

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

Week 8 Report

April 2 - April 8

Team Members

John Fleiner — *Mobile Application Development Lead*

Ben Young — *iOS Development Lead*

Thomas Stackhouse — *Backend Lead*

Hongyi Bian — *Hardware Test*

Yuanbo Zheng — *Meeting Facilitator*

Casey Gehling — *Scribe/Backend Developer*

Team Members

Greiner Jennings Holdings

Taylor Greiner

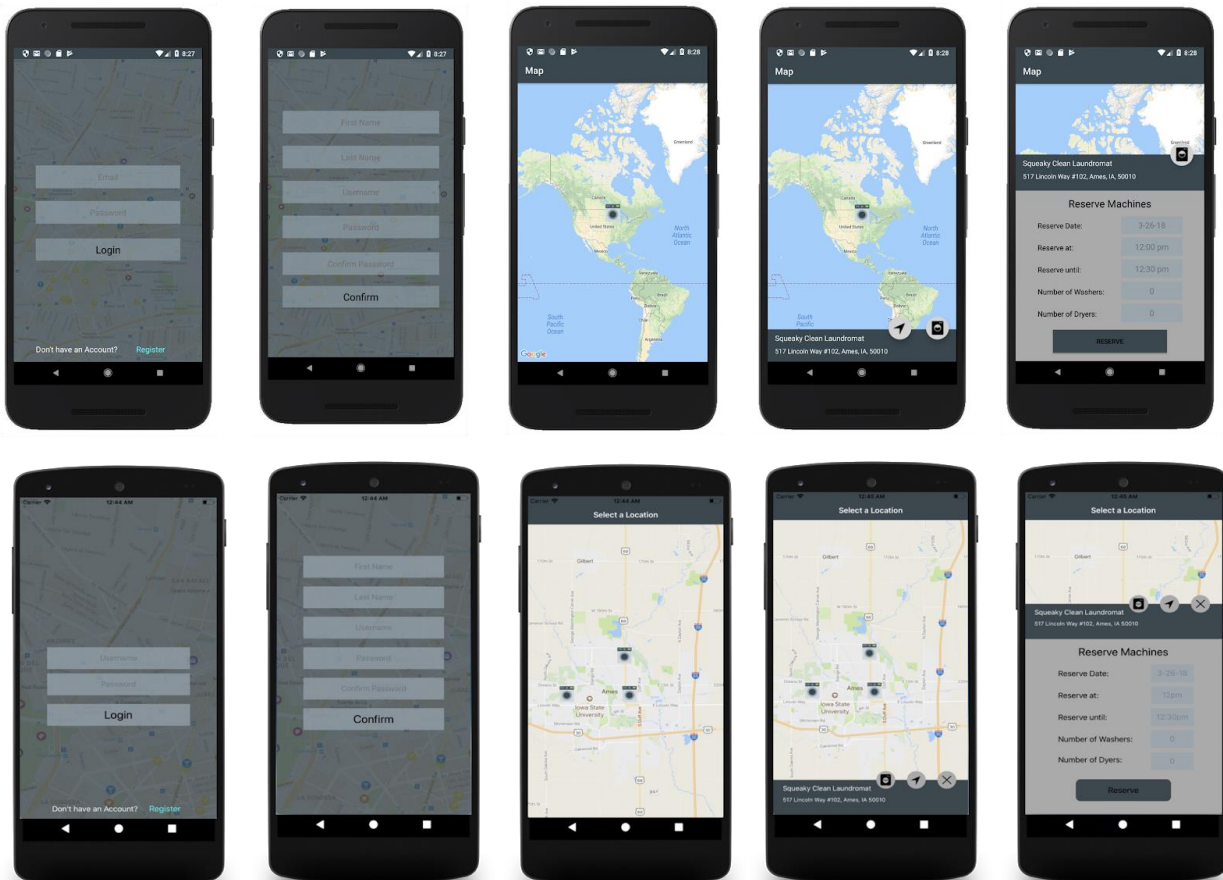
Connor Jennings

Team Members

Goce Trajcevski

Summary of Progress this Report

At the request of our clients, the Android UI has been updated to match that of the iOS mobile application. A screenshot below shows a comparison between the Android and iOS UI.



