EE/CprE/SE 492 STATUS REPORT

Start Date – End Date: 4/7/2025 - 4/17/2025

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 this report period, our group focused on continuing testing, UI development, and cleaning up some loose end edge cases in our script. For testing, we focused on the Data Formatting and Data Collection components, making sure that the collected data was being properly sent to formatting and storage. Additionally we also began to create test sets of data for us to manually test our complete system, without relying on a real world weather event. This week we also worked on integrating Grafana and the UI. We worked on adding weather csv data locally to the Grafana website, and tested it working. We also created visualizations using Grafana and integrated the infiniti plugin. Lastly, we modified our Data Collection code to include edge cases for weather events that happen close together and should be grouped together as one event in storage.

Accomplishments

- **UI Implementation**
  - Grafana research
  - Worked on adding and testing using weather csv data locally in Grafana website
  - Created visualizations using Grafana and integrated the infiniti plugin
- **Testing**
  - Continued testing of Data Formatting and Data Collection components
  - Begun creating test parameters for upcoming full system prediction testing
- **Edge Cases**
  - Modified code to group weather events that happen in rapid succession into single files for storage.

Pending issues

- No current pending issues.

Individual contributions

NAME	Individual Contributions	Contributed Hours	HOURS cumulative
Nisha Raj	-Worked on creating a UI in python that will connect with Grafana - Added and tested using weather csv data locally in Grafana website -Worked on using python to extract and save zip file locally	12	131
Alexander Christie	- Researched Grafana implementation in a python UI - Planned testing parameters for Prediction testing - Compared API predictions to ensure system compliance	12	130
Aidan Gull	- Researched using Grafana as a data visualization tool. - Created a python UI to connect and display csv data	12	130
Colin Kempf	- Compared API predictions to upcoming weather forecast and historical data to ensure system compliance and accuracy - Planned testing parameters for upcoming prediction testing	12	130
Alex Chambers	- Implement the ability to group weather events that happen in rapid succession into one event - Implement integration between collection and data storage	12	134
Adam Fields	-Testing the integration with the data formatter and the rest of the program - Debugging any issue that come up with integration	12	130

Current Plans

- **UI Implementation**
    - Continue working on creating a web based UI that will connect with the Grafana HTTP dashboard so users can render data visualization on the UI
    - Finalize UI testing with csv files
- **Testing**
    - Complete component to component testing
    - Test the entire system together from start to finish
        - Use manually created datasets to test the system without relying on weather events
        - Test different prediction possibilities from the APIs to determine how their accuracy affects our collection

        - Use wind speed instead of precipitation to test real weather triggers as to not have to wait for rain events
- **Feedback Adjustments**
    - Incorporate feedback from our client and advisor about how the averaged prediction from the API's affects collection lead-in time.

Summary of advisor meetings

Our team met with our advisor and client on 4/16. During this meeting we gave an update for the past two weeks of work, presenting our progress. We discussed currently unimplemented features such as interpolation (no longer necessary) and the UI (confirmation that the UI should be web based). The team presented our findings on Grafana being implemented in our UI, and clarified any standing questions we had. Our advisor discussed our current implementation of our data collection system and advised us to change how our prediction API should affect the lead-in time.