

sdmay19-30: EE 448 Stroboscope

Week 7 Report

October 11 - October 24

Team MembersKatrina Choong — *Chief Hardware Engineer / Timeline Manager*Meghna Chandrasekaran — *Chief Software Engineer / Meeting Facilitator*Seth Noel — *Chief Hardware Engineer*Kyle Zelnio — *Project Manager*Jessica Bader — *Chief Software Engineer / Communication Manager / Scribe*

Summary of Progress this Report

For this reporting period, the hardware team (Katrina, Seth, and Kyle) met with Lee to discuss designing the PCB board and started the first PCB design. They also created and tested a first prototype circuit on a breadboard to test for brightness and flashing. From this original circuit, they were able to start identifying problems which will need to be solved (such as back current) and start brainstorming ways to solve this (like using a diode). They also discussed where to put test points in the board. The software team (Meghna and Jessica, with help from Seth) worked on the first prototype for the software circuit. They implemented the creation of a waveform by initializing and putting the Tiva board in PWM mode. They also did testing to verify they were outputting a wave. Meghna also did some work on the GUI to finish it for prototype 1. Both sides of the team are now ready to demo our first prototype to our client. Our group as a whole also did rework on our Project Plan and our prototype timeline for the rest of the semester.

Pending Issues

We are missing some components for our PCB design in UltiBoard. Calculations and testing for the current prototype are not completed for the hardware team. Also need to determine what testing points will be useful in the PCB and what the client wants. In addition, the hardware team struggled with back feed into the Arduino which could damage the Tiva board in the future if not fixed. We are working on adding a Zener diode to stop the back feed at high voltages. The software team was able to output a waveform, but it does not look how we expected it to. We thought we were creating a waveform with equal time high and low, but the waveform created had a much longer low period than high. This will not be an issue until we start calibrating our stroboscope for accuracy. While this will not be until next semester, we will need to resolve this issue.

Plans for Upcoming Reporting Period

Katrina is planning on drawing a detailed circuit so we can find our max values for testing purposes. She is also planning to read more about PCB design. Seth is planning on designing components for the UltiBoard. Kyle is planning to mount an external power supply to the circuit to allow freedom from the bench power supplies. The hardware team (Katrina, Seth, and Kyle) is going to determine test points for the PCB circuit and make a to-do list to organize their upcoming work. They also plan to get their PCB printed soon so they can start working on the case. The software team (Meghna and Jessica) are going to do more testing on the waveform. They are going to test that their waveform works as expected with the hardware to flash the LEDs. They are also going to work more on the GUI to finish up the prototype one functions of the GUI. The group as a whole is going to finish our edits for version two of the project plan.

Individual Contributions

Team Member	Contribution	Weekly Hours	Total Hours
Katrina Choong	I watched a few videos to learn how to use MultiSim and Ultiboard. I discussed with the hardware team where we could potentially have test points on the circuit i.e having a "diode" so no current flows back into the Tiva, a component that tests if current will short the diodes. I also helped test with prototype 1 for flashing, brightness - however we were eye balling these two and comparing from the actual stroboscope and not through calculated values (that is for the future), and calculated max frequency with 30ms for one period knowing max, 2000RPM. I also worked on my assigned parts for the project plan to fix.	16	48.5
Meghna Chandrasekaran	Worked with jessie to make some changes to on the goals for the software team prototype 1. Worked on project plan version two based on the feedback provided. Worked on getting a GUI set up. The current GUI looks good and can be used for the first prototype, however, it doesn't fully function yet. Worked with jessie to implement the code necessary for creating the PWM waveform on the Tiva board. We did some tests using an oscilloscope to make sure the waveform was printing out properly. Also helped with preparing for the lightning talks next week.	18	51
Seth Noel	Worked on evaluating prototype timeline for hardware. Took a hands-on approach to learning MultiSim and UltiBoard. Met with Lee Harker to discuss PCB design strategies. Discussed test points with the hardware team. Tested some edges of the current prototype with the hardware team. Met with the software team to help produce a waveform for their first prototype.	17	52
Kyle Zelnio	Created a mock-up design in Multisim and started the connections on the PCB layout in Ultiboard. Minimalized power distribution for the test arduino so future testing is easier before we get the Tiva Board setup. Worked on stress testing our new LEDs at different frequencies and voltages.	12	46

Jessica Bader	Helped to re-evaluate our prototypes for this semester; in looking at where we are now and how much time we have left, decided to redefine our goals for the software team for prototype 1. Worked on redoing my parts of the Project Plan from both TA and client feedback. Worked on implementing the waveform in the code. Helped to write the code which put the waveform in PWM mode and wrote an init function to initialize the Tiva board. I also redid some of the original project reports we submitted. In addition, I helped our group prepare our presentation for the upcoming Lightening Talk	19	53
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Gitlab Activity Summary

Nothing to report.
