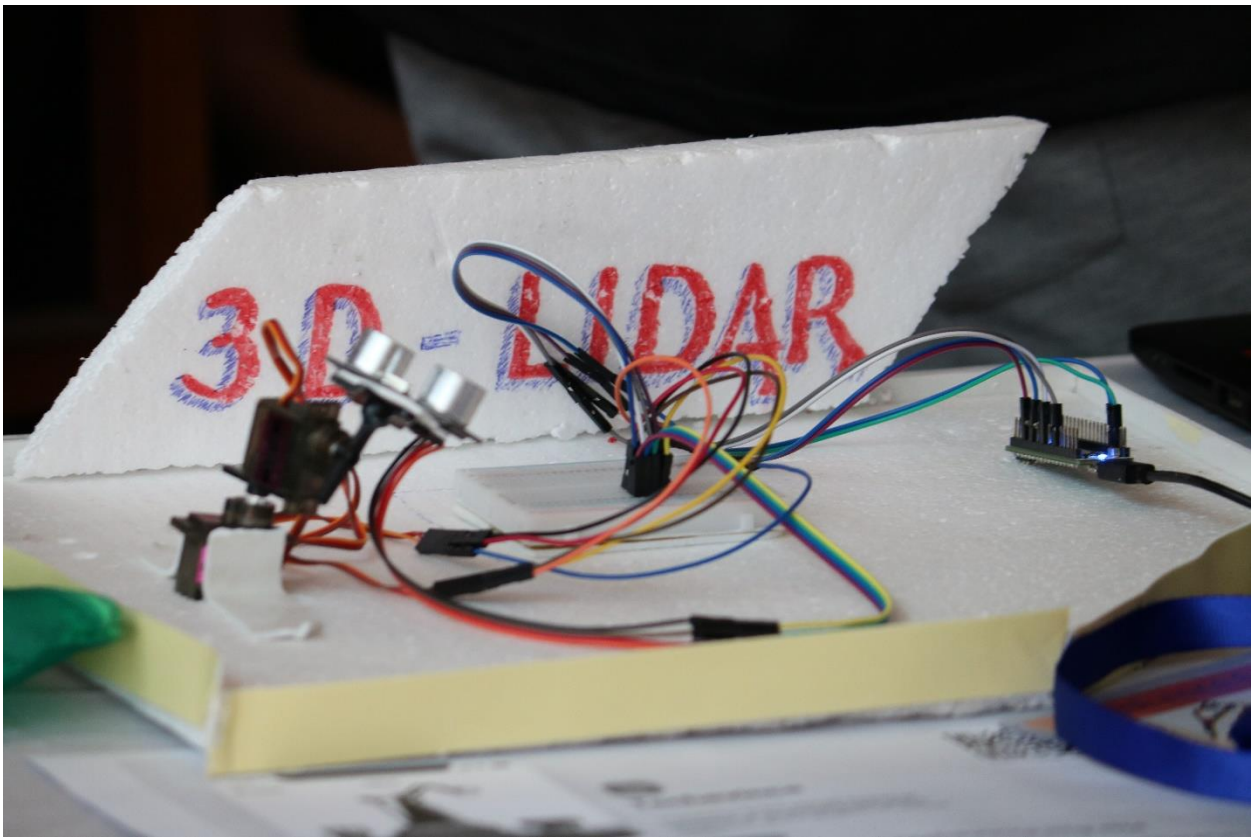


3D-LIDAR ROBOTICS CLUB

A device which scans the objects in its surroundings and makes a mapping of it on your display and guess what its small and cheap!!!



Hardware Required

- 1) Servo (2x1)
- 2) Arduino
- 3) Ultrasonic sensor(1x1)
- 4) Breadboard(1x1)

Arduino

Some great masters have developed the **Arduino board** to help us with our quest. This board will be the heart of the project, so building the project without it would be a harsh journey. We will be using Arduino UNO for this project but any board with at least 9 digital pins is good to go.

Circuit Diagram

Code XD:-))

→For Arduino

// Includes the Servo library

#include <Servo.h>.

// Defines Trig and Echo pins of the Ultrasonic Sensor

const int trigPin = 10;//orange

const int echoPin = 11;//red white - vcc grey -gnd

// Variables for the duration and the distance

long duration;

int distance;

Servo myServo; // Creates a servo object for controlling the servo motor

void setup() {

 pinMode(trigPin, OUTPUT); // Sets the trigPin as an Output

 pinMode(echoPin, INPUT); // Sets the echoPin as an Input

 pinMode(4,OUTPUT); //yellow

 pinMode(12,OUTPUT);

 Serial.begin(9600);

 myServo.attach(9); // Defines on which pin is the servo motor attached on 9
 purple

}

void loop() {

 // rotates the servo motor from 15 to 165 degrees

 for(int i=0;i<=180;i++){

 myServo.write(i);

 delay(30);

 distance = calculateDistance(); // Calls a function for calculating the distance
 measured by the Ultrasonic sensor for each degree

 Serial.print(i); // Sends the current degree into the Serial Port

Serial.print(","); // Sends addition character right next to the previous value
needed later in the Processing IDE for indexing

