

EE / CprE / SE 492 Weekly Report

February 20 - February 27, 2025

sddec25-08

Smart Home Control Unit for Energy Optimization

Faculty Advisor / Client: Md Maruf Ahamed

Team Members:

- Seth Proctor
- Alexander Ryan
- Jacob Carnesi
- Arie Kraayenbrink
- Gamage Binula Karunaratne
- Erik Schmidt

Summary of Work:

This week, we conducted more research on ODROID and other features of the project. We also obtained a blessing on our plan to adapt Home Assistant for our purposes.

Work Period Accomplishments:

- Received approval for Home Assistant
- Conducted Research on ODROID
 - Researched two different models
 - Compared pros/cons against Raspberry Pi
 - Found key advantages for both models

Plans for Coming Week + Action Items:

- Seth Proctor- I plan to continue researching important project areas next week. If we are not through all tickets for researching hardware I would like to get that done next week and vote on which we want to choose to deploy Home Assistant onto.
- Alexander Ryan- Finish design document intro, make a final design of the database, make potential network layout for home size network
- Jacob Carnesi- Continue working with ETG to integrate Jira and GitLab. I may have to schedule a meeting to communicate more quickly than we're capable of doing via email. I also plan to continue supplemental research and work on the design I have a lot of exams this coming week so I don't expect to be able to do very much.

- Arie Kraayenbrink- I plan to work with the team on the design document and also work on an overall system design for the project. I also plan to do additional research on home assistant to get an idea of where we might start in our programming.
- Gamage Binula Karunaratne- I plan to finish the design document with the team. I also plan to finalize the type of hardware we will be needing for the project.
- Erik Schmidt- I plan to work with the team to complete the design document, do more research on x86 systems as a potential solution for our HA server.

Pending Issues:

- Seth Proctor- No issues
- Alexander Ryan- No issues
- Jacob Carnesi- No Issues
- Arie Kraayenbrink- No issues
- Gamage Binula Karunaratne- No issues
- Erik Schmidt- No issues

Individual Contributions:

Team Member	Contribution	Weekly Hours	Total Hours
Jacob Carnesi	Organized meeting with Dr. Ahamed. Performed supplemental research and initial work on the design document's user profiles.	4	12.5
Seth Proctor	Researched ODROID as a potential candidate for deploying Home Assistant. Researched the pros and cons of ODROID and how it compares to Raspberry Pi.	3	11
Arie Kraayenbrink	Worked on the design document. Installed home assistant on my own hardware.	3	12
Binula Karunaratne	Worked on the design document. Continued the research from last week on MCUs that can be utilized for the light and temperature sensor devices.	3	11

Erik Schmidt	Researched x86 systems like NUCs or mini PCs as a potential HA server, went through personal devices for sensor hardware.	3	11.5
Alexander Ryan	Reviewed ODROID documentation and made supplemental edits. Researched potential users and their needs and how best to orient our project towards them. Started work on Design document introduction	3	11.5