

EE/CprE/SE 492 BIWEEKLY REPORT 3

9/25 - 10/8

Group number: 10

Project title: Holiday Arboreal Light Project

Client &/Advisor: Tom Daniels x 2

Team Members/Role:

Aaron - Raspberry Pi and Inter-process Communications

Rob - Android Developer

Rajiv - Web App Dev/Android Dev

Justin - Web App Dev/Android Dev

Michael - Image processing/data storage

**Weekly Summary:**

**Past Week Accomplishments:**

The tree works to the extent that we need for all testing purposes. Each LED can be individually addressed and interacted with if needed (might be needed). The website has several pages including home, help, about, and test pages. The camera application has an overlay to display a triangle that the tree can be placed inside of. The image processing software can find locations of LED's as they are progressively lit up and save the location to a file.

**Pending Issues (if applicable):**

We need to do some research into what kind of case or mount we want for the circuit, power supply, and raspberry pi.

**Individual Contributions (optional but must include hours worked):**

Name	Individual Contributions	Hours this week	Cumulative hours
Aaron	Created python scripts to load preset patterns onto the lights. Created scripts to generate random patterns into a text file, read the patterns from the file, then load that pattern onto the lights.	6	19
Rob	Added an overlay to the Android application for the user's ease of use during calibration, as well as making some changes to the GUI	6	19.5
Rajiv	Close to finishing sending image to web server, should be complete in the next couple days	6	18

Justin	Updated website style layout and added more pages to the website including a page that displays image sent from the app for testing purposes.	6	12
Michael	Talked with Dr. Daniels at the meeting, I brought up some ideas regarding my findings. After that I took what we discussed but took the “keep it simple stupid” approach. I change the code so it does a basic subtraction and searches for the cluster of different points. This then aims to circle those points and saves the center to a file. Also got the circuit all ready to go!	6	21

**Comments and Extended Discussion (optional):**

Something we will have to figure out is the different levels of camera quality and may have to set a minimum in order to adjust settings. Obviously right now i'm working with a massive image (4k) and this allows me to get very nice detail but also makes tweaking the settings very challenging. I also don't think we should be keeping the camera settings constant because it may affect the image quality. This is something i'll have to run more tests on different video.

Something we may have to discuss more in depth is how we want to interact with the lights and recording. Obviously if we make the lights turn on and off at a set rate we should know the timing. So something I had thought of doing was lighting a bulb somewhere very visible that we set at the beginning during calibration. This then can be the “timing bulb” and it turns on when another LED is also on. Therefore we always know its “coordinates” and when its on we, know another LED should also be on. This could mitigate the issue of not being able to see an LED if it were to be on the rear of the tree.

**Plans for Upcoming Week:**

Name	
Aaron	Need to communicate with the Web app group and figure out how they are doing the image processing and how they are saving the information to the RPi. Also want to look at how the scripts will be ran from the web app.
Rob	Continue to streamline the UI and add more options to the user, as well as converting the image into a better format to send
Rajiv	Work on code to send a video file between the mobile application and the

	webservice. Polish code/UI functionality for sending picture to web server.
Justin	Continue to work on website, work with Michael to put a step by step guide for calibration to be put on the website. In addition work with Rajiv to successfully confirm that we can communicate between the app and the website.
Michael	I would like to get the python code that I have been working on to the git. Then also make a guide on what would need to be downloaded in order to the run code. This should allow for more testing with videos as tweaking the settings will be one of the more challenging tasks.

### Summary of Weekly Advisor Meeting:

Worked to discuss some of the image processing code and took some sample video that could be tested. Promised a different version of the code with a simple way of interacting with the images. Also some key points we discussed were the reflections of the things in the background which will have to be done at a later date. (AKA one late night I need to go into the lab and turn the hallway light off then take a video of the tree with the window behind it)