LEDAlert

Tech Response Industries, Ltd.
8 April 2019

Software Manager: Caroline Barker
Hardware Manager: Yiqing Guo
Project Manager: Lin Lin Jin
Program Manager: Lucia Jeon

Agenda

- **Project Objective**
- **Background Information**
- **Technical Design Description**
- **Cost Estimate**
- **Project Schedule**
- **Summary**

Project Objective

- Design and create a search and rescue robot:
  a. Activate during emergencies
  b. Map floor plan
  c. Traverse room efficiently
  d. Find people and send their location to emergency services

Background Information

- Currently:
  - Search and rescue teams go out and find people
  - Very **dangerous** and **not effective**:
    - Navigating dangerous terrain
    - Search occurs hours/days after disaster struck

Figure 1. Rescue team

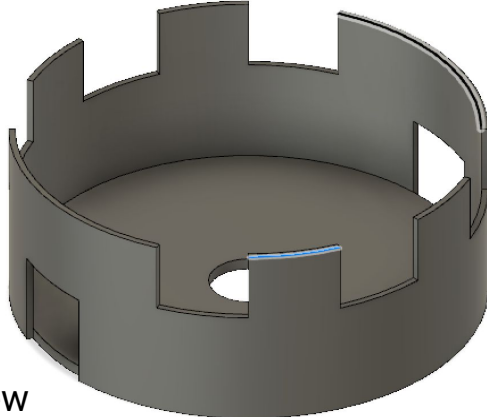# Technical Design Description

- ## Bottom Piece
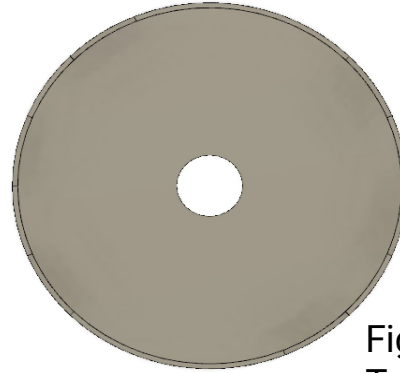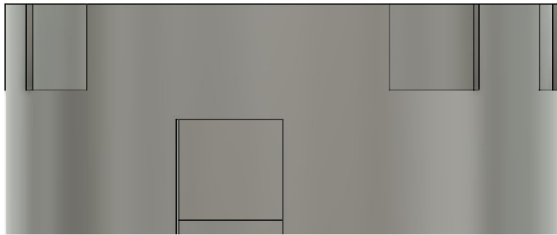
Figure 2.
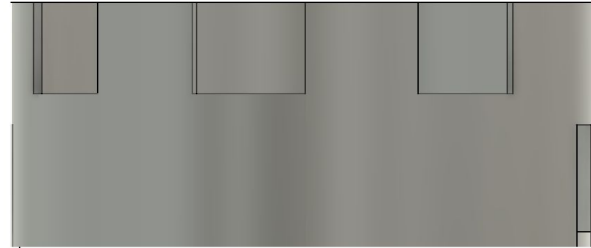Isometric View

Figure 3.
Top View

Figure 4. Side View

Figure 5. Front View

Technical Design Description

- **Top Piece**

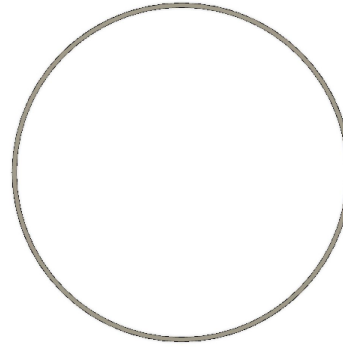Figure 6. Isometric View
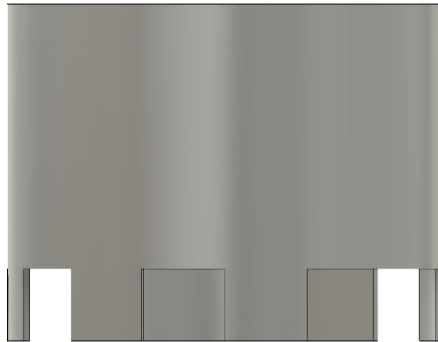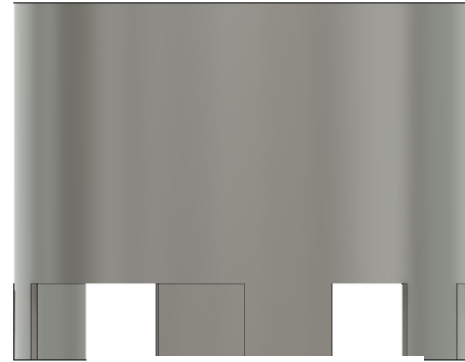