Furthermore, once a user enters the required information for reserving a machine, they must be able to confirm or deny the returned selections based on their request. To do so, the mobile team began implementing an alert popup that either returns an error with their request (such as no machines available), or asks for a confirmation to the payment screen.

Since the hardware team has finished most of the hardware implementation needed to control a power source, the week was spent researching security concerns for both the local hardware components and for communication to AWS IoT web server. Second, the team has been performing tests on the washing machine control components received last week. A multimeter pin is being used to measure the board while enabling different buttons on it. Lastly, in order to measure power draw of a portable washing machine, research needed to be conducted on the different modules that can be used for measuring power consumption.

The backend has been successfully deployed onto an EC2 instance on AWS. This will allow the demo for the final presentation to start being put together, as the backend lets the hardware and mobile portions of our solution work together. There has also been some tweaks to the reservation system on the backend at the request of the mobile developers.

Pending Issues

Our most important pending issue has been our inability to meet with our client due to scheduling issues for both parties. It was initially planned that our team would meet in-person with our clients twice a month to discuss progress, to provide milestones and deliverables, and to receive project feedback. Because our schedules haven't aligned as well as we'd like, our clients have graciously set aside a two hour timeframe each week for instant messaging and phone calls in hopes of eliminating schedule conflicts.

Prior to obtaining the washing machine components from our clients, we were expecting to receive a portable washing machine as it plays a vital role in our Panel Presentation demo. We have reached out to our clients about the possibility of obtaining the portable washing machine during the upcoming reporting period. Otherwise, our demo plans will be changed to incorporate the washing machine components instead.

Plans for Upcoming Reporting Period

Front-End

For the upcoming reporting period, the mobile development team will work together to create a cross-platform payment screen. The idea behind the payment screen is as follows:

Once the user has submitted a reservation date, a reservation time frame (1:00 PM - 3:00 PM), the number of washing machines, and the number of drying machines, we will receive a query from the back-end team with the ideal machines that fit their reservation request. The user will be directed to a payment screen, where they will see a viewable list of assigned machines, and a price based on their reservation criteria. If the user chooses to pay, we will generate a confirmation with a reservation number (for locking/unlocking a machine) that can be viewed under the users reservation history. Please note that the actual payment transaction (entering credit card, etc) will be done using an external payment service that requires a monthly fee by our clients. This section will not take place until next semester. Otherwise, if the query doesn't return valid, then we will display a UI alert indicating that no machines are available for the requested time.

Back-End

For the upcoming reporting period, much of the development work with the backend for this semester has been accomplished. Instead of starting new development that will not be finished before the end of the semester, the

backend team will be focused on supporting the hardware and mobile teams and working on the final presentation.

Summary of Weekly Adviser Meeting

As the date for the Panel Presentations near, the focus of our weekly advisor meeting was on presentation preparation. Our advisor provided us with expectations for the Panel Presentation, including dress attire, length of powerpoint, demo setup, and length of demo.

Dress Attire

It is expected that our team dresses business casual for the presentation.

Length of Powerpoint

It was recommended that we develop the powerpoint to be approximately 25 minutes with 5 minutes for questions, as questions may be asked throughout the presentation as well. To help keep track of time, check marks will be placed throughout the presentation. If we reach a checkmark before its ideal time, then we will want to expand details. If we reach a checkmark after its ideal time, then we will want to minimize detail and reference our documents for the sake of time. In addition, each member of the team will need to present information so we will be having mock presentations with our Advisor to obtain feedback prior to the final presentation.

Demo Setup

If the planned setup will take too long, then a pre-recorded demo should be used. However, live demos are favored. Our team plans on performing a live demo where we will turn on a portable washing machine through the use of a mobile application. To do so, several team members will have to setup the demo while other team members present.

Length of Demo

The length of the demo should be minimal (under 5 minutes) with time for questions and should occur near the end of the presentation. If the demo occurs first, then it is difficult to reference our project plan and design document.

