

Color Stage Automatic Lighting using Arduino

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Abstract

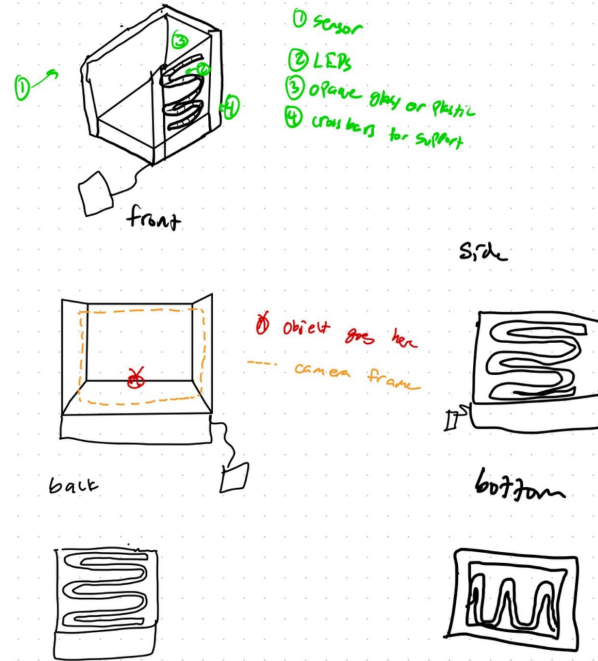
We propose a color stage that will change color depending on the color of an object placed inside

Problem Addressed:

Many times when taking a picture of an object people have difficulty with staging it so it appears vibrant as opposed to the background. Our project will attempt to fix this issue by automatically by detecting the color of an object and making its background another color.

What? And How?

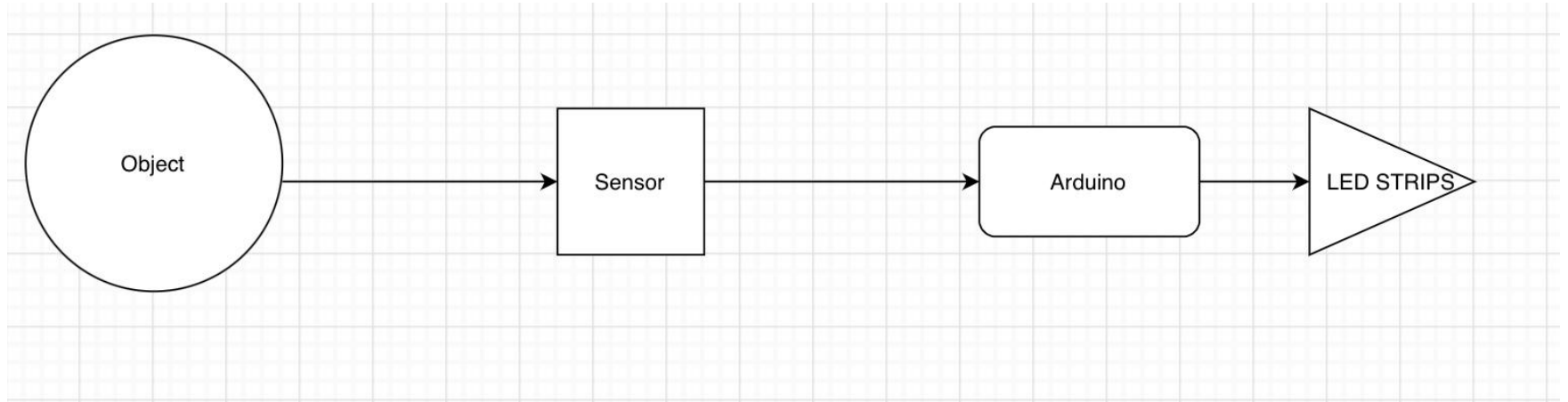
The way this will be approached will be by making a stage to put items, and then backlighting the stage with the complementary color of the item. The sensor will be used by hand to allow for optimal color selection.



