

# MYCOTOUCH

## Final Project Presentation

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# Project description

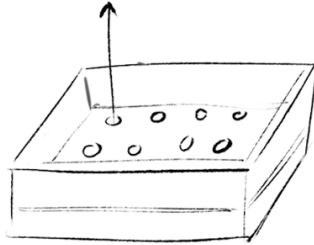
Our goal is to create a physical installation consisting of a box of dirt and a lightbox with origami structures representing mushrooms.

Should a user feel inclined to touch the dirt, this touch would cause a slow spread of fluorescent light in the mushroom light box. The box of dirt will act as the user interface while the mushroom representation will show the effect of the user interactions.

# Previous concepts - The dirt box

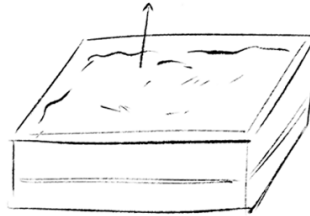
## DIRT-BOX DESIGN SKETCH

light sensors attached  
to the floor of the box



1. The "dirt box's" technical component consists of multiple light sensors, and the bluetooth Particle Phooton attached to the underside of the box.

dirt, literally



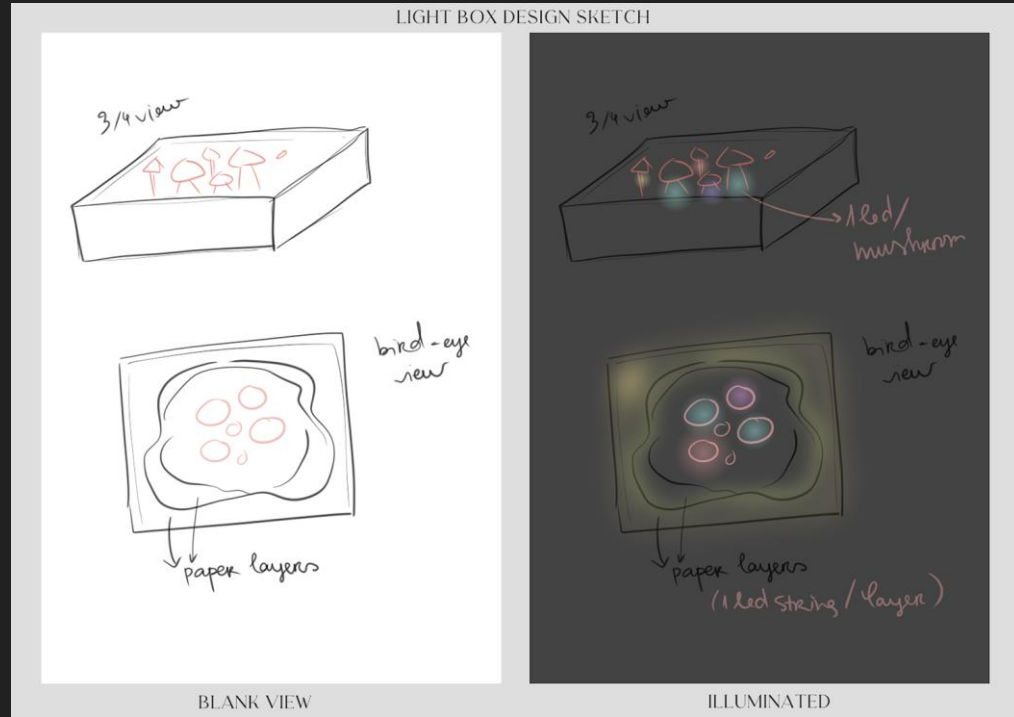
2. Then it's covered with dirt

user can play around  
with the dirt box and see  
the changes in our mushroom  
box's lighting pattern



1. As user picks up the dirt and "play" with it, user changes the exposure of the light sensors underneath, thus changing the variables sent to TouchDesigner

# Previous concepts - The mushroom box



# Demonstration

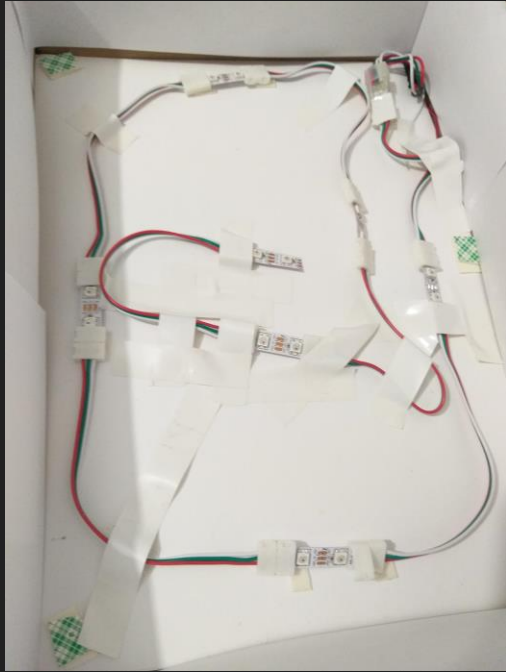


# Live Demonstration - Web Version

Try this link!!

