sddec18-17: IoT Remote Monitoring Mobile App for Commercial Appliances

Week 1 Report
January 22 - February 2

Team Members

John Fleiner — *Front End Lead*
Ben Young — *Hardware Lead*
Thomas Stackhouse — *Backend Lead*
Hongyi Bian — *Hardware Test*
Yuanbo Zheng — *Meeting Facilitator*
Casey Gehling — *Scribe / Backend developer*

Clients

Greiner Jennings Holdings
Taylor Greiner
Connor Jennings

Faculty Advisor

Goce Trajcevski

Summary of Progress this Report

Our group reached out to the client and began discussions surrounding the scope of our project. After assigning roles and responsibilities, we developed our own set of requirements based on the project information initially provided. We refactored those requirements appropriately following the first face-to-face meeting with our client.

We have decided to implement the mobile application on both platforms, android and ios. Our general architecture involving an IoT stack along with a microcontroller was laid out and presented to the client without much concern. While we haven't committed to a microcontroller/single-board computer yet, our client recommended two (Raspberry pi & an arduino) and said he could provide us with both for experimentation. As far as an IoT stack, we are leaning toward Amazon Web Services (AWS) due to increasing popularity as well as our client's background using the technology.

Pending Issues

One issue our team currently faces is deciding exactly what technology is going to be used for the IoT stack and microcontroller. We seem to have decided on using Spring Boot for the server based on industry standards and personal preference. We also need to submit the IP agreements recently sent to us.

Plans for Upcoming Reporting Period

We need to have a meeting to decide what IoT technology we are going to use. We do plan on connecting our mobile applications to our server before doing much of anything else, therefore the choice of IoT stack and microcontroller aren't exactly critical at this juncture. Therefore, we are going to begin the initial development stage in parallel with composing our project plan due next weekend.

We have our weekly meeting with our adviser on Tuesday to discuss our project requirements that were slightly refined in the original client meeting during this time period. We will also need to meet in this upcoming period

to hash out the necessities for our next reflection assignment.

Summary of Weekly Advisor Meeting

Goce made a couple of recommendations during our first collective meeting. First, he approved our preference of Amazon Web Services and is willing to sign off on an account for us if necessary. However, he recommended we check out Bluemix as an alternative. His second recommendation was to stick with the 'gold standard' of microcontrollers, such as the raspberry pi and arduino. Also, while the objectives and requirements planned for our project are pretty straightforward, Goce recommended we brainstorm outside the box ideas to incorporate into our project.

Individual Contributions

Team Member	Contribution	Weekly Hours	Total Hours
John Fleiner	Since our project entails developing a mobile application, there are several different approaches that can be taken. Android and iOS mobile development can be done using their native programming languages (java and swift), or they can be done using a cross platform framework such as xamarin. I spent my week researching alternative solutions and analyzed the pros and cons of working with native languages vs cross platform frameworks. As mentioned in the summary above, our team selected to use the native languages due to our previous experience. Since I was excited to delve back into iOS mobile development I began mocking up a prototype calendar in iOS as it is not a built in iOS component. The calendar may be used in the future for reserving an appliance on a specific day. The calendar may be created using iOS collection views which generate a table with x rows and y columns. Another option that we may implement is a pre-built calendar using the following library: https://github.com/patchthecode/JTAppleCalendar The library may also provide us with some neat calendar designs if we choose to implement a calendar view ourselves.	7	7
Ben Young	For this first week I got an understanding of what the clients wanted at the end of the project and as a group we decided on which roles would be fit our team to best complete	7	7

	this task. As the iOS development lead I research various ways that an iOS application can be created, which includes platforms like Xamarin and Flutter and comparing those to use Swift, the native way to create iOS applications. I decided to use Swift to create this application because I have created iOS applications using Swift in the past so I can use that prior knowledge when working on this project. This week I also pushed a base android and iOS project to their own folders in the git repository.		
Thomas Stackhouse	We met with the client for the first time, and got a general overview of what the project will entail and more context of what the solution is trying to accomplish. Using this new knowledge, I started thinking of how the solution may look architecturally, and started weighing pros and cons of different designs. I also did some preliminary research into AWS IoT.	6	6
Hongyi Bian	After the meeting took place, we went further researches on the hardware implementation strategies. According to the actual desire of the project as well as the scope of our objective, we decided to follow a power source control implementation as the wash machine monitoring process. Also, we have roughly planned out what the timeline will be and how actual implementation will be separated within the hardware team.	5	5
Yuanbo Zheng	In this week, we've met with our client and make sure we can solve some possible problems before we get it started. Also we met with our team and we have divided it into 3 teams. I was on the hardware team which will focus on the washing machine control board and the hardware implementations. We have chose Arduino uno, Arduino Yun and Raspberry Pi as our hardware microcontroller, we will search them and choose a best one based on our project to communicate it with AWS IoT.	6	6
Casey Gehling	Was able to get a better grasp on the scope and long term goals of our project. As I am on the backend team, Thomas (backend lead)	6	6

	and I started discussing potential options for a server implementation. We also did individual research on AWS IoT, as none of us have any experience with the platform.		