EE/CprE/SE 491 WEEKLY REPORT

Start Date – End Date: 10/18/2024 - 10/24/2024

Group number: sdmay25-18

Project title: Weather Triggered Wireless Telemetry System

Client &/Advisor: Daji Qiao and Sarath Babu

Team Members/Role:

1. **Alex Chambers:** Individual Component Designer
2. **Alexander Christie:** Client Interaction
3. **Adam Fields:** Data Formatting
4. **Nisha Raj:** Team Lead
5. **Aidan Gull:** Component Integration
6. **Colin Kempf:** Documentation

Weekly Summary

This week our group focused on gathering and visualizing our preliminary data from the forecast APIs using our prototype. After successfully getting our prototype onto a server and letting it run, we showed some early representations of the data to our client during our meeting. He gave us feedback on the ways we could be visualizing data and what we should be looking for when we analyze the data to help us better understand accuracy. Using this feedback we created new visualizations to better represent the forecast data. Analyzing these charts allows us to better understand which of the forecast APIs are the most accurate and under what conditions they work best. We are also going back and refining the prototype based on our gathered data. One of the issues we worked on this week and are continuing to work on is that some forecast APIs need an API key, and our program must be able to refresh this key so that it can continue to get the forecast data.

Past week accomplishments

- **Gathering Data**
    - Ran the prototype for an extended period of time to collect forecast data
    - Updated and adjusted the prototype code based on errors that occurred
    - Working to solve the current issue of not being able to gather data from certain APIs do to keys
- **Analyzing Data**
    - Compared gathered forecast data to historical weather data from the forecasted time
    - Made visualizations showing the accuracy of the forecast data beginning to look for which API has the best accuracy when predicting a number of features
    - Created refined graphs based on the feedback from our client to better assess the accuracy. These graphs better visualize accuracy overtime as well as how accuracy is affected by other data features.

Pending issues

- **Forecast API Keys**
    - Keys that certain APIs need to be able to access their data will eventually expire
    - Prototype needs to be able to get a new key so that it can continue to collect data

Individual contributions

NAME	Individual Contributions	Hours this week	HOURS cumulative
Nisha Raj	-Continued investigation into functional requirements -Worked on deriving non-functional requirements -Categorized the non-functional requirements by type -Recognized project planning techniques for the project	5	39
Alexander Christie	- Experimented with Forecast API Key from Tomorrow weather API - Analyzed data from the prototype, primarily to ensure a lack of bugs and recognize points of improvement	6	40
Aidan Gull	- Performed data analysis on the data gathered on the prototype - Expanded upon chosen Engineering Standards to create clear guidelines for the group to follow and to present to the client or panel at a later time	6	40
Colin Kempf	- Helped visualize and analyze gathered data from the prototype - Brainstormed solutions to problems encountered with the prototype and running it long term on a server - Continued to help finalize our requirements, both functional and non-functional	6	40
Alex Chambers	- Created python script to visualize data gather from Data Gathering Prototype to analyze accuracy of various forecasting APIs	6	42
Adam Fields	-Helped to maintain the test server during testing -Helped with finalizing our task decomposition	6	39

Plans for the upcoming week

- **Data Analysis**
    - Present our new graphs to our client and advisor and receive feedback
    - Based on the feedback adjust existing graphs and create new ones
    - From our findings, begin to determine how to use the more accurate measurements of

forecasting from different APIs to inform our prediction methods

- **Continuing Prototype Development**
    - Continuing to fix the issue with API keys
    - Expanding the prototype to begin gathering data from ARA Framework and eventually using the forecast data to inform when the ARA data is gathered

Summary of weekly advisor meeting

Our meeting this week took place on 10/18. We met with our client and advisor and updated them on our progress for the previous week. This presentation focused on our prototype code and the steps we had taken to acquiring a server and running our code on it. We presented some initial graphs we created from the data the prototype had gathered, and our client gave us feedback on how we could improve the graphs. In particular what data we could show from the graphs and how to make sure our graphs were readable to an unfamiliar audience. We also went over the issues we had been having with our prototype, specifically with API keys expiring.