<http://bffeb6e8d593.ngrok.io>

# Mushroom box - Components



Bottom layer



Mushroom layers



Mushroom shapes

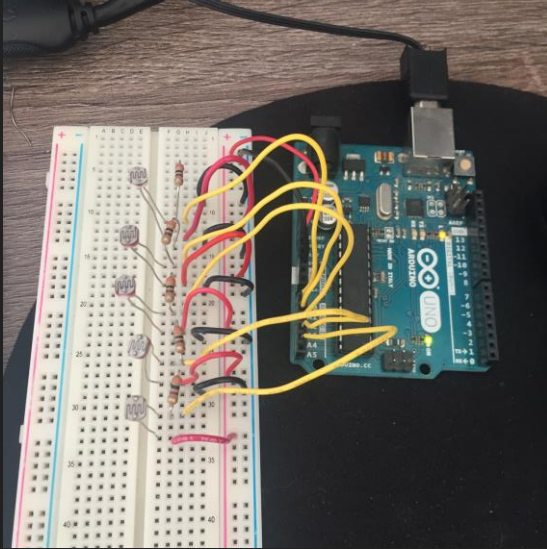


# Mushroom box - Components



Mushrooms when lit

# Dirt box - Components



Bottom layer



Top dirt layer

# Dirt box - Components



Full view

# Dirt box script - From Arduino to TD

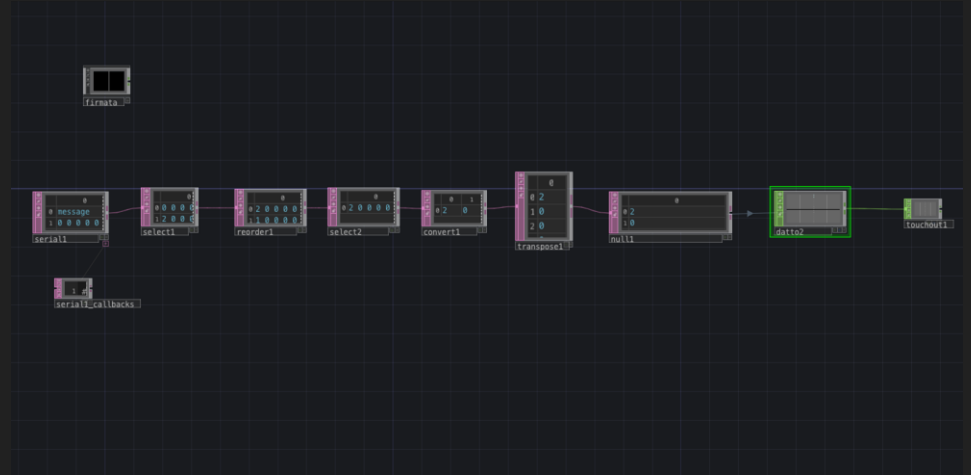
```
#include <Firmata.h>

// the setup routine runs once when you press reset:
void setup() {
  // initialize serial communication at 9600 bits per second:
  Serial.begin(9600);
}

// the loop routine runs over and over again forever:
void loop() {
  // read the input on analog pin 0-5:
  int sensorValue_A0 = analogRead(A0);
  int sensorValue_A1 = analogRead(A1);
  int sensorValue_A2 = analogRead(A2);
  int sensorValue_A3 = analogRead(A3);
  int sensorValue_A4 = analogRead(A4);
  int sensorValue_A5 = analogRead(A5);

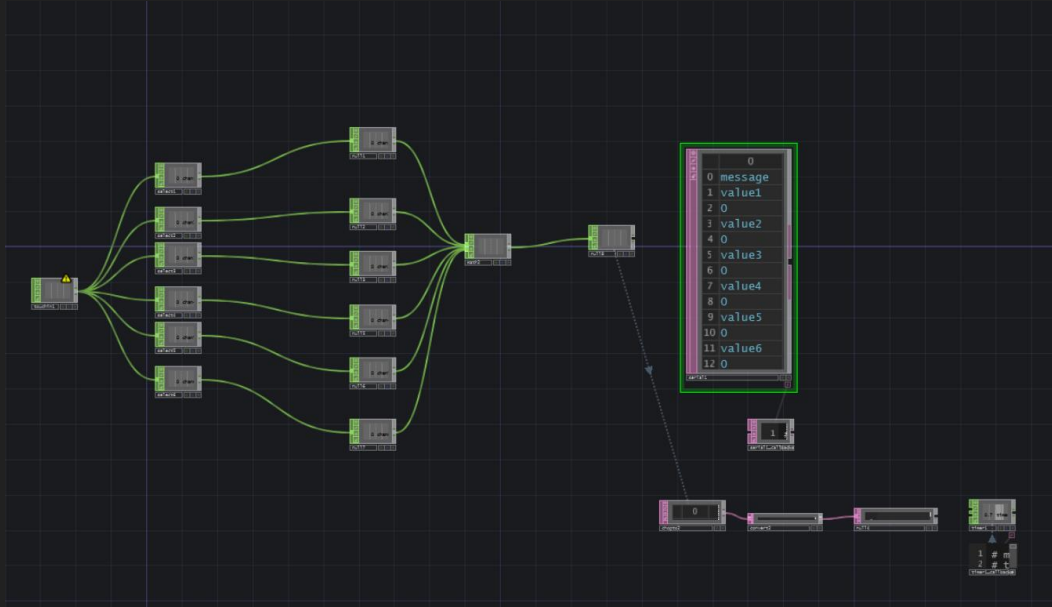
  // Convert the analog reading (which goes from 0 - 1023) to a voltage (0 - 5V):
  //float voltage = sensorValue * (5.0 / 1023.0);

  // print out the value you read:
  Serial.print(sensorValue_A0);
  Serial.print("\t");
  Serial.print(sensorValue_A1);
  Serial.print("\t");
  Serial.print(sensorValue_A2);
  Serial.print("\t");
  Serial.print(sensorValue_A3);
  Serial.print("\t");
  Serial.print(sensorValue_A4);
  Serial.print("\t");
  Serial.print(sensorValue_A5);
  Serial.print("\n");
}
```