Required Parts

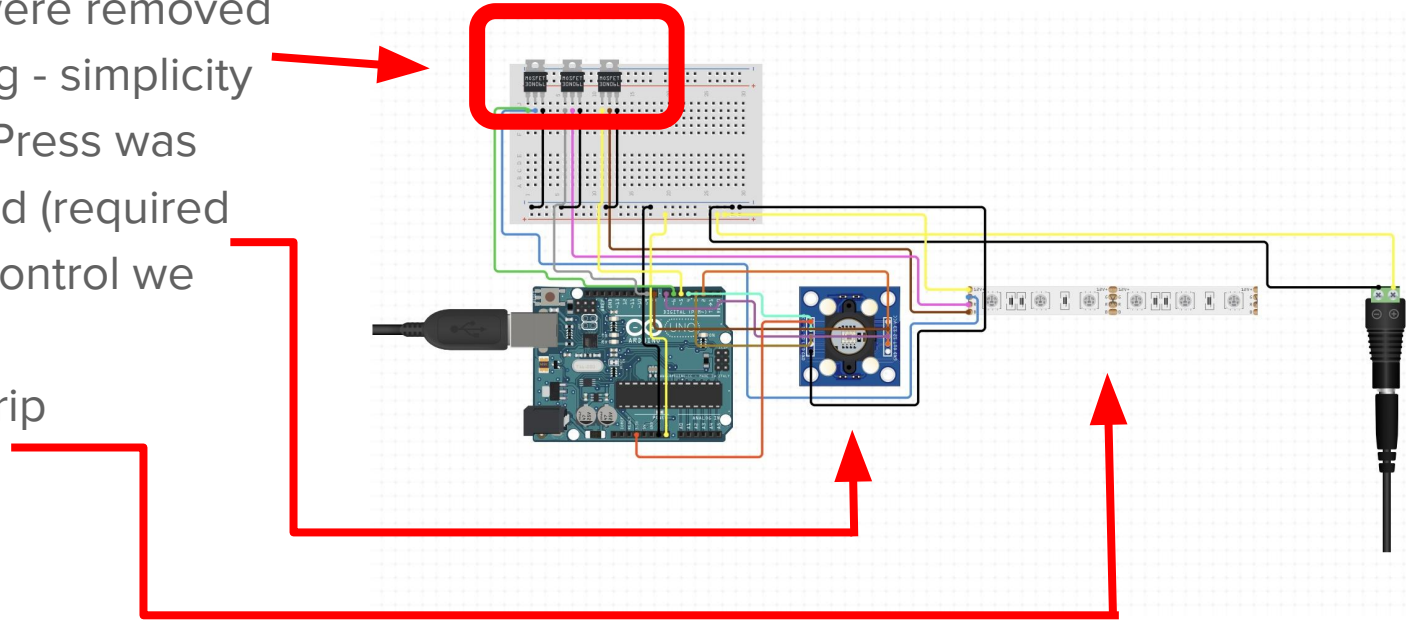
- LCS 320 Color Sensor
- Stage components
 - Cardboard frame (Supplied by Situ)
 - LED Strip
 - Opaque Plastic(4x)
- Arduino

Flow Chart



Arduino to LED light strip Schematic

- MOSFETS were removed for our wiring - simplicity
- The Button Press was also removed (required for remote control we didn't use)
- LED Light strip



Process

Stage 1 - Collect all components and successfully produce color recognition from color sensor

Stage 2 - Produce model color stage and model electrical set-up

Stage 3 - Produce final color stage with all functional components

Updates

- > change to the TCS230 TCS3200 RGB Light Color Recognition Sensor
- > light sensor strip actually use inverse RGB values
- > Building the stage

```
->void RGB(int red, int green, int blue){
```

```
    int R=255-red;
```

```
    int G=255-green;
```

```
    int B=255-blue;
```

```
    analogWrite(3,R);
```

```
    analogWrite(5,G);
```

```
    analogWrite(6,B);} 
```

```
void inverseRGB(int red, int green, int blue){
```

```
    analogWrite(3,red);
```

```
    analogWrite(5,green);
```

```
    analogWrite(6,blue);} 
```

```
int r=255;
```

```
int g=0;
```

```
int b=0;
```

```
void setUp() {}
```

```
void loop(){
```

```
    RGB(r,g,b);} 
```

