

EE / CprE / SE 492 Weekly Report ;/

March 06 - March 13, 2025

sddec25-08

Smart Home Control Unit for Energy Optimization

Faculty Advisor / Client: Md Maruf Ahamed

Team Members:

- Seth Proctor - Designer
- Alexander Ryan - Software
- Jacob Carnesi - Project Manager
- Arie Kraayenbrink - Client Relations
- Gamage Binula Karunaratne - Hardware
- Erik Schmidt - Embedded Systems

Summary of Work:

We completed and submitted the second part of the design document on Requirements, Constraints, and Standards. We received the Hub Hardware from the ETG and started work on it. We researched and discussed hardware components for the sensors. We also researched wireless protocols to communicate with sensors and controllers.

Work Period Accomplishments:

- Completed part 2 of the design documentation
- developed a prototype IoT sensor, finalized sensor hardware research.
- Installed Home Assistant on Intel NUC.

Plans for Coming Week + Action Items:

- Seth Proctor- Continue the work for the hardware group defined on the Jira board. Work with ETG to get some equipment needed to start the project.
- Alexander Ryan- Continue the setup process to ensure the project is ready to go for creating a prototype. Continue working on the design documentation as we progress through the course.
- Jacob Carnesi- Away on military training
- Arie Kraayenbrink- work with hardware guys to develop sensor solutions and hopefully have parts in hand after spring break.
- Gamage Binula Karunaratne- Work with the hardware team to decide on the components needed for the sensors.

- Erik Schmidt- Finalize some sensor hardware decisions, discuss wireless protocols. then discuss/research MCU/SOC options. Make an order for sensor hardware with ETG.

Pending Issues:

- Seth Proctor- No issues
- Alexander Ryan- No issues
- Jacob Carnesi- I will be gone.
- Arie Kraayenbrink- No issues
- Gamage Binula Karunaratne- No issues
- Erik Schmidt- No issues

Individual Contributions:

Team Member	Contribution	Weekly Hours	Total Hours
Jacob Carnesi	Away on military training	0	15.5
Seth Proctor	Completed 2.1 Requirements and Constraints portion of the design document. Installed home assistant on Intel NUC.	4.5	21
Arie Kraayenbrink	Worked with team to design a high-level diagram of our project. Got hub hardware from ETG and researched options for wireless protocols to communicate with sensors and controllers	3	18
Binula Karunaratne	Worked with the team to design a diagram of the project. Reviewed part 2 of the design document.	3.5	17.5
Erik Schmidt	Researched sensors to present to the group, started MCU/SOC Research, implemented 2 mockup sensor prototypes, Experimented with MQTT brokers, researched Wireless Protocols and hardware, focusing on power consumption.	6	20.5

Alexander Ryan	Tested on Gitlab and JIRA integration and helped create overall project design. Researched essential and relevant standards and requirements for design documents.	3	17.5
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