DATT 2010 Group Documentation

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Code

Schematics

**Tasks division:**

* Ziyu Zhong:

1. Connecting each component of the whole project together,glove to laptop , laptop to LED cube,glove to music.
2. OSC messages transferring in Max.
3. Wekinator, glove training
4. Soldering the LED cube
5. Soldering the whole circuit of the glove.
6. Finish the course on Kadenze about machine learning for the project
7. Max msp : writing the max patch and connect with arduino and lilypad
8. Ableton Live:Connecting the sensor to control music through Max for live
9. Flex sensors and MPU6050 soldering and coding
10. Bluetooth module connection
11. Debugging for bluetooth module.
12. Modify codes for LED cube and light String

* Jiaqi Yao:

1. LED Cube Circuit
2. RGB LED String Circuit
3. LED code and the operation of LED with code
4. RGB LED String code
5. Flex sensor and orientation sensor’s circuit
6. Soldering for LED cube
7. Building the outer case & inner case of Mirror World

* Xiangyue Meng:

1. Search the matching product type & its availability & its price
2. Buy material from Creatron, Home Depot, Dollarama, Taobao
3. Work with logistic service
4. Soldering for LED cube
5. Soldering for connection between the LED cube & control board
6. Building the outer case & inner case of Mirror World
7. Glove Sew

* Dongchen Wu:

1. Search & buy material
2. LED cube code
3. RGB LED String code
4. Building the outer case & inner case of Mirror World
5. Debug the circuit of the cube
6. Lilypad connection research
7. Soldering for led cube

**Brief** artist’s statement:

Our project is an interactive visualization project that has a closed mirror box and controlled by the wearable device — a glove. Audiences could have an immersive and interactive experience by using the glove.

Two parts in this project: the mirror room and wireless glove.

Mirror room- Use mirror paper to create a distorted reflect vision, it decorates with RGB LED strips and an 8\*8\*8 LED cube in the middle. Speaking of the wireless glove, there are 4 flex sensors and one orientation sensor on the glove which could detective the user’s hand gesture and movement. When users do different gestures, the environment in the mirror room would change and present different light modes.

For the technical parts, we use an Arduino Uno and 9 multiplexers to control both LED strips and the cube. By connect flex sensor with the Lilypad, we can detect user’s hand gesture then use Wenkinator to train the computer to send different instructions from Max8 to Arduino to change the mode of LED cube and string.

**Materials we use:**

* 8\*8\*8 led cube

1. 5 colors 5mm Light Emitting Diode LED \* 512
2. PN2222 Transistor \* 16
3. 220 ohms Resistor \* 64
4. 74HC595 Multiplexer \*9
5. 5V 1A SWITCHING POWER SUPPLY \* 1
6. WS2811 12mm Diffused Digital RGB LED 5V 50pcs/set \* 2
7. Splittable jumper wire(M-M)
8. Splittable jumper wire(M-F)

* glove part

1. HC-05 BLUETOOTH MODULE \*1
2. Flex sensor \*1
3. Lilypad Arduino 328 \*1
4. Lilypad FTDI Basic breakout - 5V \*1
5. glove

* Mirror room

1. 60\*60cm mirror paper for inside \* 6
2. 60\*80 cm mirror paper for outside \* 6
3. Cardboard of 60\*80cm \* 6
4. 16 pcs of 6\*2 inch wood screws \* 2
5. 80cm wood strip \*4
6. 60cm wood strip \* 8
7. wood glue \* 1

List of technologies used/description of how it works

**Technical part:**

* Cube: LED cube uses multiplexer to connect all the 512 LEDs driven by an Arduino UNO. LED cube was built and wired with breadboard. 6 light effects are able to be displayed.User can switch between 6 modes using the glove. A max patch is used to transfer output data from wekinator to Uno by using a classification algorithm to set output as integer numbers from 1 to 6 based on different hand gesture.
* Glove:Bluetooth module is used for wireless connection between glove and laptop.A max patch is used to receive data from lilypad. After this max patch receive the data it will then be send to Wekinator as OSC messages.

Flex sensors are used to sense the bending degree of user’s fingers.

* Music: Ableton Live is used to play 4 different sound tracks. The volume of each sound tracks are controlled by each finger. Max for live is used to receive data from the max patch which receive data from lilypad.

**Photos/videos:**

**Pictures:**

<https://drive.google.com/open?id=1n0U0p2ekXwq-lonW_5I6TitIzQhAEnBj>

**Video：**

In the progress of shooting. Video are planned to be edited so it will take some times.