Figure 7. Top View

Figure 8. Side View

Figure 9. Front View

Technical Design Description

- **Pole**

Figure 10.
Isometric View

Figure 11.
Side View

Figure 12.
Top View

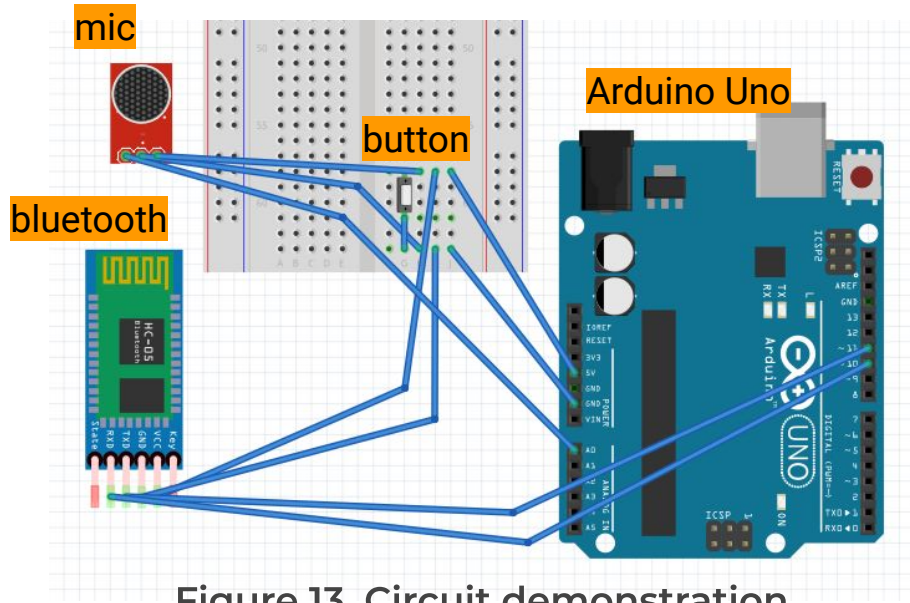# Technical Design Description

- **Circuitry**

mic

button

bluetooth

Arduino Uno

Figure 13. Circuit demonstration

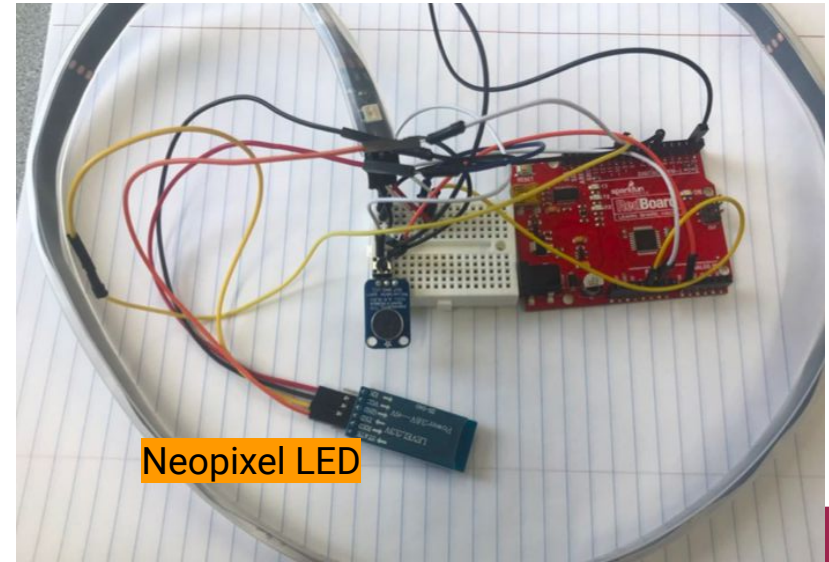Neopixel LED

Figure 14. Circuitry

Technical Project Description

- **Sensor Coding**

```
TestingSensors

#include <Adafruit_NeoPixel.h>
#include <SoftwareSerial.h>

// Bluetooth connected to 10 and 11
SoftwareSerial BTserial(10, 11);
const int LEDPin = 6;
int LEDValue;

const int buttonPin = 1;
int buttonState = LOW;

const int micPin = A0;
int micState;

//Adafruit_NeoPixel pixels = Adafruit_NeoPixel(16, 6, NEO_GRB + NEO_KHZ800);
void setup() {
  // put your setup code here, to run once:
  Serial.begin(9600);
  //pinMode(buttonPin, INPUT);
  pinMode(micPin, INPUT);
  pixels.begin();

}
```

```
void loop() {
  // put your main code here, to run repeatedly:
  int adc, dB;
  adc = analogRead(micPin); //read in initial pin
  Serial.println(adc);
  dB = (adc + 83.2073) / 11.003; //getting the decibal value

  Serial.println(dB);

  if (dB > 80){
    Serial.println("I am in the loop");
    pixels.setPixelColor(1, pixels.Color(200, 0, 0));
    pixels.show();


  }
  else{
    pixels.setPixelColor(1, pixels.Color(0, 200, 0));
    pixels.show();
  }

  delay(700);
}
```