Some Basic LED code

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Helpful Sources:

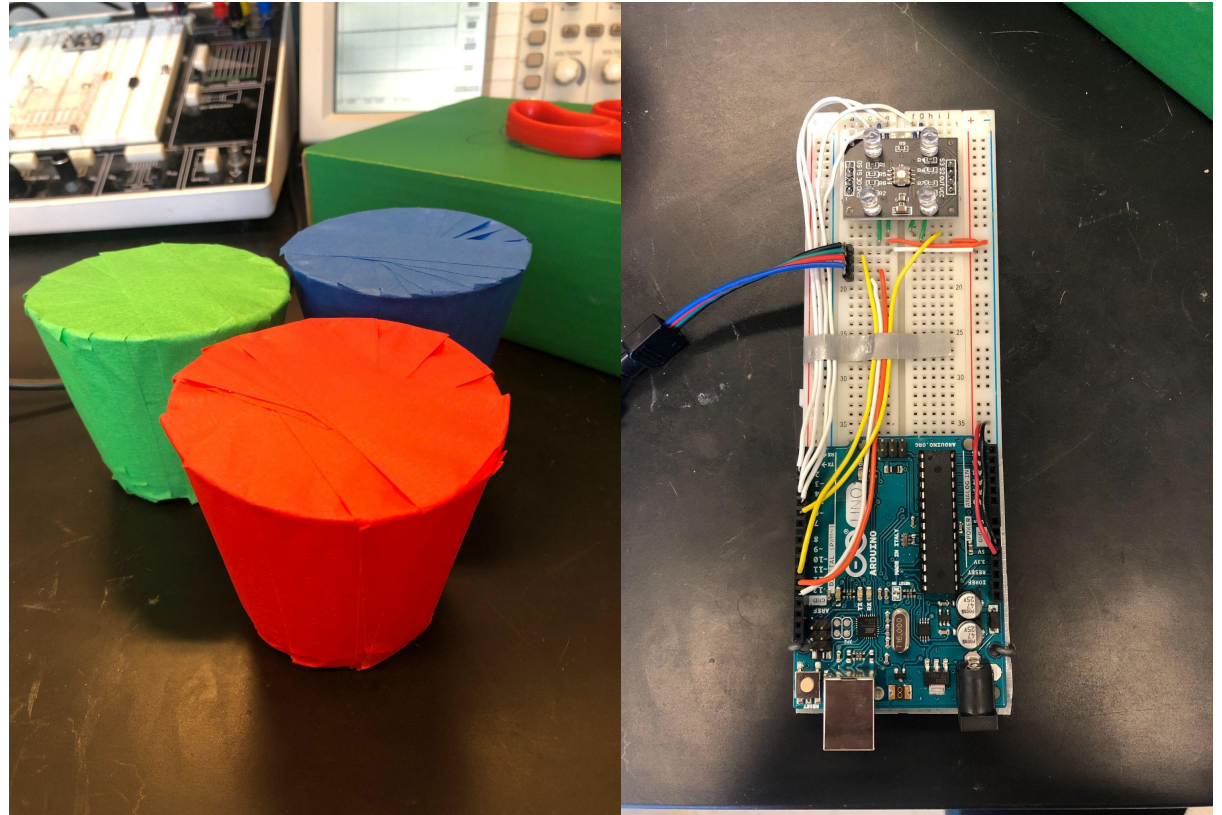
<https://learn.adafruit.com/rgb-led-strips/arduino-code>

<https://www.makeuseof.com/tag/connect-led-light-strip-s-arduino/>

<https://randomnerdtutorials.com/guide-for-ws2812b-addressable-rgb-led-strip-with-arduino/>

Testing and Modifications

- Creating objects to test the system on
- Re-wiring the system on a breadboard so that it can be integrated into our system



Results

