INNER LIGHT

PROTOTYPE PRESENTATION

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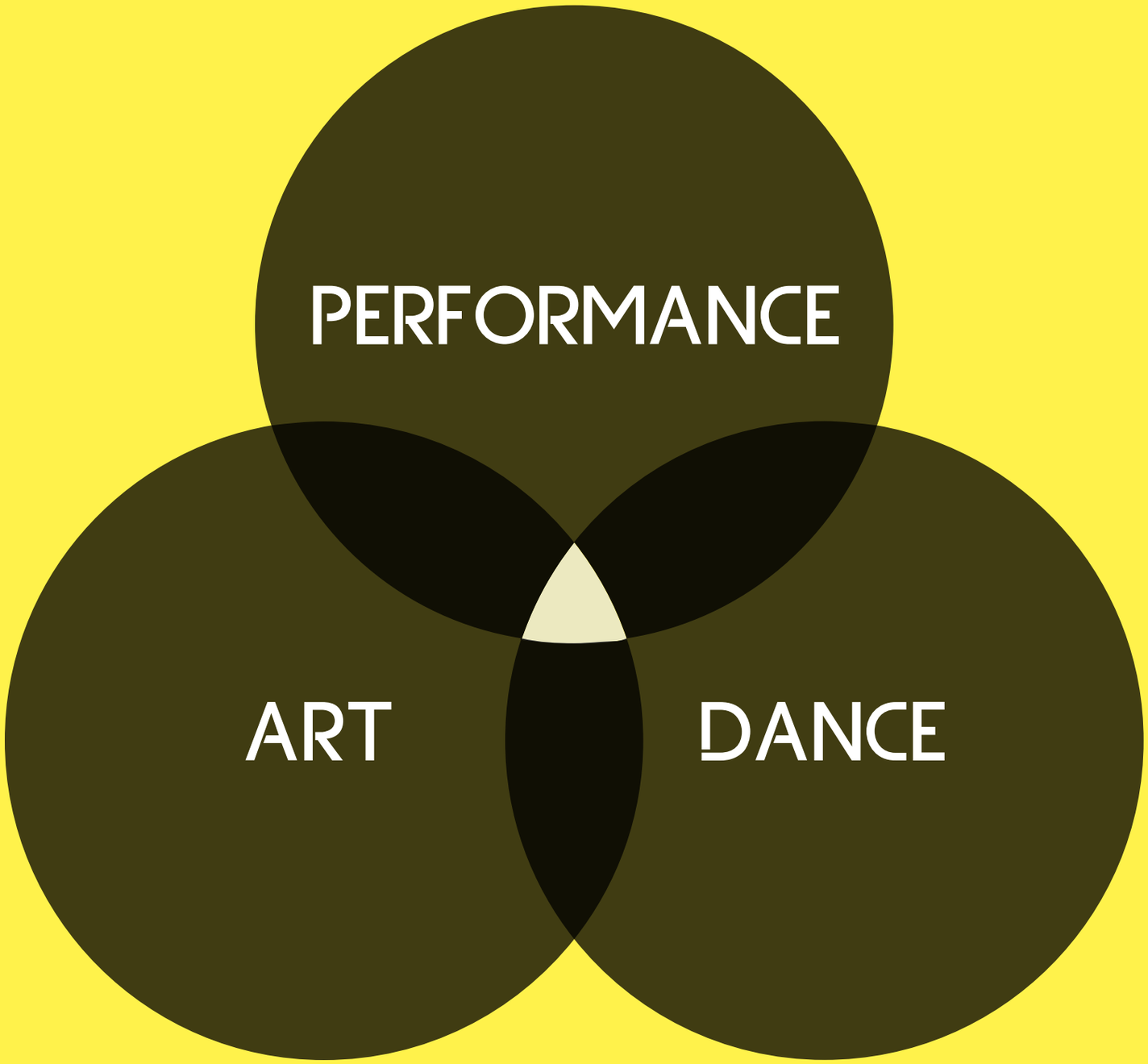
PROJECT DESCRIPTION

Inner Light is a modern dance performance for two performers that chronicles the emotional journey of two people missing their other halves as they physically and socially interact with each other, explore their differences through contact and movement, and then find harmony with one another.



JOURNEY MAP

DISCOVERY

IDEATION

PROTOTYPE

FINAL

DISCOVERY

Our group, during the discovery phase, discovered that we were strong conceptually and that we were interested in the poetic and creative aspects of body interface. Based on this, we chose the art/performance/dance stream because we felt it afforded us a great amount of creative freedom to explore our areas of interest in art, music, and dance.

IDEATION

Within our ideation phase, we began to ideate key concepts for our project and sought to marry those with some of the specific areas of art/performance/dance to create a definitive idea. After ideating for a while, we decided on the key themes of emotion and reality, and we based our project ideas on those themes.

A musical instrument that reacts emotionally to human interaction

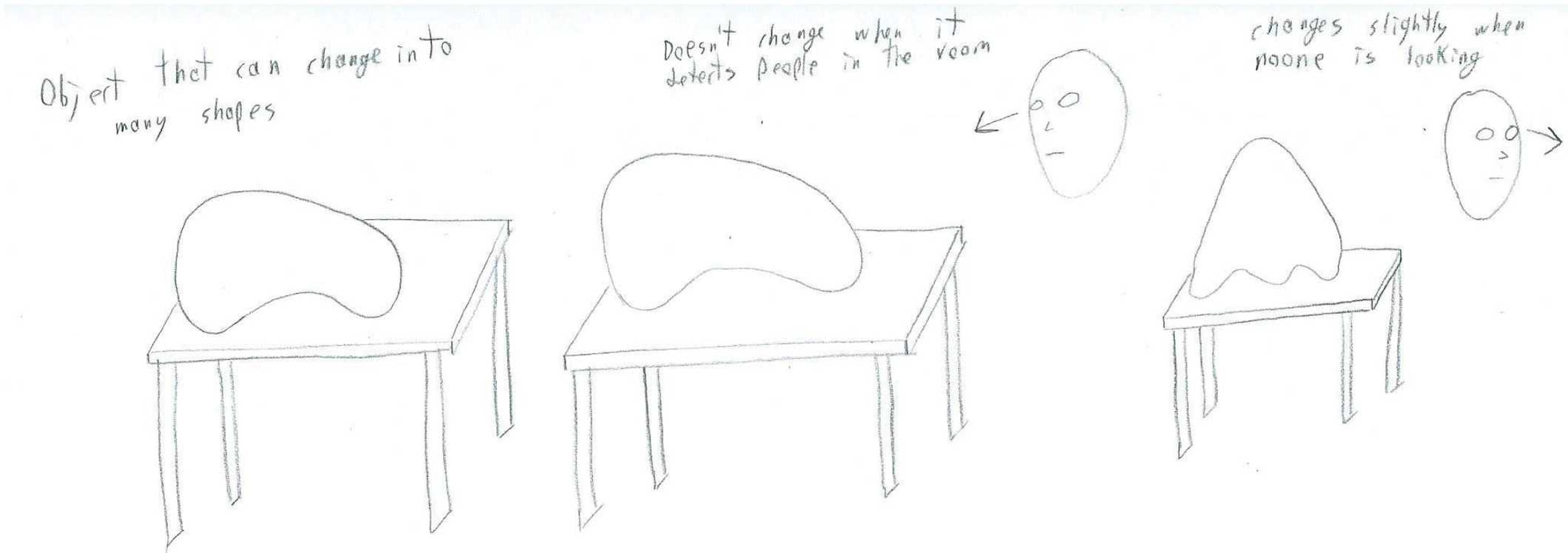
Wearable instrument that makes noise as you cover up certain lights

