

# **Project Title: LED Cube 3D Display Treasure Detector**

## **Group members:**

Boning Dong,    Ran Mo,    Emma Gau

## **Device Function:**

We want to build a LED Cube and use it as a platform to be a treasure detector.

We will integrate a GPS module and Gyro module in this LED cube. When we give it the coordinate of the “treasure”, it can display a big arrow which points to the direction where the treasure locates, according to the GPS and Gyro data.

## **Hardware Components:**

The following hardware will be used for this project:

- Arduino Nano board
- GPS Module
- Gyro Modules
- 8pcs 74HC595 shift-register SOIC package
- 1pcs 74HC138 decoder SOIC package
- 5pcs AO3401 p-channel Mos
- 1pcs Switch
- 2k Resistor 250R 0603 package
- 8pcs Resistor 250R 0603 package
- 65pcs Resistor 125R 0603 package
- PCB board which designed by ourselves
- 2pcs 15-pin header
- 10pcs 8-pin header
- 1pcs 5-pin header

## **Design Timeline:**

### **Week 5:**

- Design the schematic and PCB file, and contact manufacturer to manufacture it. But components

### **Week 6:**

- Hardware: Solder the LED part. Test the first version of PCB board.
- MCU: test program of shift-register part, GPS module and Gyro module.  
Find the method of calculating the direction according to the data from GPS and Gyro. Test timer interrupt

### **Week 7:**

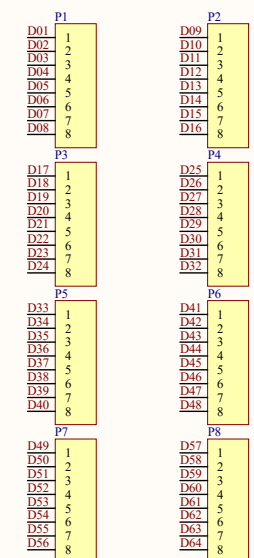
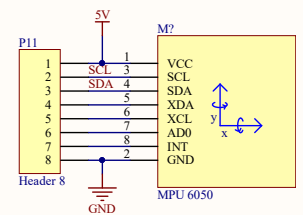
- Hardware: If the first version PCB board is fine. Solder the components. If not, redesign the circuit and manufacture it. Design case for this cube.
- MCU: Finished MCU program of LED cube.

### **Week 8:**

- Assemble all the parts together. Build the case or 3D print the case. Final test, try to develop develop more functions.

### **Week 9:**

- Final test, develop more functions. If all went well so far, we should finish our work.



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ECES Project Alpha      LED Cube Treasure Detector		
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