, we aim to lead in software technology, working consistently to enhance efficiency. Our profound commitment to research and development and a dedicated focus on emerging trends and inspirations fuels an innovative culture. This ethos precisely guides advancing our cutting-edge solutions, inviting collaboration to expand the boundaries of software technology collectively. We welcome you to be a part of this transformative journey.

Let's connect

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