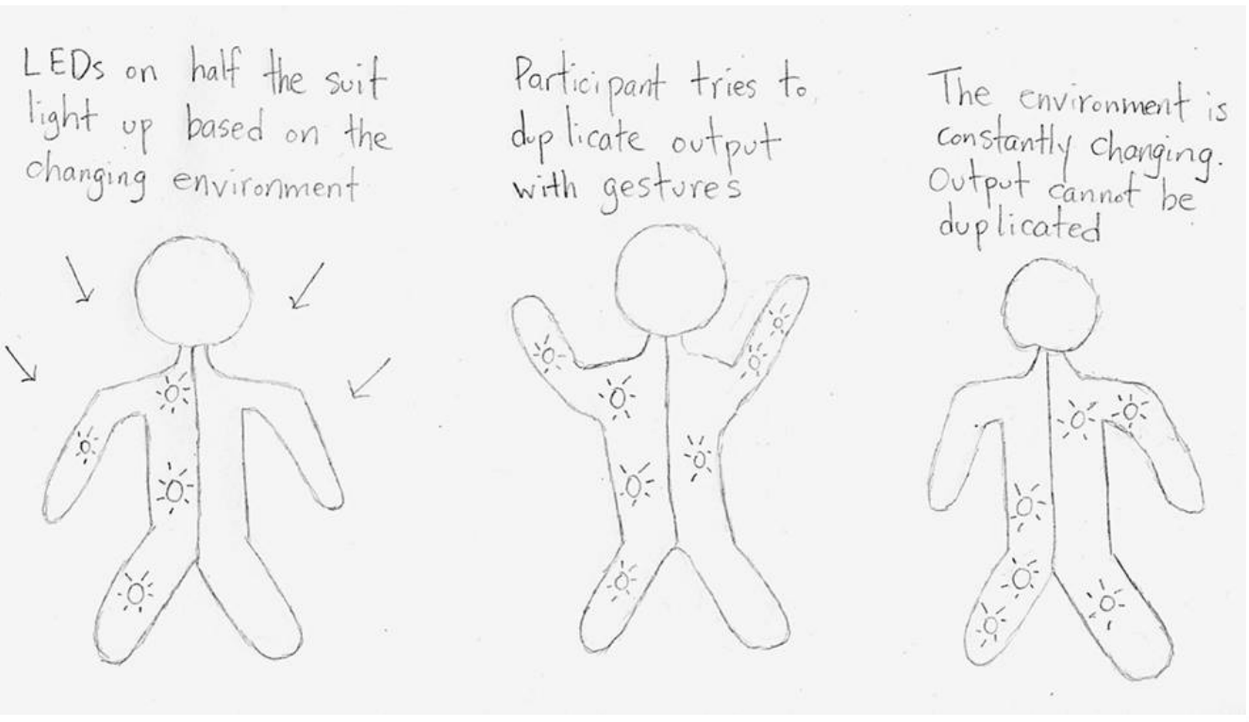
Big instrumental display that uses Kinect to react to physical movement and make noise

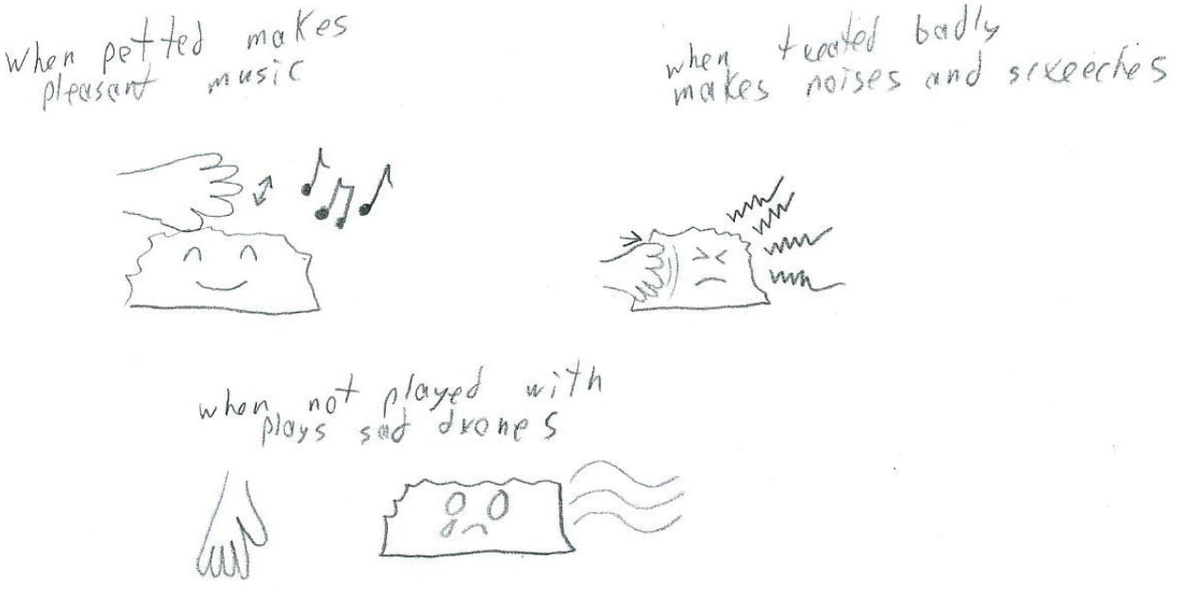
Interactive creature that seems to exist only when we are not looking at it

Biofeedback that detects emotional changes and generates reactive music

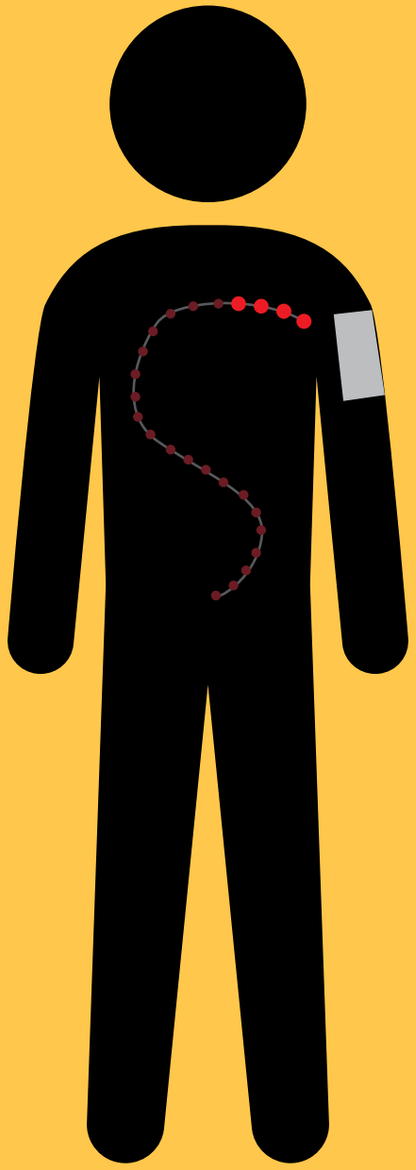
SKETCHES


Object that can change into many shapes
Doesn't change when it detects people in the room
changes slightly when noone is looking

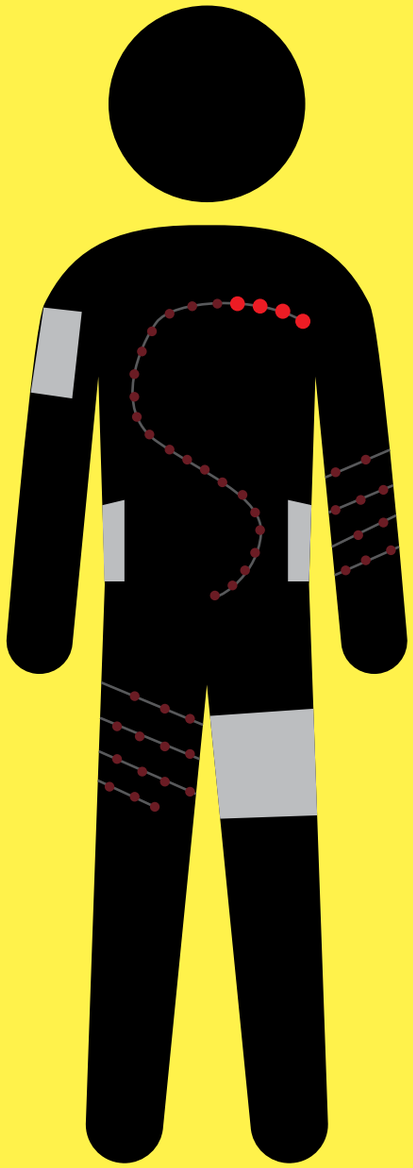

LEDs on half the suit light up based on the changing environment
Participant tries to duplicate output with gestures
The environment is constantly changing. Output cannot be duplicated


when petted makes pleasant music
when treated badly makes noises and screeches
when not played with plays sad drones

