

EE / CprE / SE 492 Weekly Report

February 06 - February 13, 2024

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, Arie, Alex, and Erik researched existing open-source projects to compare with our work. Seth and Binula focused on analyzing similar projects to identify key features and improvements. Jacob set up the project management hub and also worked on obtaining the database server to support our development. Arie spent time researching open-source projects as well as cheap devices that might be suitable for this project.

Work Period Accomplishments:

- Conducted research on other smart home devices.
 - Got some intel on the capabilities of these devices.
 - Pros and Cons compared to our device.
 - I got some insight into how other companies solved this issue and the technology they used.
- Set up communication and issue-tracking platforms.
- Acquired a virtual machine for our database and web servers.

Plans for Coming Week + Action Items:

- Seth Proctor- Next week I would like to plan out the final plan for this project. This means writing down the capabilities we want the smart home device to do. Additionally

conduct more research for each category to get a baseline idea of how we want to accomplish each task. As a group, we can split the project into different sections and individually research a given section. Friday and Monday meetings will give the group time to get together and assign tasks.

- Alexander Ryan- Finish up the final overall design for the project. Define specific user goals for product usage and find areas of improvement from open-source models. Conduct more research to find a specific open-source model to start with and work from. Start to break down work into action items (tickets on Jira) to help track user progress and results from work.
- Jacob Carnesi's goals are:
 - Continue research on existing open-source smart home projects
 - Initialize database VM once it's provisioned
 - Developing a project plan and timeline with the team
- Arie Kraayenbrink- My goal for this coming week is to work with the team to come up with an overall plan for the project. This will require some additional research and further discussion on how we can best approach the needs of this project.
- Gamage Binula Karunaratne- My goals for the next week is to get together with the team and help finalize our plan for the project and figure out how we are going to execute the dimming and temperature control features. I would also like to have an idea on what kind of devices will be needed to do the light and temperature controlling tasks, so I can start researching them. I will continue to research more on OpenHAB.
- Erik Schmidt-

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	Sent emails to ETG to inquire about VM and project management software access. Obtained access to Jira through ETG and prepared it for use. Created a Microsoft	4	4

	Teams channel for communication and a Google Drive folder for collaborative documents. Obtained a VM to host our database.		
Seth Proctor	Created the summary for the report. I filled in my information on the team website. Did research on three different smart home devices. One that monitors temperature and humidity, another that can monitor and change temperature, and the final device is a central hub that connects to other smart devices to control the entire home.	4.5	4.5
Arie Kraayenbrink	Researched open source home automation projects and devices. I compiled a list of all the URLs I could find for existing projects and also several links for cheap hardware. I prepared a few notes on several of the projects for a quick overview about them. I also prepared a list of several outstanding questions for our team to discuss and think about.	5	5
Binula Karunaratne	Researched existing smart home lighting and temperature controlling devices. Researched the open-source project OpenHAB and listed down Pros and Cons to present to the team on Monday.	3.5	3.5
Erik Schmidt	Researching Home Assistant as a potential open source software to use for home automation. Determining the pros and cons.	4	4
Alexander Ryan	Set up Jira board for team use and created template ticket. Researched open-source home automation projects and general design types for smart home projects. Looked into possible solutions for data storage (SQL vs Non-SQL DBs).	4	4