Arduino script receives the 6 analog sensor information. The arduino script uses the Firmata custom library to send the information to TD. TD processes the data and sends it out to Hao.

# Mushroom box script - From TD to Arduino



TD file receives 6 values from Elsa's sensors using TCP/IP, then converts them into integer values ranging from 0 to 255

```

leds[1].setRGB(value1*0.5, value1*0.5, value2*0.5);
leds[2].setRGB(value3*0.5, value2*0.5, value2*0.5);
leds[3].setRGB(value3*0.5, value4*0.5, value3*0.5);
leds[4].setRGB(value4*0.5, value4*0.5, value5*0.5);
leds[5].setRGB(value6*0.5, value5*0.5, value5*0.5);
leds[6].setRGB(value6*0.5, value1*0.5, value6*0.5);
leds[7].setRGB(value1*0.5, value1*0.5, value3*0.5);
leds[8].setRGB(value5*0.5, value3*0.5, value3*0.5);

```

```

leds[9].setRGB(value1, value1, value1);
leds[10].setRGB(value2, value2, value2);
leds[11].setRGB(value3, value3, value3);
leds[12].setRGB(value4, value4, value4);
leds[13].setRGB(value5, value5, value5);
leds[14].setRGB(value6, value6, value6);

```

```
FastLED.show();
```

Arduino receives the integer values  
then assigns them to each LED using  
the FastLED library

# Approaches and observations

- ❖ LED Mapping - Implementing a working “light grid”
- ❖ Data sharing across networks using TouchIn - TouchOut CHOPs
- ❖ The mushroom box’ visual design - making a light landscape with 6 value inputs
- ❖ .... Remotely tangible?

# References & Tutorials

1. Mushroom design: Origami mushroom lanterns - OrigamiAround:  
<https://www.deviantart.com/origamiaround/art/Origami-mushroom-lanterns-841407816>
2. LED mapping: How to get the sensor data from Arduino to TouchDesigner - TD Tutorial 4 - Jun Li: <https://youtu.be/lkudxFrwPXU>
3. Online mushroom controller: Control Your TouchDesigner Installation Remotely - Ben Benjamin: <https://interactiveimmersive.io/blog/controlling-td/control-your-touchdesigner-installation-remotely/>