PROTOTYPE + FINAL

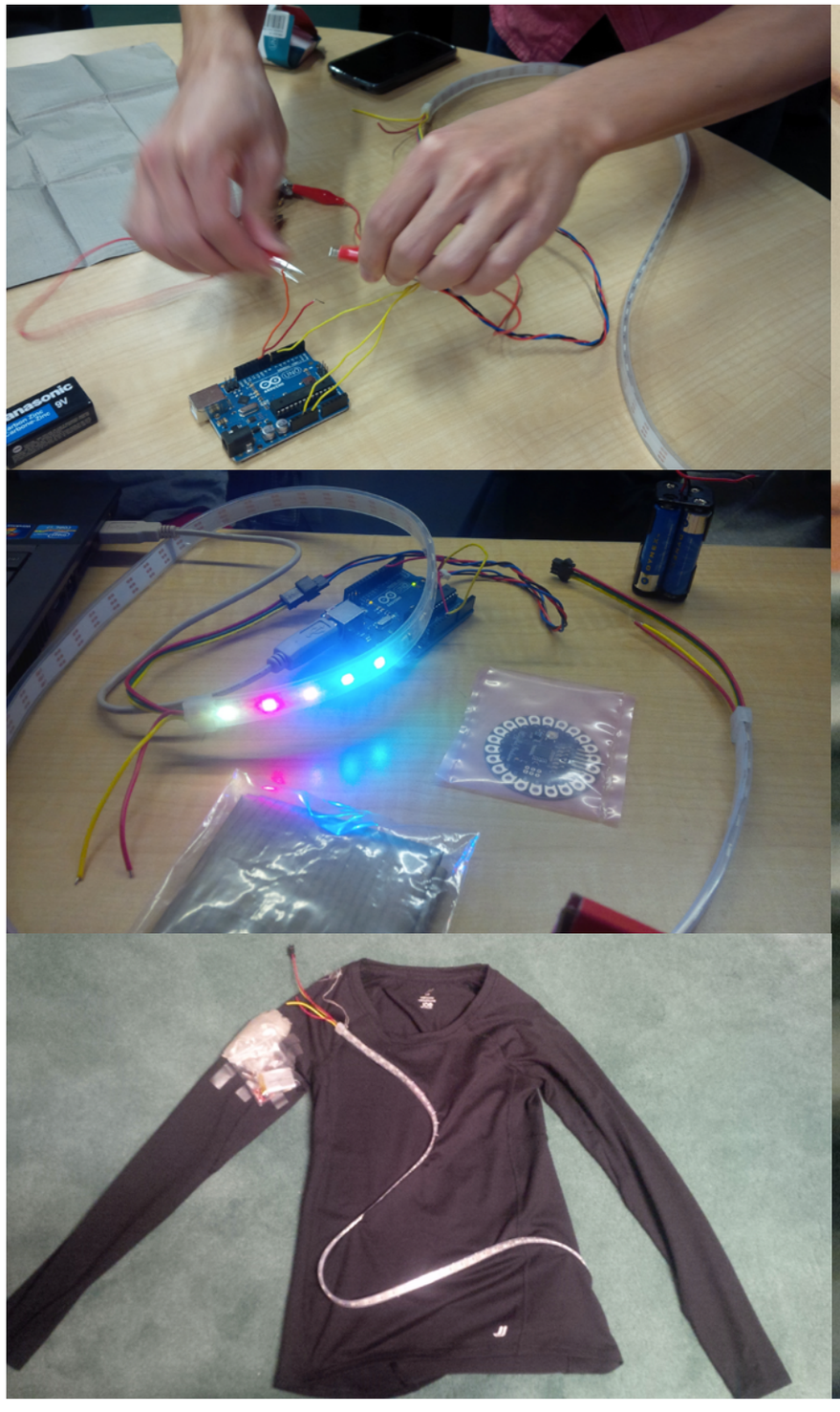


PROTOTYPE



FINAL

PROTOTYPE PROCESS



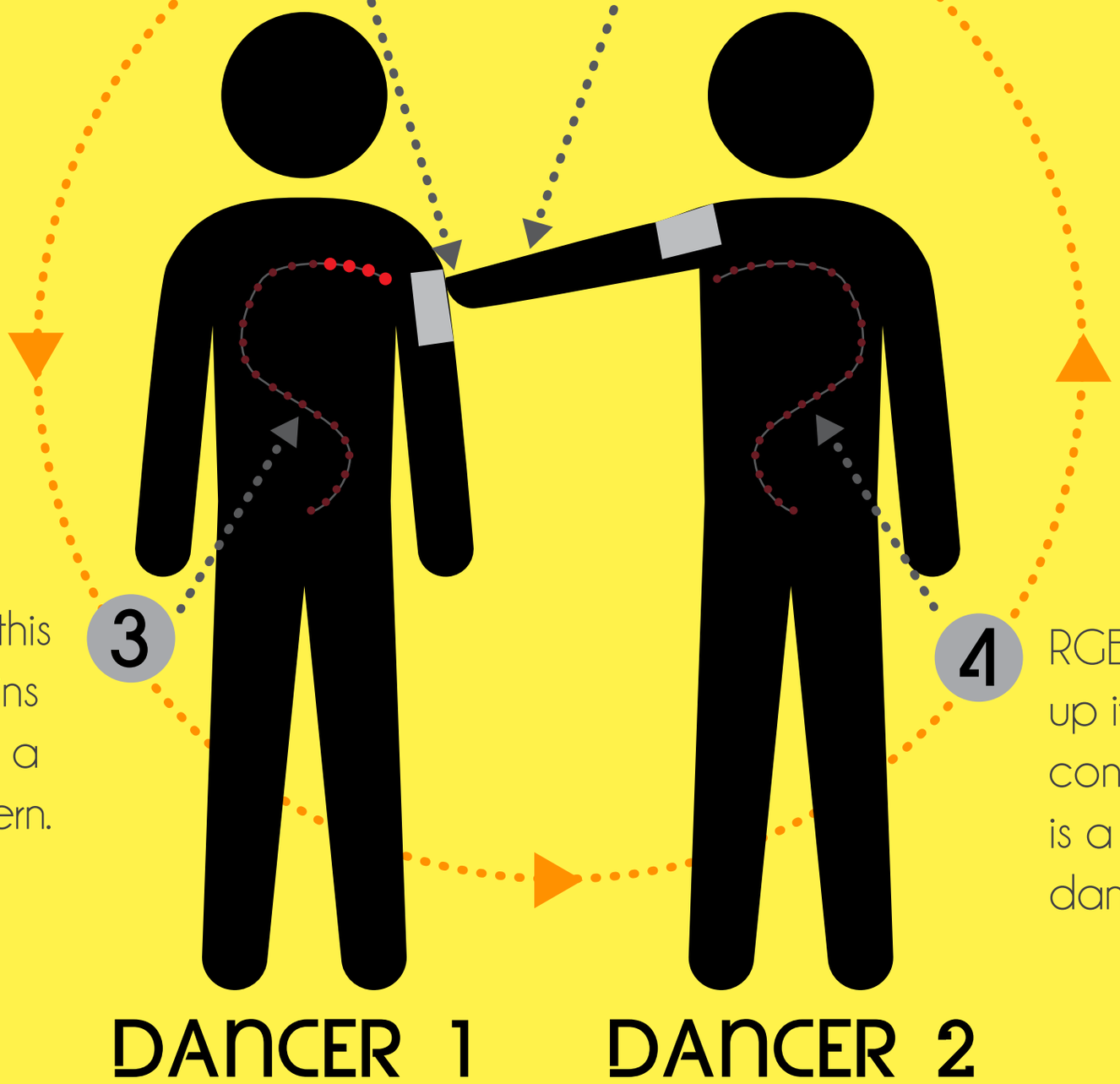
INTERACTION

1. Dancer 2 makes physical contact with Dancer 1.

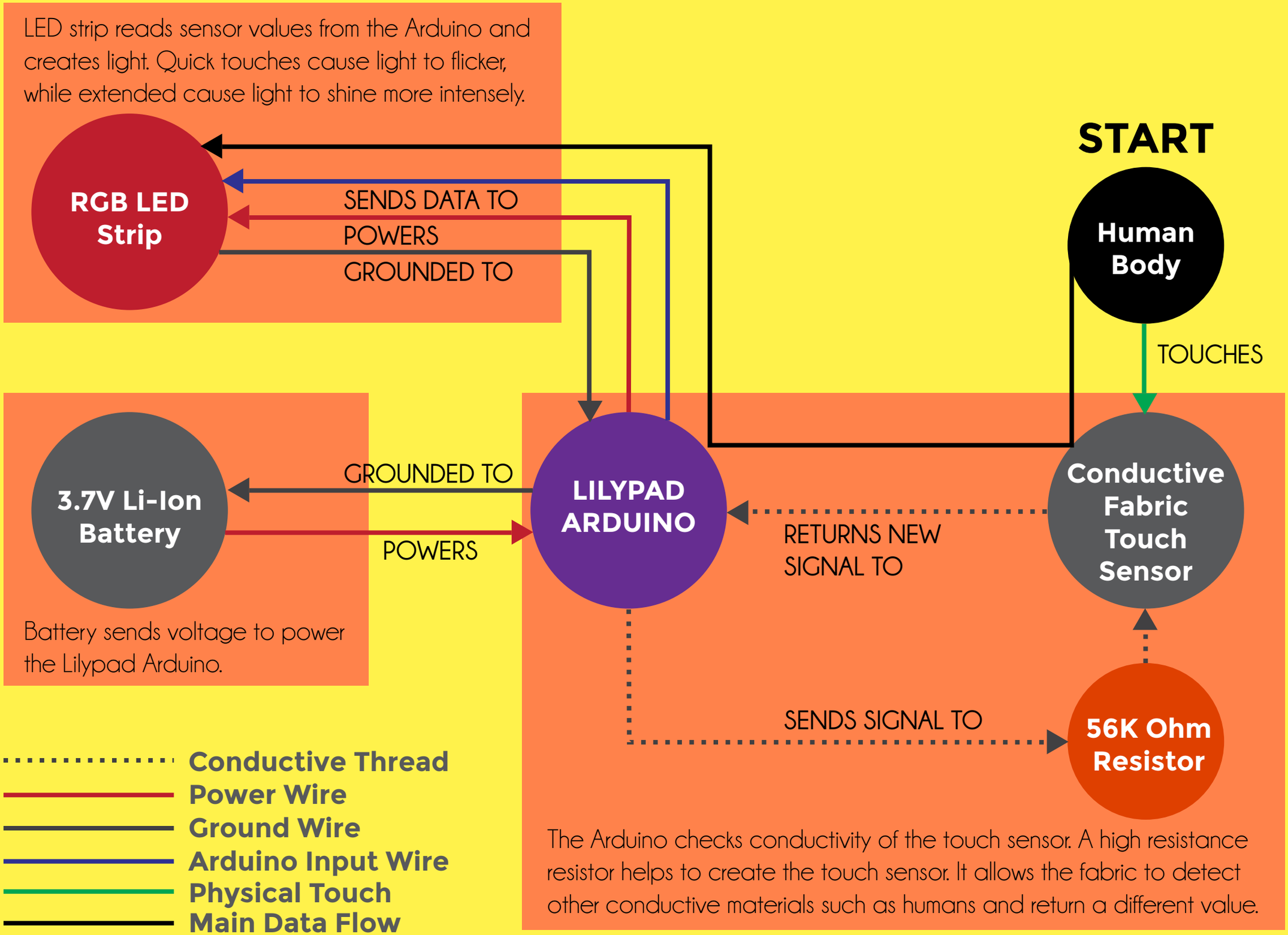
2. The touch sensor on Dancer 1's shoulder detects this touch and outputs a numerical value.