Individual Contributions

Team Member	Contribution	Weekly Hours	Total Hours
John Fleiner	This week, I worked with the iOS Development Lead to finalize UI integration. Login Activity(Screen): Updated the Login form UI. Android standards for TextEdit input is in the form of an underline such as: Email , while iOS standards for TextField inputs is in the form of a box. To mimic the iOS design, the underline was removed, and the background was replaced with a transparent rectangle to match the iOS design. Likewise, the Android button background was replaced with transparency. All font colors and word	10	97

	<p>choices were updated to be identical. The location of views (buttons, textfields, etc) were aligned using the same constraints. Registration Activity (Screen): Same updates as Login Activity. Maps Activity (Screen): Added custom marker icon to Google Maps. Rather than seeing a red pin/marker, the user will now see a washing machine icon. The icons used are the same across platforms. Updated color palette of menu, and slider screens Reservation Menu (slide-in view): Updated UI form design to match that of iOS</p>		
Ben Young	<p>This week I added another UIView, called the paymentView, to the map controller so that is confirming payment for when a user reserves machines. In the paymentView I added a button to confirm the payment for the user but as of right now that button does not actually charge a user. Our group with our clients have decided that to make the project fit into two semesters we will use a third party service to handle the payment system of our application. Also in the paymentView it lists the machines the user is going to reserve.</p>	8	68
Thomas Stackhouse	<p>Since the previous status report, I have been working on implementing the plan for deploying the backend on AWS. The plan has now been implemented, and it is now possible to hit the backend via any browser. This will allow the mobile development team and the hardware team to start integrating their applications with the backend to have a conclusive, all-encompassing demo that shows the basis for the solution that we will be improving upon in the upcoming fall semester. From now until the end of the semester, I will primarily be focused on preparing for the final presentation and demo, as well as making sure the hardware and mobile application development teams have everything they need from the backend to have a successful demo. I shall also look into faster methods for deployment, possibly automating the entire process.</p>	5	62
Hongyi Bian	<p>Since last several weeks we have finished most hardware works in terms of controlling</p>	12	67

	<p>the power source of our appliances. The works for this week were mainly focused on gaining more knowledge of what we have implemented including MQTT protocol implementation, security concerns on both local components and cloud communications.</p> <p>In addition to those, we have also been working on the wash machine component received from our client. We have done some simple tests on the components such as using multimeter pin & measure the board while enabling different buttons on it. The last thing was to do some researches on the modules which can be used in our project to measure the power consumption. Hopefully we could find proper modules to apply to our project in order to get the useful data.</p>		
Yuanbo Zheng	<p>Last week we received our portable washing machine component with a control board. After we plugged this in our department, we can work with it and test if it can be turn on/off through our AWS cloud by sending some signals. Right now what we can achieve is just turning it on/off. Our client asks if we can measure its power consumption, I think we may need to learn a little bit EE technology which will get the power data from a control board. Besides that, we still did some tests and searched for a way trying to get the current status of the washing machine but this will be an extremely complicated work for us since we can't directly get any data from the board. Moreover, I am still working on the system security issues with our AWS cloud and the Raspberry Pi.</p>	10	57
Casey Gehling	<p>While Thomas, our backend lead, has been working on integrating AWS with our spring boot server, Goce, our adviser, requested that we wrap up development this week in order to allow us to prepare for our presentation by focusing on our design document and project plan. Thus, for the most part I have shifted my focus to the paperwork surrounding our presentation. John and I did a lot of work on the project plan in order to receive an additional round of feedback. I added some content further justifying our choice of spring</p>	8	61

	<p>boot over nodeJS and php, as well as other sections which we received feedback on. These included our task approach to the project, personnel effort requirements, as well as an itemized-list of project deliverables. We put an emphasis on the second semester plan, as we somewhat neglected that in our first iteration of the project plan. Work on the design document also needs to be done. Also, at the end of the weekend, Ben (iOS lead) requested a new query be implemented on the server. This was similar to the reservation query implemented in the previous cycle, but required a couple hours of development and testing.</p>		
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