

EE / CprE / SE 491 Weekly Report 1

Jan 23 - Feb 6

sddec24-16

Designing a Smart Plant Nurturing System Enabled by IoT Technology

Faculty Advisor / Client: Md Maruf Ahamed

### **Team Members:**

- Tejal Devshetwar - Frontend / Backend
- Holden Brown - Frontend / Backend
- Blake Hardy - HW / SW Integration
- Cameron Jones - HW / SW Integration
- Cayden Kelley - PCB Design
- Chase O'Connell - PCB Design

### **Weekly Summary:**

This week was primarily focused on organization and initial brainstorming for our project. Organization-wise, we have decided to have weekly team meetings on Mondays at 5 PM and our faculty advisor/client meeting on Saturdays at 2 PM. A Discord server has also been set up for easy communication, and a shared Google folder has been set up to share any work and research we do. The Frontend/Backend team members have had initial discussions with the broader team on app development and will be making a decision on what language it will be coded in here in the coming week. The Hardware/Software integration team has begun researching sensor availability and brought up concerns about the availability of sensors for certain nutrients. The PCB design team has also had initial discussions about the possibility of designing a custom PCB and is weighing the pros and cons when compared to the use of already-made solutions, like a Raspberry Pi or Arduino.

### **Past Week Accomplishments:**

- Team Organization
  - Set up team Discord for communication. Shared a Google Drive folder with each member to include reports, notes, and technical information. - Chase
  - Determined team member availability and best meeting times. - All
    - General Meeting: Mondays at 5PM
    - Faculty Advisor Meeting: Saturdays at 2PM
- Initial Faculty Advisor / Client Meeting - All (2/3)
  - Asked questions on funding, technical specifications, and requirements.
  - Determined an appropriate end goal for the semester: basic functionality with base cases. Have a prototype version of each major aspect of the system working correctly with other components in the system.
- Initial Sensor Research - Blake (2/4)

- Found and documented potential sensors such as an ambient UV sensor for sunlight on Adafruit: <https://www.adafruit.com/product/4831>
- Listed realistic sensors to include: temperature, humidity, light level, and pH.
- Noted that sensors for calcium, magnesium, and sulfur are unlikely to be realistically implemented as they can require more complex processes such as spectroscopy:  
<https://www.semanticscholar.org/paper/Soil-calcium-and-pH-monitoring-sensor-system.-Lemos-Nogueira/d5fa68c17f996e30b84ee23f741f31387157925d>
- Sensors for nitrogen, phosphorus, and potassium are reasonably able to be found from some initial searching online:  
[https://www.amazon.com/gp/product/B08MXXSP59/ref=as\\_li\\_tl?ie=UTF8&camp=1789&creative=9325&creativeASIN=B08MXXSP59&linkCode=as2&tag=shophow2elect-20&linkId=791f967ac266cf14f2c69f3f299278b4](https://www.amazon.com/gp/product/B08MXXSP59/ref=as_li_tl?ie=UTF8&camp=1789&creative=9325&creativeASIN=B08MXXSP59&linkCode=as2&tag=shophow2elect-20&linkId=791f967ac266cf14f2c69f3f299278b4)
- Brainstorming for Hardware and Software - All
  - Discussions on which communication protocols to use. - Blake & Cameron (2/5)
  - Determining which potential platforms the app should be developed for. - Tejal and Holden (2/5)
  - Initial discussions on the pros / cons of doing a custom PCB design as opposed to a Raspberry Pi or Arduino. - Chase and Cayden (2/5)

### **Plans for Coming Week:**

- Holden Brown - Design front end of the mobile on Figma, determine what we want our app to be made in.
- Tejal Devshetwar - Design front end of the mobile on Figma, determine what we want our app to be made in.
- Blake Hardy - Backend end refresh for SpringBoot, sensor research, communication protocol research.
- Cameron Jones - Backend end refresh for SpringBoot, sensor research, communication protocol research. (Meeting Notes 2/12)
- Cayden Kelley - Meet as Electrical Engineering team, research microcontrollers and PCB components to include.
- Chase O'Connell - Meet as Electrical Engineering team, research microcontrollers and PCB components to include.

### **Pending Issues:**

- Tejal Devshetwar
  - No issues
- Holden Brown
  - No issues here.
- 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	Discussed some possibilities for frontend implementation as well as communication protocol to be used.	2	2
Holden Brown	Discussion and brainstorming with the team about app name and software to make the app in.	1	2
Blake Hardy	Did some preliminary research into microcontroller and sensors, availability, types, what protocols to use, etc.	2	2
Cameron Jones	Discussed and brainstormed with the team about potential/ideal protocols to use between sensor and PCB. As well as whether a custom PCB or raspberry pi is preferable for the project.	1	2
Cayden Kelley	Discussed and brainstormed with the team some initial ideas for which microcontroller to use. Set up Google Sheet for team availability and set up the faculty/advisor meeting for the team.	2	2
Chase O'Connell	Discussed and brainstormed some initial hardware design ideas. Set up Discord / Google Drive for the team and recorded notes from the 2/3 and 2/5 meetings.	2	2