Weather Triggered Wireless Telemetry

Lightning Talk

Ethics

Group: sdmay25-18

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Project Overview

- ARA is an advanced wireless research platform covering Iowa State University, Ames, and nearby rural areas.
- Tasked with creating a system that will recognize and predict when a weather event is occurring.
- This trigger, signals data collection before a given weather event has begun and allows us to continue collecting data until the weather event has passed.
- This weather data will eventually allow researchers to determine how the performance from the ARA framework differs during different weather events.
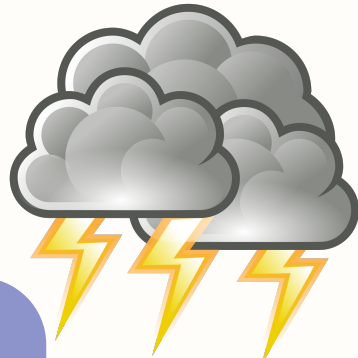

Agronomy Farm

Wilson Hall

Problem Statement

- Want to intelligently collect a wide range of network data during a variety of weather events.

- Use forecast data to predict future weather events to gather data only when weather events we want to record are going to occur.

- Store collected data and allow for user queries to access and format selected data.

Professional Responsibility – Work Competence

- Relevance:
  - Team provides high quality deliverables for
    - design documents and lightning talks
    - compiles weekly progress powerpoints advisors
  - Team keeps Git repository up-to-date with code progress
- Approach:
  - Team meets weekly and plans the weekly plan of attack for documents, slides and any code progress for the week.
- Why:
  - Team is always on the same page
  - Team makes sure progress is high-quality and thoughtful
  - Team deliverables are submitted to client on a timely basis

Professional Responsibility – Communication

- Relevance:
  - Team has met with primarily client,
    - Miscommunication on system requirements
- Approach:
  - We were not meeting with the advisor as much as we would like due to him not being in the country.
- Change of Approach:
  - We are planning to meet with our advisor twice a week to make up for past meetings.

Broader Context Area-Four Principles

	Beneficence	Nonmaleficence	Respect for Autonomy	Justice
Public Health, Safety, and welfare	Design helps researchers gather and analyze data	Design works within existing, safe, systems	Design uses feedback to ensure clients success	Design promotes access to all users with permissions
Global, cultural, and social	Design helps gather data to improve transmission of wireless data	Design uses trusted open-source APIs to predict weather events	Design does not interfere with other users	Implementation is focused on access for educational purposes
Environmental	Design will help to research rural environment	Implementation will not disrupt the environment	The design does not impact the environment	Design does not disturb one habitat over another
Economic	Design could help to speed up research	Design has no real impact on the economy	Design does not come at a cost for shareholders	Design would be usable for all, it is not pay walled

Ethical Concerns

- We are working on improving our communication with the advisors.
  - Better tailor our project to make it accessible for all users.
- Ensuring security such that no malicious users have access to wireless signal data.
  - Additionally, our UI for queries need to be resistant to SQL injection.
    - This will ensure our database stays secure.

Conclusion

We have identified:
- Professional Responsibilities
  - Work Competence
  - Communication
- Broader Context Area
- Ethical Concerns