

## sddec18-10: Holiday Reverse Programmable Light Strings

Week 3 Report

February 19 - February 23

### Team Members

Mir Aamid Ahabab — *Electrical Engineer/Microcontroller*

Rajiv Bhoopala — *Web App*

Justin Falat — *Microcontroller Team*

Aaron Hudson — *Android Dev*

Michael Scholl — *Android Dev*

Robert Tynismaa — *Android/Web Dev*

### Summary of Progress this Report

Received 300 lights (3 strands) and a power supply. We built the initial prototype using an Arduino Esplora and the Fast LED library to ensure that the power supply is suitable to power the lights without much issue, and tested several light patterns on the tree to make sure that the lights are visible to a smartphone camera. We also developed a conceptual algorithm to detect the lights within a set of frames from a video using the RGB values of each pixel within the mobile app. We also broke the projector screen in the senior design lab (thanks Michael).

### Pending Issues

We will need to move away from the Arduino and Fast LED libraries when we get to work on the Raspberry Pi and begin to implement the Linux Web Server for the link between the lights and the mobile app. We also need to acquire a few fuses for the power supply (15 Amp, 12 Volt) so we don't blow it.

### Plans for Upcoming Reporting Period

For this upcoming period, we are going to be working on implementing the Raspberry Pi into the controller system and starting work on the light detection software.

### Individual Contributions

| Team Member      | Contribution  | Weekly Hours | Total Hours |
|------------------|---|--------------|-------------|
| Mir Aamid Ahabab | Worked on the circuit aspect of the prototype, ensuring that the power supply was sufficient.                     | 3            | 9           |
| Rajiv Bhoopala   | More research on the Web App, helped build and test the prototype.  | 4            | 11.5        |
| Justin Falat     | Worked on setting up the Arduino prototype as well as figuring out how to make the switch from Arduino to Rasp Pi | 3            | 10          |

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|-----------------|---|---|----|
| Aaron Hudson    | Assisted in the development of the algorithm to detect lights, assisted with the building and testing of the prototype. | 3 | 10 |
| Michael Scholl  | Broke the projector screen in the design lab. Helped develop the algorithm to detect individual lights on the tree.     | 4 | 12 |
| Robert Tynismaa | Assisted in the building and testing of the prototype, worked on the light detection algorithm.                         | 4 | 13 |
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