EE/CprE/SE 492 STATUS REPORT

Start Date – End Date: 2/14/2025 - 2/27/2025

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

During the last reporting period, we continued to work on the project's individual components and worked towards integrating them. For the API Prediction script, we integrated a newly developed script designed to calculate the average precipitation from our three selected APIs. Additionally, we altered our API Prediction script to pull weather predictions from one hour out instead of its previous form. The integrated scripts have been successfully run locally, on the remote server and are currently live on the ARA server. For the ARA Data Collection script, we finalized putting the code on the ARA servers. Additionally we began research on Flask API for its future usage with COTS for wireless data collection. For the data formatting we worked on adding features to our already existing script. We made our script place the various files into a properly named zip folder. We also had done some research on storing our data with MariaDB. We wrote a script that will connect to the database while also placing some example data in here. Lastly we continued our progress on script integration by adding more of the components to the ARA server and began to determine the best ways to run the code together.

Accomplishments

- **API Predictions**
    - Finalized script to find the average precipitation percentage pulling from the script that creates text files from weather APIs
    - Reformatted the script that pulls from the APIs and creates text files
    - Now uses API data to predict weather one hour in advance every hour
- **ARA Data Collection**
    - Finalized putting existing script onto the ARA servers
    - Begun research into the Flask API for usage with COTS data collection
    - Looked at existing ARA code for COTS wireless weather data collection from ARA base stations

- **Data Formatting**
    - Worked on a script that placed files in zip folders that match ARA's naming conventions.
    - Researched and prepared a script for placing files in a MariaDB database.
- **Script Integration**
    - Put existing scripts onto the ARA servers
    - Determined what information each component would need to send to one another and brainstormed ways to run the code together

Pending issues

- None

Individual contributions

NAME	Individual Contributions	Contributed Hours	HOURS cumulative
Nisha Raj	- Worked on creating and debugging a script to find the average precipitation probability and then send a trigger to ARA scripts - Ran script on local, remote, and ARA server - Integrated API data collection script to grab the generated files and parse and take average	12	95
Alexander Christie	- Revised API Prediction collection script to predict only an hour in advance. - Ran script on remote and ARA server. - Helped with the integration of API data collection script and average calculating script.	12	94
Aidan Gull	- Continued work on a script that placed files in zip folders that match ARA's naming conventions - Researched and prepared a script for placing files in a MariaDB database.	12	106
Colin Kempf	- Continued to work on the ARA Data Collection script - Begun work on COTS collection and Flask API usage - Brainstormed integration plans	12	94
Alex Chambers	- Updated ARA Data Collection script - Ran updated ARA Data Collection script - Worked on COTS collection	12	96

Adam Fields	- Continued work on a script that placed files in zip folders that match ARA's naming conventions - Researched and prepared a script for placing files in a MariaDB database	12	94

Current Plans

- **API Predictions**
  - Next steps include modifying the average script based on average precipitation give an interval for when data collection check API weather prediction again
  - Integrate the taking the average script and the prediction script
  - Refine the prediction script
  - Start deleting text files the day after creation
- **ARA Data Collection**
  - Implementing Flask API
  - Using Flask API to connect COTS to the weather collection
- **Data Formatting**
  - Our next steps for data formatting is to finish integrating the scripts for MariaDB with our current data formatting script so we can store our data in a database.

Summary of advisor meetings

During this report period, we met with our client and advisor twice on 2/21 and 2/26. During the first meeting, we went over our plans for component integration and getting the code set up on the server. We got feedback on our progress and got an understanding on how to move forwards. During the second meeting, we asked several questions about collecting data and gathered additional information about server set up.