3. The RGB strip reads this value and begins to light up in a predetermined pattern.

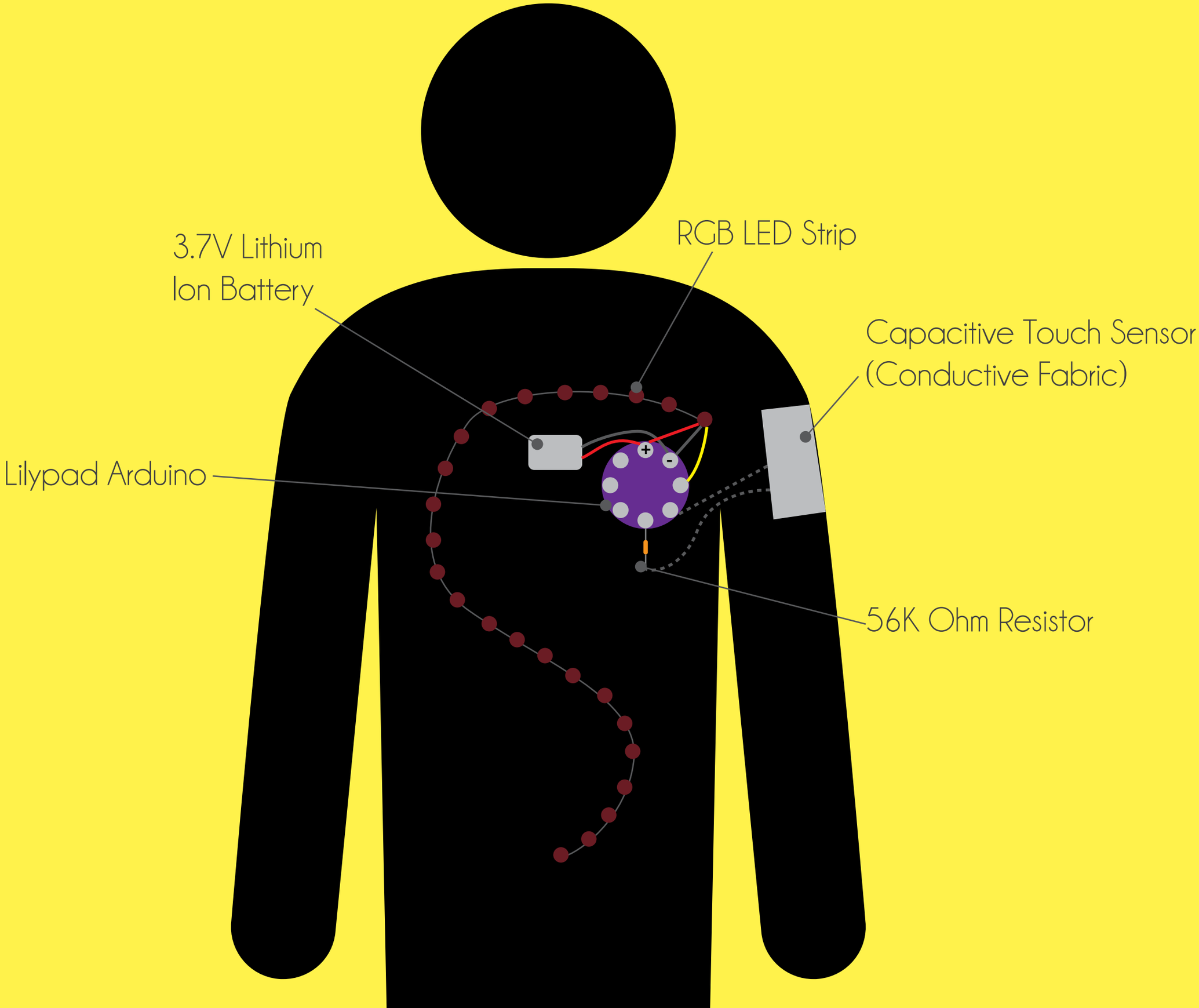
4. RGB strip ceases to light up if it is not physically contacted - the light is a physical sign that the dancer is being touched.



