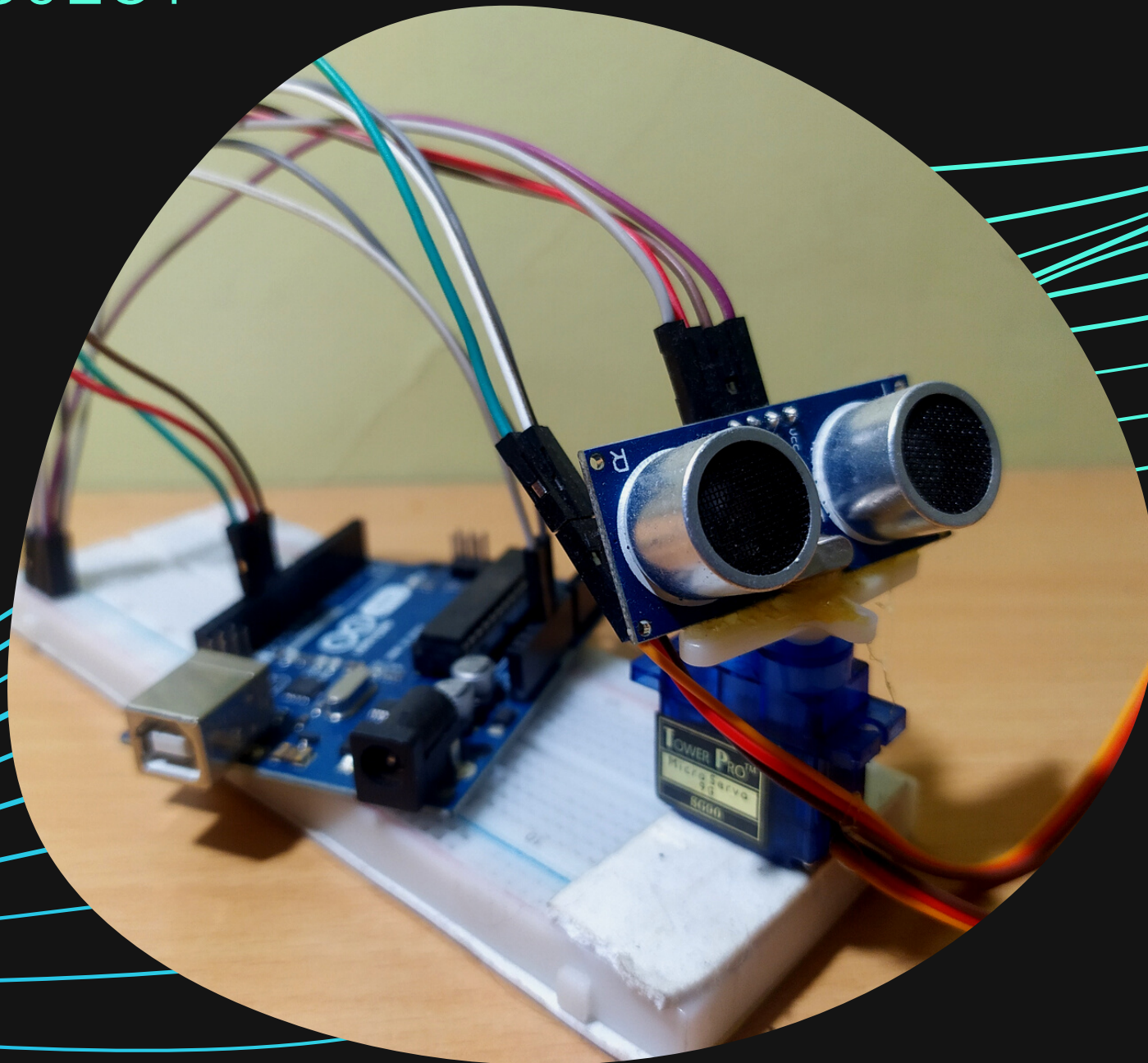


Arduino Radar Sensor

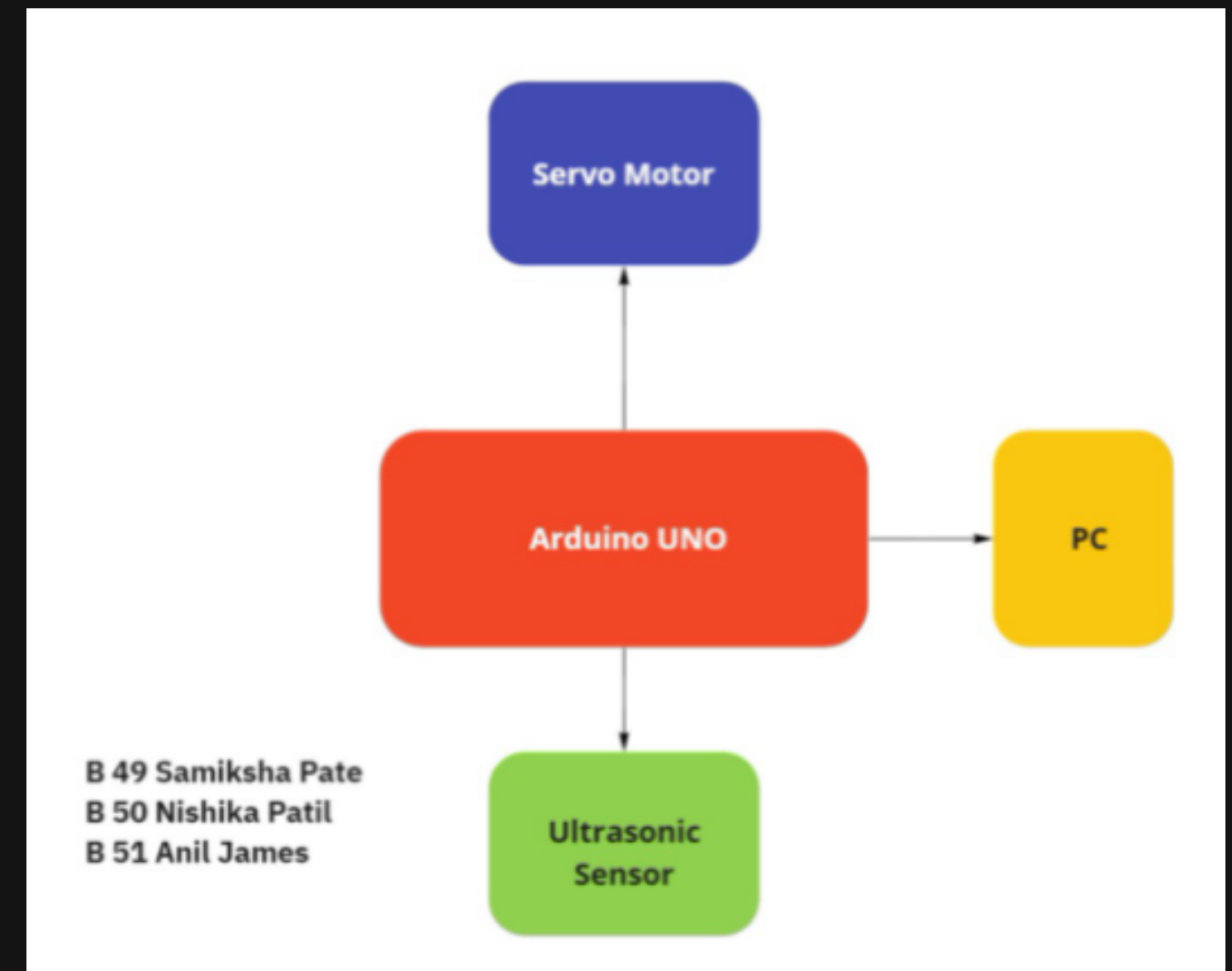
MECHATRONICS PROJECT



B 49 - Samiksha Pate
B 50 - Nishika Patil
B 51 - Anil James

OVERVIEW OF THE PROJECT

There are different hardware uses to accomplish the Arduino Radar Sensor. Like Arduino UNO. HC-SRo4 Ultrasonic Sensor including a Servo Motor. The process is shown in the block diagram