Serial.print(distance); // Sends the distance value into the Serial Port

Serial.print("."); // Sends addition character right next to the previous value
needed later in the Processing IDE for indexing

}

// Repeats the previous lines from 165 to 15 degrees

for(int i=180;i>0;i--){

myServo.write(i);

delay(30);

distance = calculateDistance();

Serial.print(i);

Serial.print(",");

Serial.print(distance);

Serial.print(".");

}

}

// Function for calculating the distance measured by the Ultrasonic sensor

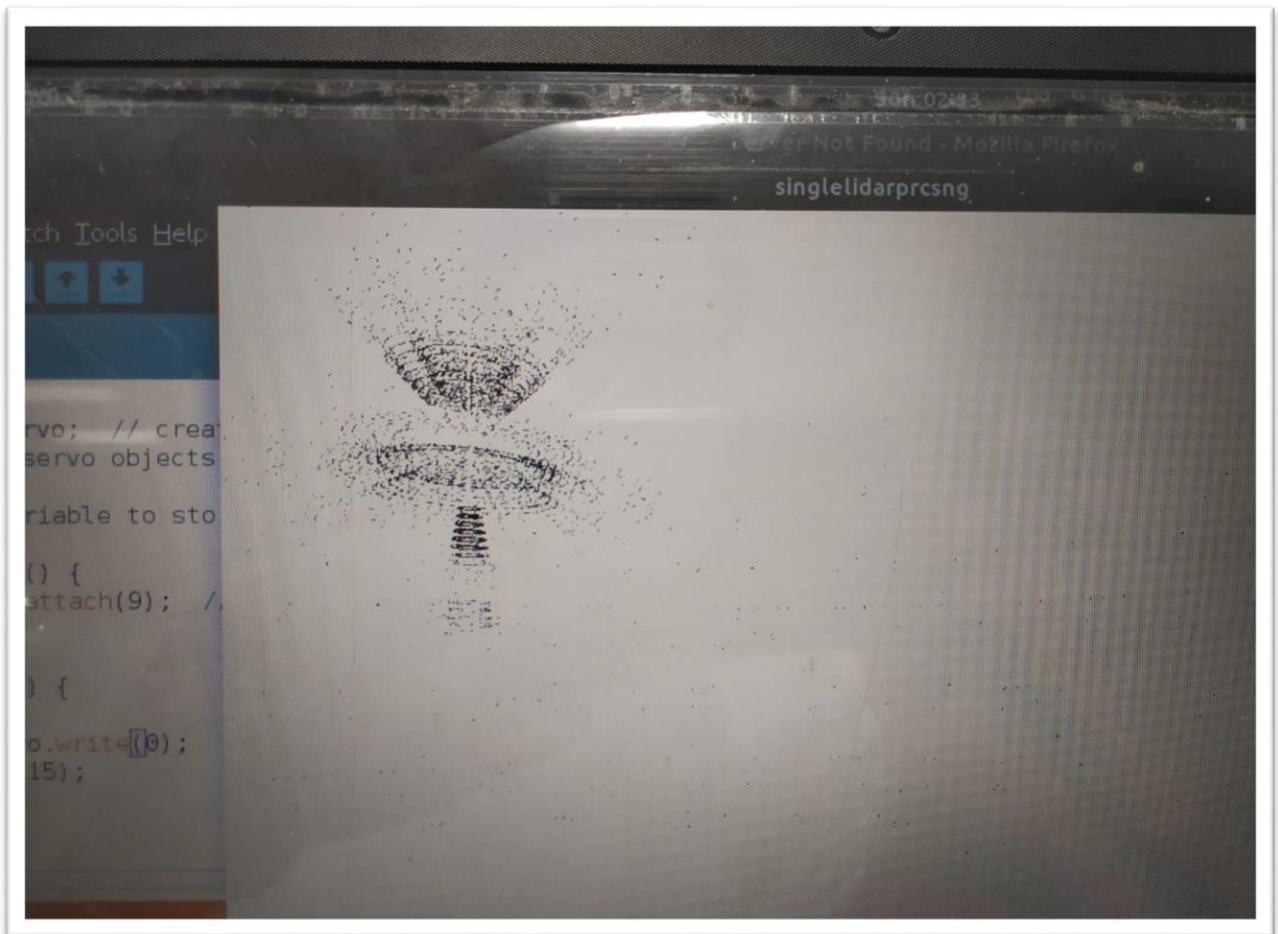
int calculateDistance(){

digitalWrite(trigPin, LOW);

```
delayMicroseconds(2);  
// Sets the trigPin on HIGH state for 10 micro seconds  
digitalWrite(trigPin, HIGH);  
delayMicroseconds(10);  
digitalWrite(trigPin, LOW);  
duration = pulseIn(echoPin, HIGH); // Reads the echoPin, returns the sound  
wave travel time in microseconds  
distance= duration*0.034/2;  
if (distance < 40)  
{  
    digitalWrite(4,HIGH);  
    digitalWrite(11,HIGH);  
  
}  
else  
{  
    digitalWrite(4,LOW);  
    digitalWrite(11,LOW);  
  
}  
return distance;}
```

→For Processing IDE

OUTPUT



This is the mapping that we got of an object kept in front of LIDAR, this seems promising isn't it.