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Progress Report Number: 2

Work Date/Hours Logs

Date	Number of Hours	Description of Work Done
February 25, 2025	4	Reviewed previous model performance and documented key improvements needed.
February 27, 2025	4	Conducted initial benchmarking of chatbot latency and response accuracy.
March 2, 2025	5	Assisted in optimizing LangChain pipeline. Designed fallback mechanisms for handling ambiguous queries.
March 4, 2025	4	Improved chatbot reliability and tested query-handling improvements.
March 6, 2025	3.5	Conducted dataset validation for sentiment analysis, ensuring preprocessing workflows handled edge cases.
March 8, 2025	4	Implemented logging and debugging tools to monitor chatbot interactions.
March 10, 2025	3.5	Developed an error-handling strategy to reduce failure rates in API responses.
March 12, 2025	3	Set up automated tests for chatbot response consistency.
March 14, 2025	3.5	Worked on refining UI interactions to improve usability within Asklytics.
March 16, 2025	3	Coordinated finalizing documentation for model deployment strategy and assessed cloud hosting options.

Description of Work Done

During this phase of the Asklytics project, my primary focus was on improving system stability, refining data processing pipelines, and ensuring smooth chatbot interactions. Key contributions included:

- **Performance Evaluation & Optimization**: Conducted benchmarking on chatbot latency and response accuracy to identify improvement areas.
- **Error Handling & Debugging**: Developed logging and monitoring tools to detect failures in chatbot responses and reduce system downtime.

- **Query Handling & UI Enhancements**: Designed fallback mechanisms to ensure that ambiguous queries were handled more effectively.
- **Automated Testing**: Implemented test cases to validate chatbot responses, improving overall system reliability.
- **Deployment & Documentation**: Assisted in finalizing documentation for deployment strategies and explored cloud hosting options to ensure scalability.

Challenges and Solutions

1. **Ambiguous Query Handling** – Users often entered vague or multi-intent queries, leading to inconsistent responses.
   - *Solution:* Introduced fallback logic and response refinement techniques to ensure clearer chatbot answers.
2. **Response Latency Issues** – The chatbot occasionally experienced delays in returning responses due to processing overhead.
   - *Solution:* Optimized LangChain's execution flow and reduced unnecessary computations to improve efficiency.
3. **Dataset Edge Cases** – Some sentiment analysis datasets contained noise, leading to incorrect classifications.
   - *Solution:* Enhanced preprocessing scripts to filter out irrelevant or misleading data before analysis.

Next Steps (Before April 15, 2025)

- **Deploy Asklytics on a Cloud-Based Platform** – Ensure smooth hosting and scalability for real-world usage.
- **Refine Model Responses Further** – Improve chatbot's ability to interpret complex analytical queries.
- **Enhance User Experience** – Fine-tune UI elements and streamline query-processing speed.
- **Perform Stress Testing** – Simulate high-traffic conditions to evaluate system robustness.

Conclusion

This phase of the project focused on refining chatbot functionality, improving query processing, and ensuring response reliability. Majority of work was performed as part of research while working together or alone researching.