

EE / CprE / SE 491 Weekly Report 7

March 20 - March 26

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/backend
- Blake Hardy - Backend
- Cameron Jones - Backend
- Cayden Kelley - Hardware
- Chase O'Connell - Hardware

Weekly summary:

Throughout this week, progress has been made toward creating a locally-based prototype for the back-end code. Including both Spring Boot and MySQL, although a roadblock has been reached regarding our phone emulator not being able to interact with the local backend. This will likely have to be resolved by placing our backend code on an actual server. In addition, we now have an additional Raspberry Pi Pico W, allowing for additional testing to be performed. In the future, we plan to attempt to send a RESTful signal from the pi to a local server running the backend code, set up a prototype control system for the water pump, along with additional inquiries into how to integrate the NPK sensor.

Past Week Accomplishments:

- Created working local backend - Holden
 - Successfully accepts RESTful requests from POSTMAN
 - Successfully stores data in MySQL
 - Has issues accepting data from the app, can be resolved by moving backend to server.
- Created a plan for how to integrate the water pumps - Cameron and Blake
 - Use the GPIO onboard the Pi Pico as the control signal
 - Activate a one channel relay connected to a small battery activating the motor on command
- Worked through test cases that can be performed to verify the accuracy of the NPK sensor that was purchased - Cayden
- Investigated hardware components available to power various sensors and actuators at different voltages. Came up with a preliminary plan and component list to power devices at each of the voltage levels - Cayden

Plans for Coming Week + Action Items:

- Holden Brown - Continue working on getting the backend up and running on AWS RDS database servers and attempt to connect it to the frontend for login.

- Tejal Devshetwar - Plan on getting SpringBoot and MySQL to work for login and homepage.
- Blake Hardy - continue working on Pi rest api, get it tested with postman
- Cameron Jones - locate a 3 volt 1 channel relay from the ETG to help control the water pump, write a program to activate GPIO to test the relay system. Look into the python request library and use it in collaboration with backend code, deployed to pi.
- Cayden Kelley - Test the functionality and reliability of the preliminary plan for the power delivery system. Get the NPK sensor to a functional state, receiving data.
- Chase O'Connell - Test hardware functionality and sensor integration. Continue brainstorming new hardware ideas.

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	Looked over the SpringBoot made by Holden.	1	24
Holden Brown	Built a basic backend and got working on pulling it to AWS RDS and connecting it to the app for front end back end login communication.	4	28.3
Blake Hardy	Worked on pi REST api to send data to server	2	19
Cameron Jones	Spent time relearning spring boot	2	20
Cayden Kelley	Came up with various test cases for the NPK sensor to verify reliability. Researched and developed a power delivery plan to meet the voltage needs of all the sensors, pumps, and microcontrollers.	7	24.5
Chase O'Connell	Determined necessary peripherals needed for	1	19

	sensor testing.		
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