

## **Conceptual**

A high-tech “mood board” made up of LED strips that predicts a viewer’s emotions based off of facial landmarks, and responds with appropriate colors/text. The LED strips make up a solid matrix (the “mood board” itself) and react with shifting colors, poetry and prose that mimic or “agree” with the predicted mood. The colors depicted correspond to mood but also shift with the minute movements of facial landmarks, making it constantly dynamic.

The project is inspired by concepts discussed in my theater lighting class - we’ve talked extensively about the usage of light and its function, and how color is a quality that, when skillfully manipulated, can also affect an audience member’s mood. This project will do the reverse - reacting *to* emotion with light and color. I’d also like to include a different mode where a user can choose a mood and get a resulting color and text scheme, more typical of the usage of color and light in theater.

## **Technical**

A high-tech “mood board” - using OpenCV, the Arduino, and several LED strips (for a total of 225, probably, LEDs).

The mood board will consist of several LED strips (roughly totaling 225) inserted into a wooden or laser cut acrylic board (cost dependent). The facial recognition will be done using OpenCV, an open-source computer vision library that’s been shown to work with Arduino boards. Based off of the position and movement of facial landmarks (eyes, mouth, eyebrows, nose, etc), I’ll determine certain thresholds that activate emotions and based on the predicted emotion output colors psychologically associated with those emotions. There seem to be several ways of doing this - since I have some experience in machine learning, I may try and train a model for this. Analog values of the positions will be used to create varying levels of brightness, saturation, and tone.

The second mode, choosing an emotion and reacting with proper output, is much easier and will probably be the first step. The model and first mode is the ultimate goal.

## **Materials/Parts list**

~9x9inch board (wooden or acrylic)

225-240 LEDs

There’s a 3.2 feet 60LED strip - I may look for other options but this is promising (4)

Arduino

AC-DC adaptor? (How do I figure out the voltage capacity for our breadboard?)

Webcam? (If built-in laptop webcam doesn’t work)