EE / CprE / SE 491 Weekly Report 6
March 6 - March 19
sddec24-16
Designing a Smart Plant Nurturing System Enabled by IoT Technology
Faculty Advisor / Client: Md Maruf Ahamed

Team Members:

- Tejal Devshetwar - Frontend
- Holden Brown - Frontend
- Blake Hardy - Backend
- Cameron Jones - Backend
- Cayden Kelley - Hardware
- Chase O'Connell - Hardware

Weekly Summary:

Throughout the past two weeks, we've made significant progress in terms of obtaining and testing hardware as well as frontend development. The soil moisture sensor we obtained previously was confirmed to be able to read moisture and temperature data simultaneously. Additionally, we now have a Raspberry Pi Pico, NPK soil sensor, and multiple liquid pumps to act as actuators within our system. Through further online research, we also determined key factors in fertilizer selection / application as well as ideal watering conditions. The frontend team was able to complete the login screen and UI for the home page as well as updating weather information. Throughout the next week, we plan on making further progress with backend development, frontend development, and hardware testing.

Past Week Accomplishments:

- Obtained Additional Hardware - Cameron
    - Multiple small electrically controlled liquid pumps.
        - Link to Product
    - NPK Sensor
    - Raspberry Pi Pico
- Tested Hardware Functionality - Cameron
    - Successfully able to see moisture and temperature data through the Raspberry Pi Pico W.
    - Water pumps tested successfully with water, no issues.
- Developed frontend for Login and Home screen- Tejal
    - Login page created successfully that opens up home page and create account page.
- General Plant and Actuator Research - Chase
    - Found multiple liquid dispersing device options
        - Example Device

    - Determined ideal watering conditions (applicable to majority of indoor plants)
        - Avoid watering leaves of plants
        - Underwatering is preferred to overwatering
        - Unfiltered water preferred
        - Selecting soil with coconut coir, vermiculite, or perlite preferred for drainage.
    - Learned fertilizers are distinguished by their NPK ratio.

Plans for Coming Week + Action Items:

- Holden Brown - Develop frontend application along with backend to allow logging into created accounts. Possibly work on creating the main home screen for the frontend.
- Tejal Devshetwar - Help with the backend for the login and home screen. Start working on create account screen as well.
- Blake Hardy - test REST api on a pi using postman, look into differences with pi pico vs standard pi
- Cameron Jones - Start on backend draw up a usable database structure. Begin relearning mySQL workbench and mySQL database.
- Cayden Kelley - Work with Chase to compile next hardware order, come up with evaluation plan for the NPK sensor, find NPK sensor datasheet
- Chase O'Connell - Compile the next list of hardware to order, including a Raspberry Pi MODBUS converter and components for the irrigation system.

Pending Issues:

- Tejal Devshetwar
    - No issues
- Holden Brown
    - No issues
- Blake Hardy
    - No issues
- Cameron Jones
    - No issues
- Cayden Kelley
    - No issues
- Chase O'Connell
    - No issues

Individual Contributions:

Team Member	Contribution	Weekly Hours	Total Hours
Tejal Devshetwar	Created frontend for login and home screen.	10	23
Holden Brown	Got familiar with react native and started prototyping the login and create account screen for the app.	2	24.3
Blake Hardy	Looked into REST on pi to communicate with database, spring break	1	17
Cameron Jones	Worked on getting good readings from Moisture/temperature sensor. Figured out how to use water pump.	6	18
Cayden Kelley	Researched the use of the Raspberry Pi pico and continued researching/determining how to power sensors and actuators.	3	17.5
Chase O'Connell	Researched ideal plant care conditions, actuators, and additional water / fertilizer distribution hardware.	4	18