

WEEKLY REPORT 07**April 5 - April 12****Group number:** 10**Project title:** Learning Holiday Light Project**Client &/Advisor:** Dr. Thomas Daniels**Team Members/Role:**

Jacob Grace

Joseph Nunez

Thien Nguyen

Steven Williams

Valery Smith/Signal Processing Specialist

Chad Griggs

Weekly Summary

Software team continued to research calibration ideas as well as researching a way to model the tree in 3D and a way to convert that to a 2D model. A phone was used to tether to the Pi to simulate a user's home wifi as well as to give us the ability to update the firmware of the Pi and install required packages such as OpenCV. The LCD has been fixed and can now display the IP address without using an HDMI monitor. This will be helpful in testing and incorporated into the final design to aid the user's operation of the system. We've expanded the controls of the individual LEDs using the Neopixel Python library and are planning on soldering more lights to the strip..

Pending Issues

The software team is currently working on the image recognition for the auto-calibration of the Holiday Light tree. We need to figure out a way to reduce the background 'noise' of each calibration image taken. Our two current ways of thinking to get around this is to apply some sort of color filter to the tree based on our selected calibration color, or a gaussian blur to single out each individual light. A few of the LEDs on the strip have burned out and are no longer working. We'll need to cut these LEDs out and re-solder the two strands back together.

The case needs to be reinforced, and the front end to be done with a malleable and friendly user interface

Plans for Upcoming Week

For the upcoming week, we aim to finish the final Project Plan along with an accompanying document to highlight the various changes we've made. The software team also

plans to hammer out the numerous issues we're having with the auto-calibration that stem from the idea of having the tree rotate as the auto-calibration takes place. We will also need to devise a way of translating the 3D model of the tree that the camera captures into a 2D model that the software can interact with and vice versa. We also expect to solder another full length strand onto the the current strand of LEDs.

Individual Contributions

Team Member	Contribution	Weekly Hours	Total Hours
Jacob Grace	Did a lot of research on PWM and how our system should function. I want to see how small of a time delay we can have between lights on/off. If we can change them fast enough we could do cool animations on the tree. I am running out of ideas on how to calibrate the tree properly.	4	32
Joseph Nunez	Made some minor changes to the Project Report and worked on researching ways to reduce the 'noise' for the auto-calibration system. I also looked into ways of modeling or representing the tree. I.e. translating the tree from a 3D representation to a 2D one for the purpose of displaying patterns.	5	25
Thien Nguyen	Theorized using GIMP to batch manipulate all images to distinguish a single light or two in contrast to the background -- as it is Python based. Can be used before calibration, but after taking images. Not much from that though.	1.5	23.5
Steven Williams	Created a preliminary front end page to pass json data from a php webpage to python. Also isolated the 120V rails	5	33
Valery Smith	Wrote python script to sequentially turn on pairs of lights red and purple to be used when getting calibration images. Reviewed project plan.	2	34.25
Chad Griggs	Worked on project plan. Looked into methods to create/update diagrams and schematics for final version of project plan and design document	1.5	27