EE/CprE/SE 492 STATUS REPORT

Start Date – End Date: 2/28/2025 - 3/13/2025

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

Summary

In terms of the API Prediction part of our project we have worked on integrating the API prediction script and the script that calculates the average precipitation prediction. We also determined that we would need to set different thresholds and then based on that we would need to check the ARA weather at different intervals. Then we also changed our code to call blocking functions to make sure we can integrate our scripts with the ARA data collection scripts.
For the ARA Data Collection script part of our project, we worked to finalize the COTS API implementation. Part of this was allowing multiples to collect simultaneously. We then tested access to the COTS port while on the ISU VPN to make sure that our script was working properly. As for data formatting, in the last two weeks we have created several functions for storing data in a database. The first function stored the CSV files onto a MariaDB database. We had met with our client and advisor to discuss how the final datasets will be stored. We concluded that the database will store the file paths to the zip folders that hold the final data sets. We changed our scripts to store the file paths instead of the CSV. We had also done some work to contact our CSV data with Garafan to display the data. We also continued our progress on integrating the different scripts together. This included discussing what each script would need to send to the others. Additionally we created multiple functions to be used for integrating the different components together.

Accomplishments

- **API Predictions**
    - Calling blocking functions from ARA Data Collection
    - Use this to give intervals weather should be checked at
    - Also, calling the start and stop collection when weather should be checked
    - Integrated average precipitation and API prediction scripts
- **ARA Data Collection**
    - Finalized COTS API implementation
        - Can allow multiple users collecting simultaneously
        - Tested access to the port while on the ISU VPN

- **Data Formatting**
    - Reworked script to place file paths into the database instead of placing the data from CSV.
    - Experimented with displaying data files with Gaffana
- **Script Integration**
    - Created multiple functions to be used for integrating the ARA Data Collection script and the API Prediction script

Pending issues

- No pending issues

Individual contributions

NAME	Individual Contributions	Contributed Hours	HOURS cumulative
Nisha Raj	- Worked on getting scripts running on ARA server - Debugging any issues with the server and the scripts - Created thresholds for when intervals should be checked - Added calling blocking functions for based on threshold different functionality will be used	12	107
Alexander Christie	- Integrated average script and API prediction scripts together - Debugged issues from integration - Helped implement method calls for Data Collection	12	106
Aidan Gull	- Created function to place CSV files into MariaDB - Created function to place the file path to data sets in the database. - Met with the client to clarify where and how we are storing final data sets.	12	106
Colin Kempf	- Assisted in the integration process between ARA Data Collection script and the API Prediction script - Gained access to the ARA servers - Helped test COTS API functionality	12	106
Alex Chambers	- Finished Flask API for COTS (Wireless) data collection - Began integration between COTS, ARA, and Weather Prediction systems	14	120
Adam Fields	- Created function to place CSV files into MariaDB - Created function to place the file path to data sets in the database. - Met with the client to clarify where and how we are storing final data sets.	12	106

Current Plans

- **API Predictions**
    - Help with integrating the API predictions script and the ARA data collection
    - Finish up some issues with OpenMeteo API giving weird faulty values
    - Debug any issues that come up
- **Data Formatting**
    - Integrate with the other parts of the project
    - Set up code base and data base on servers
    - Worked on setting up Grafana to display finalized data sets.
- **Script Integration**
    - Full system integration testing
    - Finalizing integration between the ARA Data Collection Script and the Data Formatting Script

Summary of advisor meetings

During this report period, we met with our client and advisor twice on 3/5 and 3/12. During both of these meetings we checked in with our client and advisor about our progress. We shared what we had accomplished and how we were continuing to move forwards. Additionally we demoed different aspects of our project, giving a demonstration of how different parts of the project are beginning to work and fit together. They asked questions and shared feedback about what they had seen. They gave suggestions on how we could improve or ideas for problems we were encountering. They also helped to answer any questions that came up on our end about what they were looking for or how we could better integrate with their existing systems.