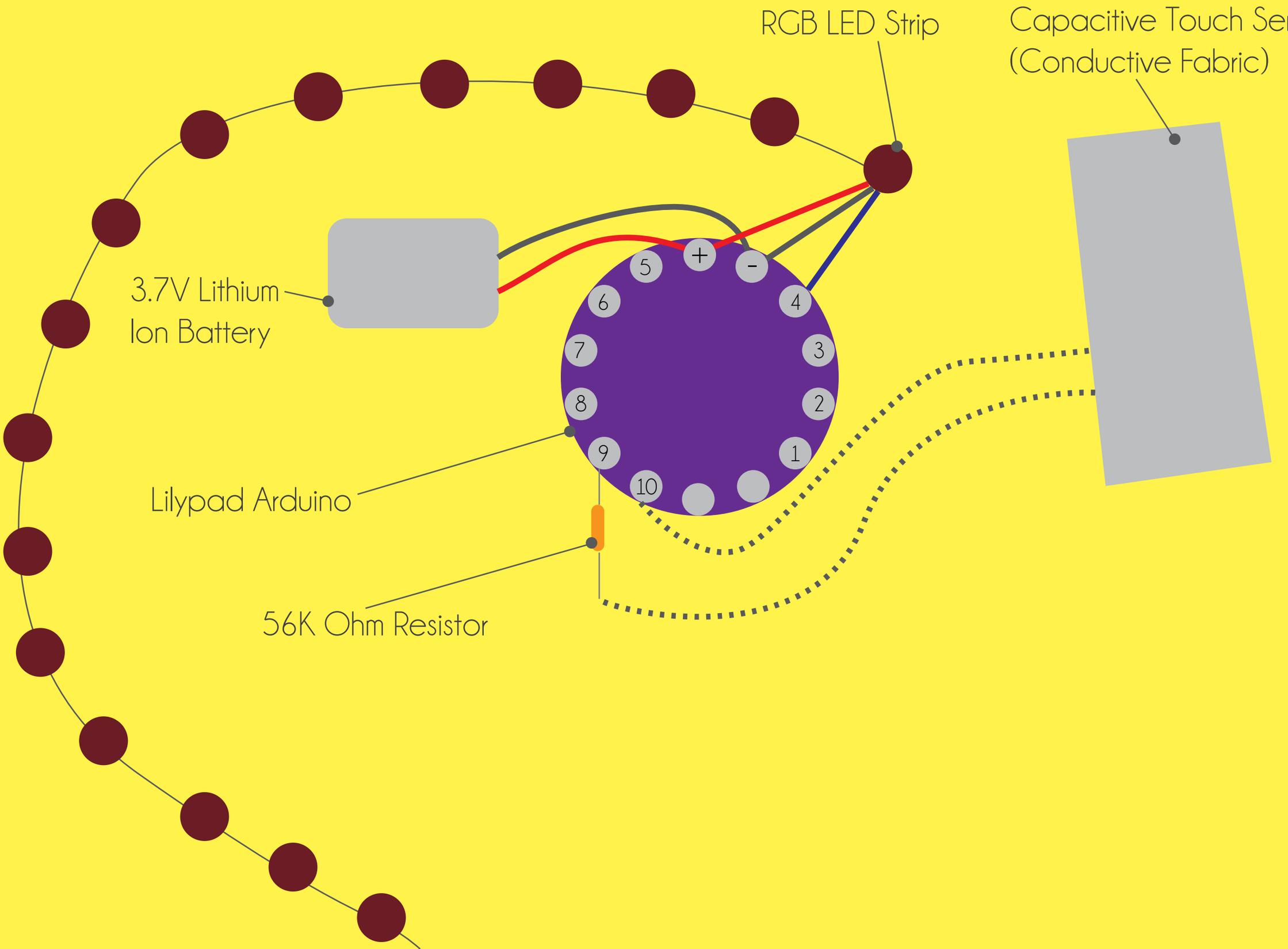
TECHNICAL DIAGRAM



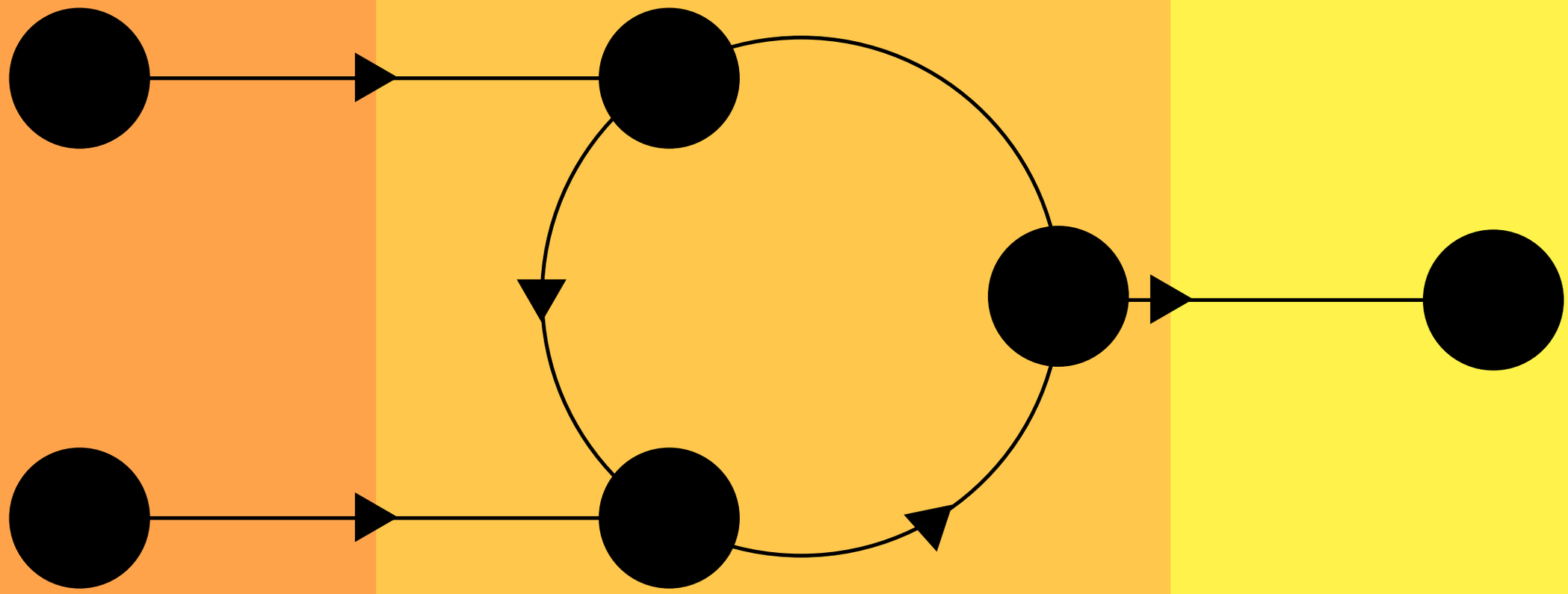
TECHNOLOGY


3.7V Lithium
Ion Battery
RGB LED Strip
Capacitive Touch Sensor
(Conductive Fabric)
Lilypad Arduino
56K Ohm Resistor

