

Work Logs

Date	Hours	Description of Work Done
March 24	2.5	Researched LangChain Expression Language (LCEL) for structured pipeline execution.
March 25	3	Integrated LCEL into chatbot logic for improved modularity and readability.
March 26	2.5	Implemented streaming with agents to enable real-time responses.
March 27	3	Refactored agent execution to efficiently handle multiple tool calls within a query.
March 28	2.5	Optimized memory handling in LangChain to improve response continuity and efficiency.
March 29	3	Conducted extensive testing and debugging to ensure smooth agent interactions.
March 30	2	Finalized enhancements, documented changes, and prepared the report.

Work Completed This Week

This week, I enhanced the **Asklytics AI chatbot** by incorporating **LangChain Expression Language (LCEL)** to create a more structured and maintainable processing pipeline. This improved the modularity and execution flow of AI tools for sentiment analysis, stock/housing predictions, and summarization.

I also implemented **streaming with agents**, allowing real-time responses and dynamic interaction handling. Previously, chatbot responses were sequential and delayed, but now they are **asynchronous and more interactive**. Additionally, I optimized LangChain’s **memory module** to efficiently manage conversation history and prevent redundant queries.

Key improvements:

- **LCEL integration** for structured pipeline execution.
- **Streaming response with agents** for better interactivity.
- **Enhanced memory management** to improve chatbot continuity.
- **Optimized multi-tool execution** to handle complex queries efficiently.

Challenges included handling **concurrent tool execution within an agent**, which I resolved by **prioritizing tool calls and optimizing execution order**. Additionally, ensuring

memory consistency while handling streaming outputs required fine-tuning LangChain's built-in **memory persistence methods**.

#### **GitHub Repository Check-In**

The following files have been updated in the GitHub repository under **Implementation**:

- **asklytics\_chatbot2.py** – Updated chatbot logic with **LCEL, streaming agents, and improved memory management**.

This progress ensures that **Asklytics can now provide real-time insights, structured responses, and efficient data processing**, enhancing the overall user experience.