Figure 15. Arduino IDE

Cost Estimate

Project name:						
Labor Cost Estimate Breakdown Table						
DESCRIPTION	**AMOUNT**		**UNIT PRICE**		**TOTAL**	
Software Manager	60	Hrs	$ 50.00	/ Hr	$	3,000.00
Hardware Engineer	60	Hrs	$ 50.00	/ Hr	$	3,000.00
Project Manager	60	Hrs	$ 50.00	/ Hr	$	3,000.00
Program Manager	60	Hrs	$ 50.00	/ Hr	$	3,000.00
PROJECT COST ESTIMATE					**$ 12,000.00**	
Equipment Cost Estimate Breadown Table						
DESCRIPTION	**AMOUNT**		**UNIT PRICE**		**TOTAL**	
Ultimaker 3D Print	1	Unit(s)	$ -	/ Unit	$	-
Arduino Microphone	1	Unit(s)	$ 8.00	/ Unit	$	8.00
Arduino Board	1	Unit(s)	$ -	/ Unit	$	-
Arduino Speaker	1	Unit(s)	$ 8.00	/ Unit	$	8.00
Arduino Oscillator	1	Unit(s)	$ 7.00	/ Unit	$	7.00
HC-05 Bluetooth Module	1	Unit(s)	$ -	/ Unit	$	-
LED Strip	1	Unit(s)	$ -	/ Unit	$	-
100k Resistors	2	Unit(s)	$ -	/ Unit	$	-
Smartphone/app	1	Unit(s)	$ -	/ Unit	$	-
EQUIPMENT COST ESTIMATE					$	23.00
GRAND TOTAL FOR ALL COST ESTIMATES:					**$12,023.00**	

Project Schedule

- On schedule!
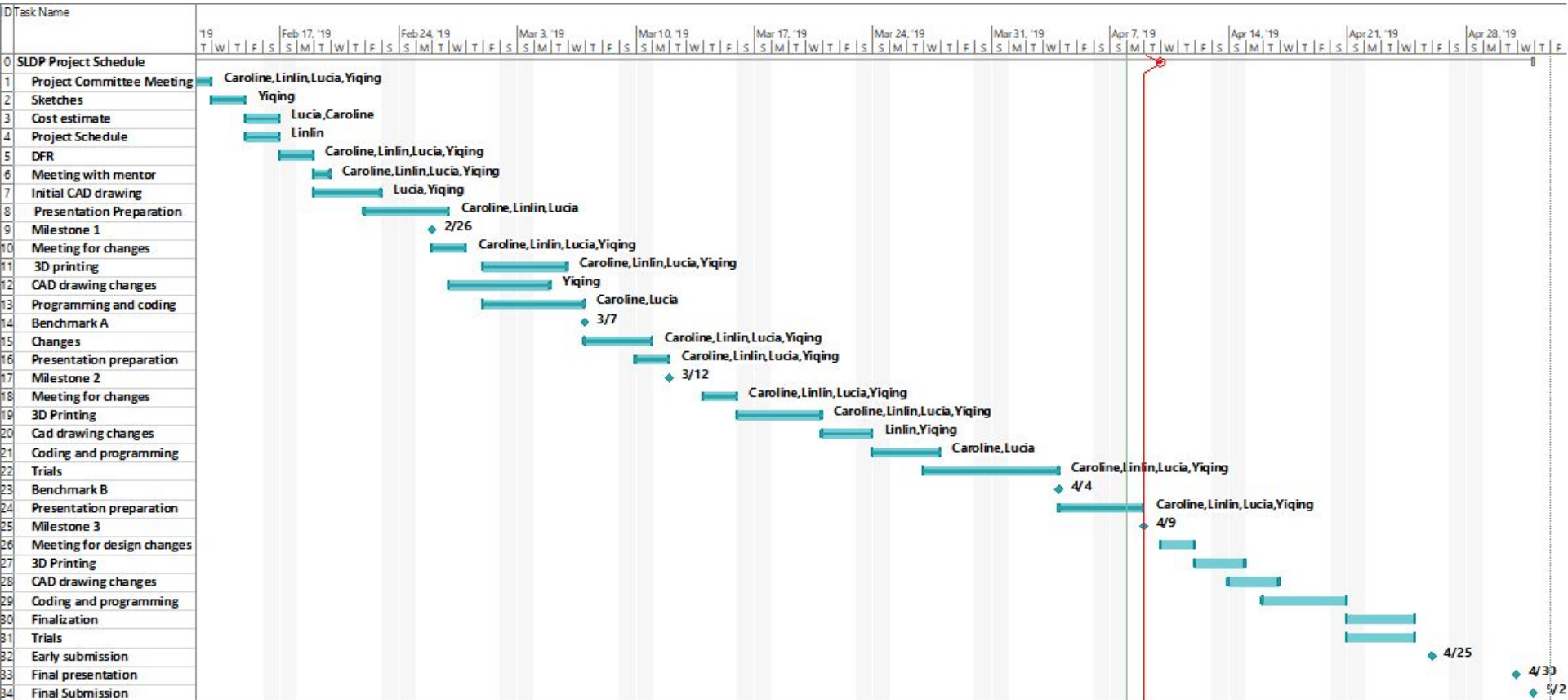
Summary

- Finished first prototype
- Future discussions/ideas:
  a. Separate power source (9V)
  b. Physical components: 3D printed wheels, top piece
  c. Camera live-feed
  d. Determine the most effective/efficient way to traverse room

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