TECHNOLOGY


RGB LED Strip
Capacitive Touch Sensor
(Conductive Fabric)
3.7V Lithium
Ion Battery
+
-
5
6
4
7
3
8
2
9
1
10
Lilypad Arduino
56K Ohm Resistor

EXPERIENCE DIAGRAM



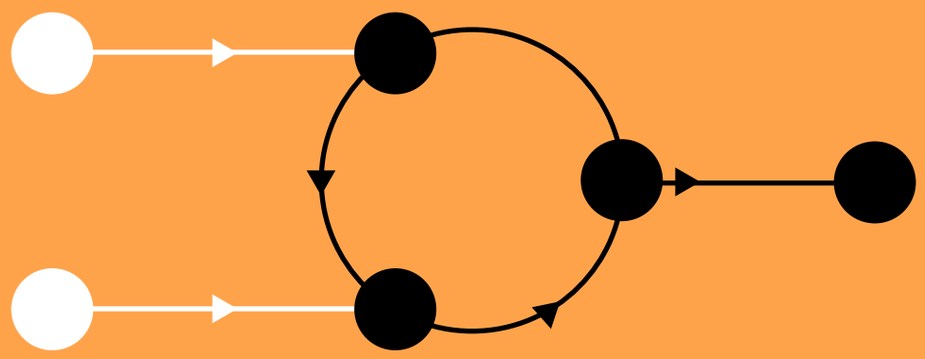
LONELINESS

EXPLORATION

HARMONY

LONELINESS

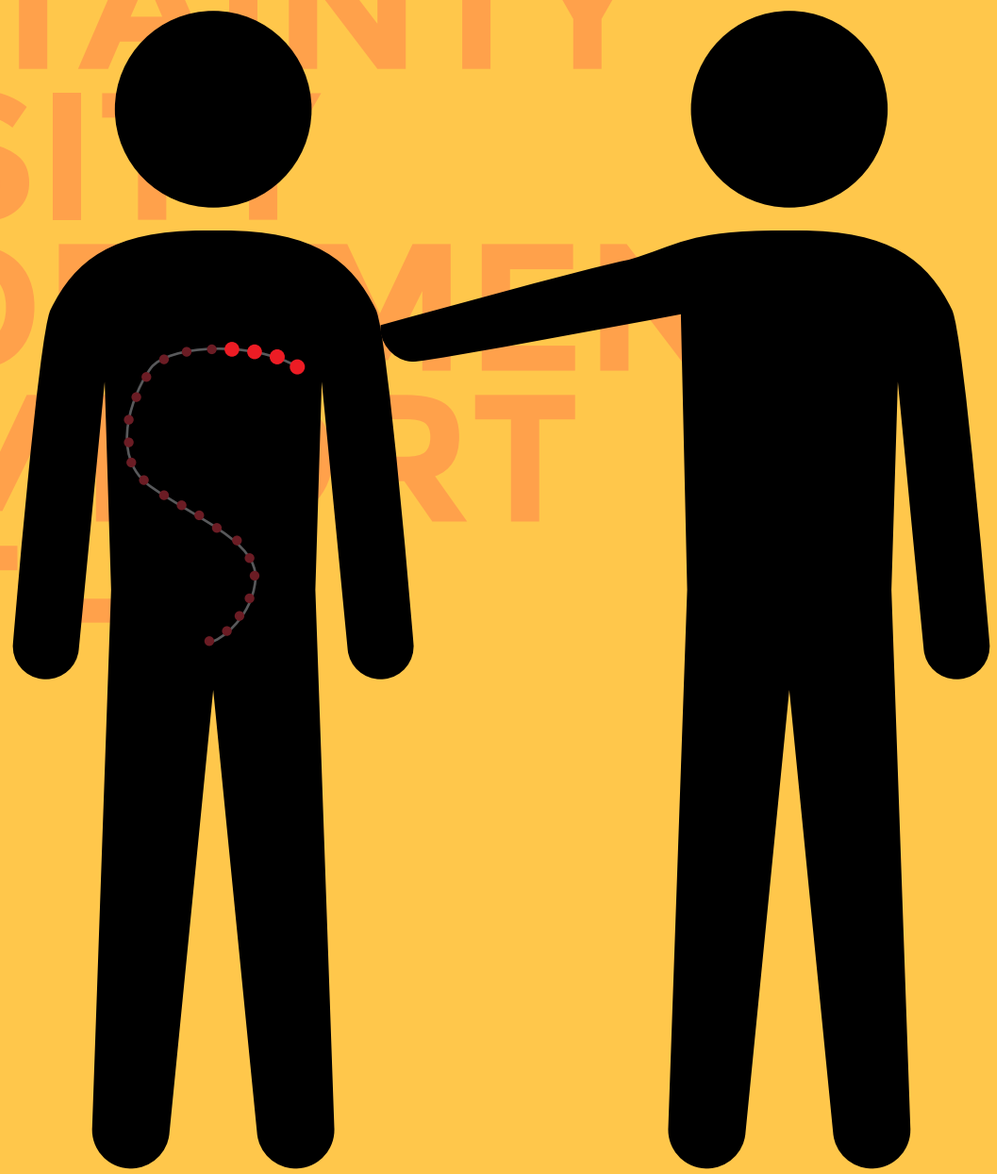
ISOLATION
DARKNESS
EMPTINESS
NOTHINGNESS
FEAR

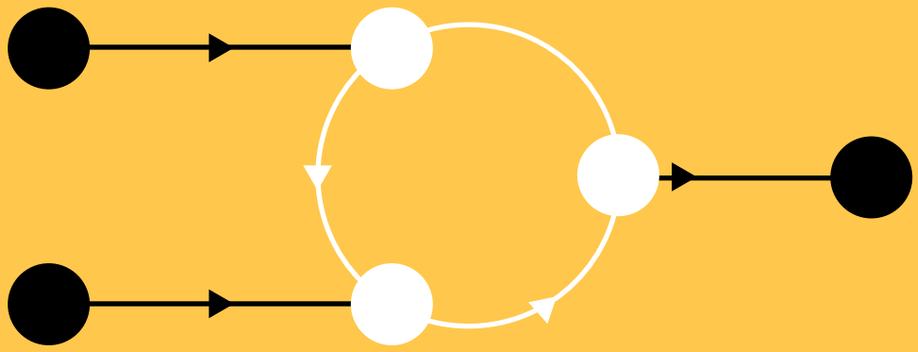


In the loneliness stage, dancers are physically separated. The room remains dark and their bodies do not light up. Both the dancers and the audience feel a sense of emptiness and isolation because of the pure darkness in the room. Slow, pensive music will cue the performance to start.

EXPLORATION

UNCERTAINTY
CURIOSITY
BEWILDERMENT
DISCOMFORT
GROWTH

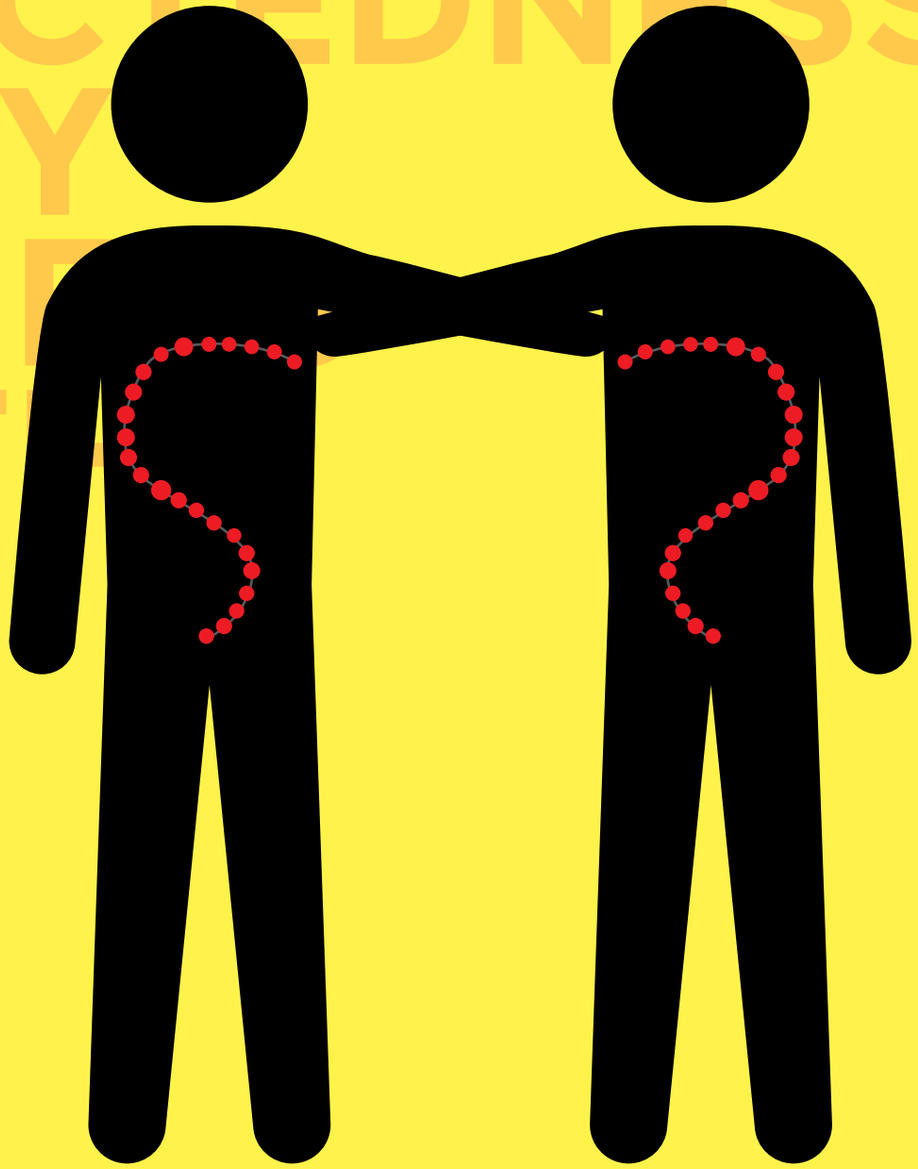


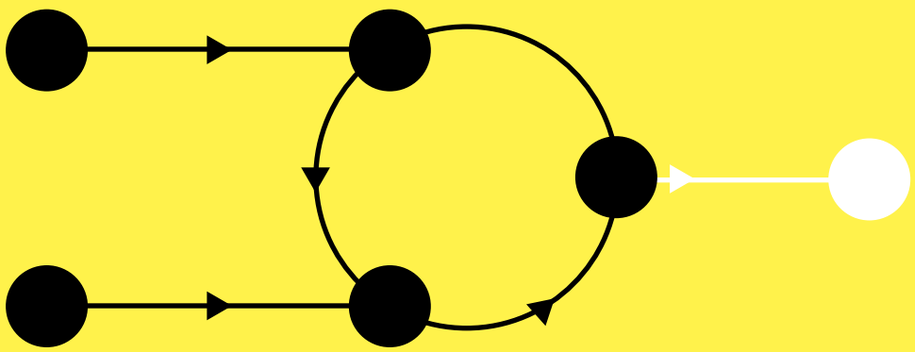


In the exploration stage, the dancers begin to explore one another through physical contact, which in turn will light up their bodies. Dancers will feel the passion in the physicality of the dance, while the audience will be mesmerized by the lights. The music will escalate to echo these changing emotions.

HARMONY

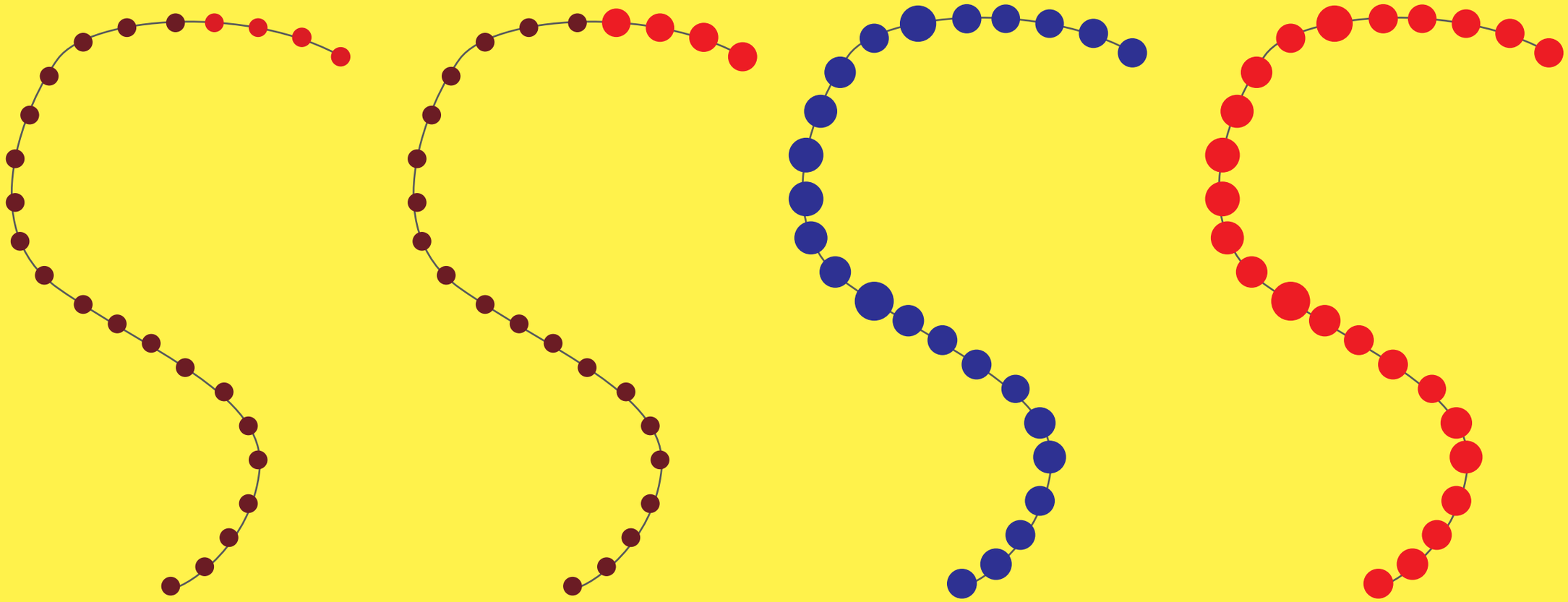
CONNECTEDNESS
ECSTASY
HAPPINE
WARMT
LOVE





At the end of the piece, the dancers find harmony and completeness and the lights on their bodies will glow with fierce intensity. The dancers will find warmth and joy in contact, while the audience will see and feel their love and connectedness. The music concludes to bring finality to the performance.

INTERACTION



TAP

A quick tap on a contact point will cause the lights to flicker briefly and dimly.

HOLD

Extended contact on the contact point will cause the lights to shine more brightly and intensely.

EARLY

Because the two dancers are lonely at the beginning of the dance, their lights will be blue to symbolize their loneliness and fear.

LATE

By the end of the dance the dancers will have found harmony with each other and their lights will shine warm colours like red.

ARDUINO CODE

```
#include <CapacitiveSensor.h>
#include <Adafruit_NeoPixel.h>
#define PIN 4

Adafruit_NeoPixel strip = Adafruit_NeoPixel(60, PIN, NEO_GRB + NEO_KHZ800);

int bright;
int delayVal;

CapacitiveSensor   cs_9_10 = CapacitiveSensor(9,10);

void setup()
{
   cs_9_10.set_CS_AutocaL_Millis(0xFFFFFFFF);
   Serial.begin(9600);
   strip.begin();
   strip.show();
   bright = 10;
   delayVal = 30;
}
```

This code initializes the touch sensor library and the RGB LED strip library, and sets up a touch sensor between the Arduino's pins 9 and 10. It then calibrates and initializes the touch sensor and the RGB LED strip in the setup method.

ARDUINO CODE

```
void loop()
{
    long start = millis();
    long total1 =  cs_9_10.capacitiveSensor(30);

    strip.setBrightness(bright);

    if (total1 >= 15) {
      for (int i=0; i<strip.numPixels(); i++) {
        strip.setPixelColor(i, 255, 0, 0);
        strip.show();
        strip.setPixelColor(i-5, 0, 0, 0);
        if (i<5) {
          for (int i=strip.numPixels() - 5; i<strip.numPixels(); i++) {
            strip.setPixelColor(i, 0, 0, 0);
            strip.show();
          }
        }
        delay(delayVal);
      }
      bright += 10;
      delayVal -= 5;
    }
```

The Arduino board detects changes in the conductiveness of the piece of conductive fabric. If it detects human touch, then it sends data to the LED strip. The strip will subsequently show dim light if it is touched quickly, and the light will intensify the longer the touch point is held.

ARDUINO CODE

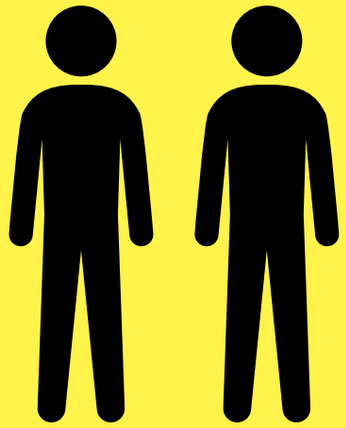
```
else {
      for (int i=0; i<strip.numPixels(); i++) {
        strip.setPixelColor(i, 0, 0, 0);
        strip.show();
      }
      bright = 10;
      delayVal = 30;
    }

    if (bright > 255) {
      bright = 255;
    }
    if (delayVal < 5) {
      delayVal = 5;
    }

    delay(10);
}
```

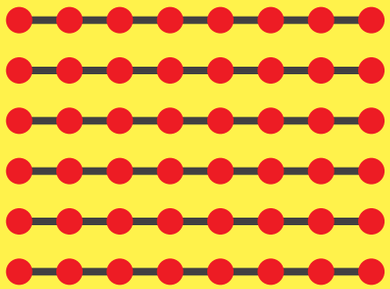
If the touch sensor doesn't sense physical touch, then the Arduino board writes to the RGB LED strip telling it not to display any light. The code also inserts a delay so that it is not constantly sending data to the serial port.

EQUIPMENT

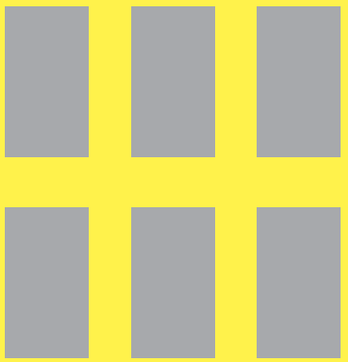


2 DANCE SUITS (COTTON/SPANDEX)

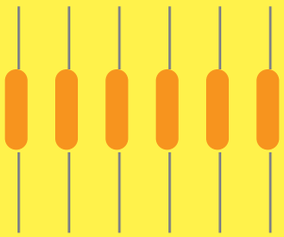
1 SHORT THROW PROJECTOR



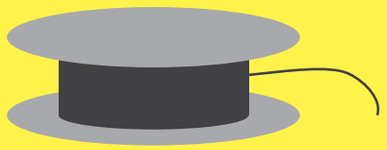
6 RGB LED STRIPS



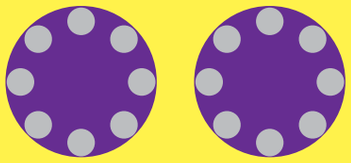
6 PIECES OF CONDUCTIVE FABRIC



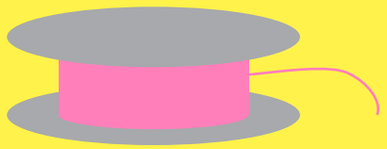
6 56K OHM RESISTORS



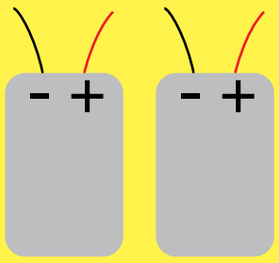
CONDUCTIVE THREAD



2 LILYPAD ARDUINOS

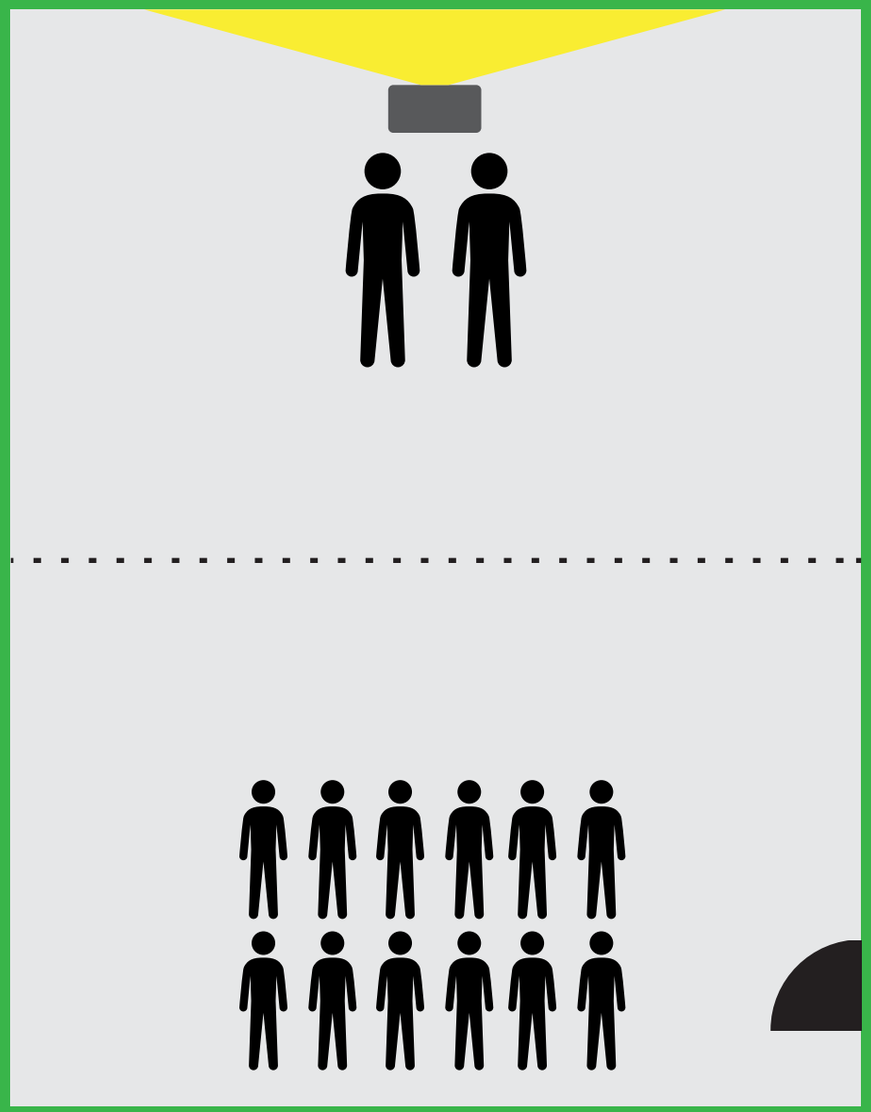


REGULAR THREAD



2 3.7V LI-ION BATTERIES

SETTING



Inner Light takes place in SFU's green screen room. The two performers will perform in the back half of the room, while the audience will sit and watch from the side of the room closest to the door. The lights will be turned off to create a sense of isolation in the room, but a short-throw projector mounted on the ceiling will shoot dim light against the back wall to provide enough light for the dancers to operate.

THANK YOU