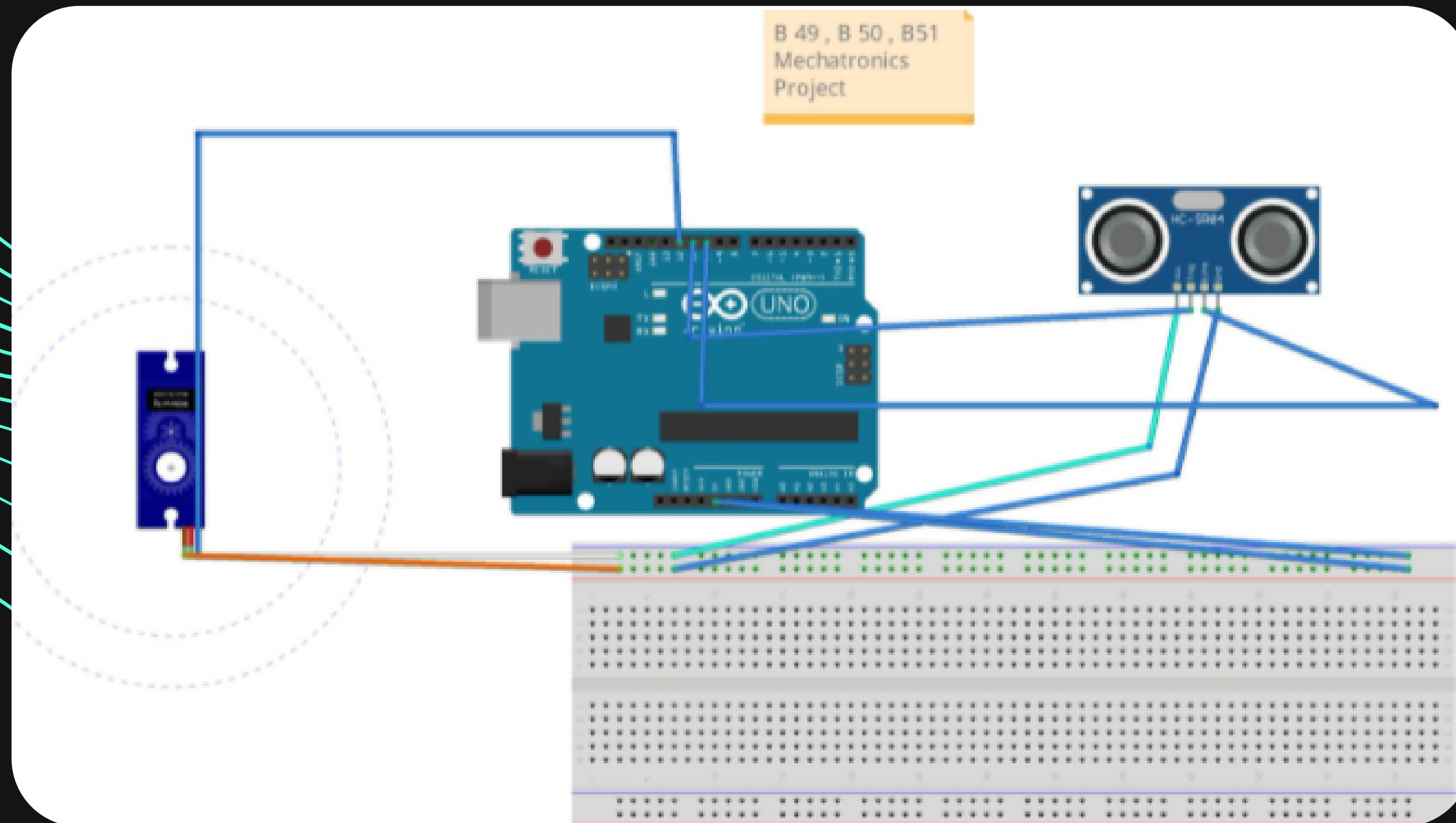


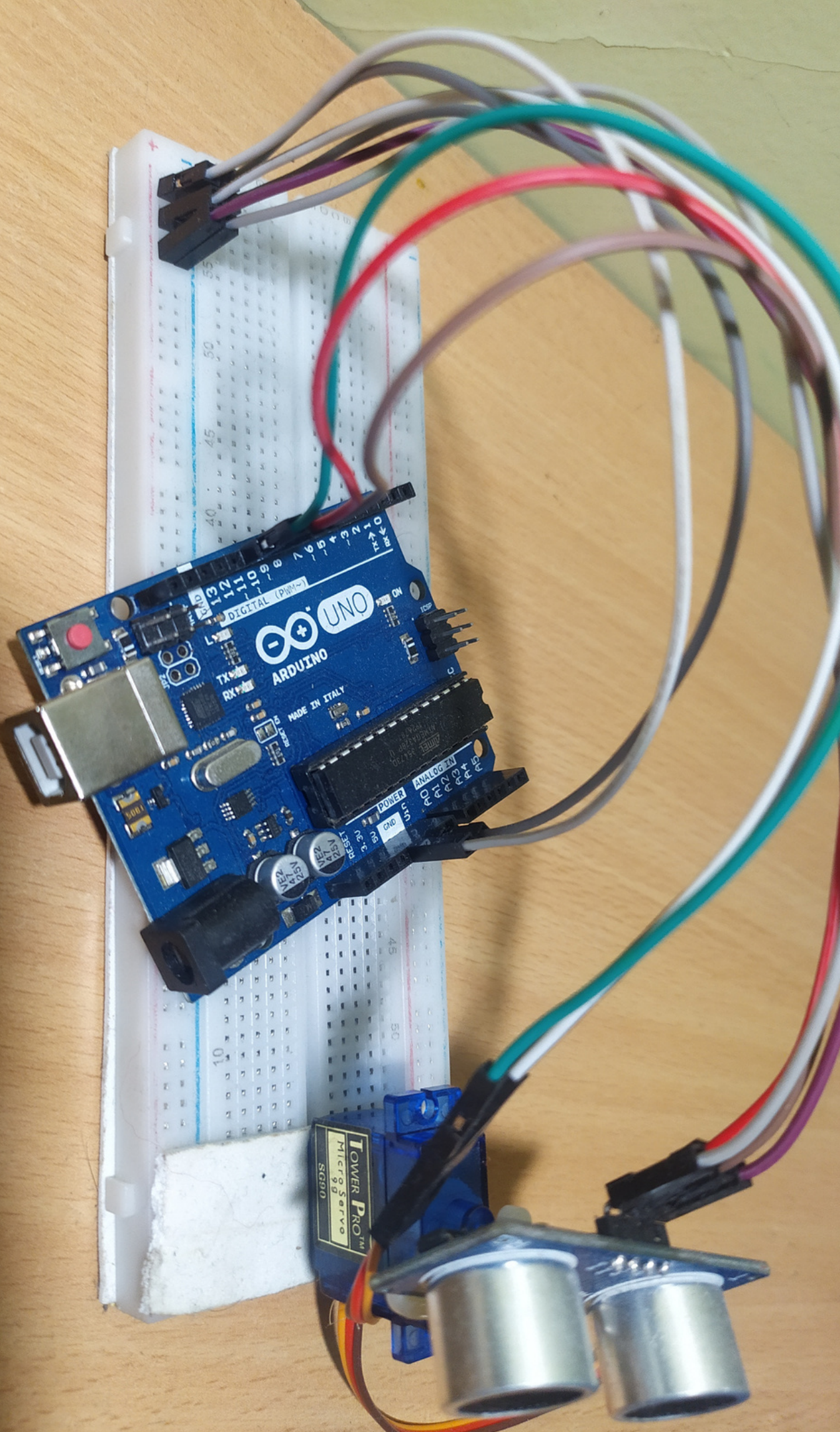


Components Used:

- ARDUINO UNO
- HC-SRO4 ULTRASONIC SENSOR
- SERVO MOTOR SG90
- BREAD BOARD
- CONNECTING WIRES (M TO F) (M TO M)
- USB CABLE FOR ARDUINO
- ARDUINO IDE
- PROCESSING APPLICATIONS

Circuit Diagram





CODE

05

```
fin | Arduino 1.8.15
File Edit Sketch Tools Help

fin

// Includes the Servo library
#include <Servo.h>.

// Defines Trig and Echo pins of the Ultrasonic Sensor
const int trigPin = 10;
const int echoPin = 11;

// Variables for the duration and the distance
long duration;
int distance;

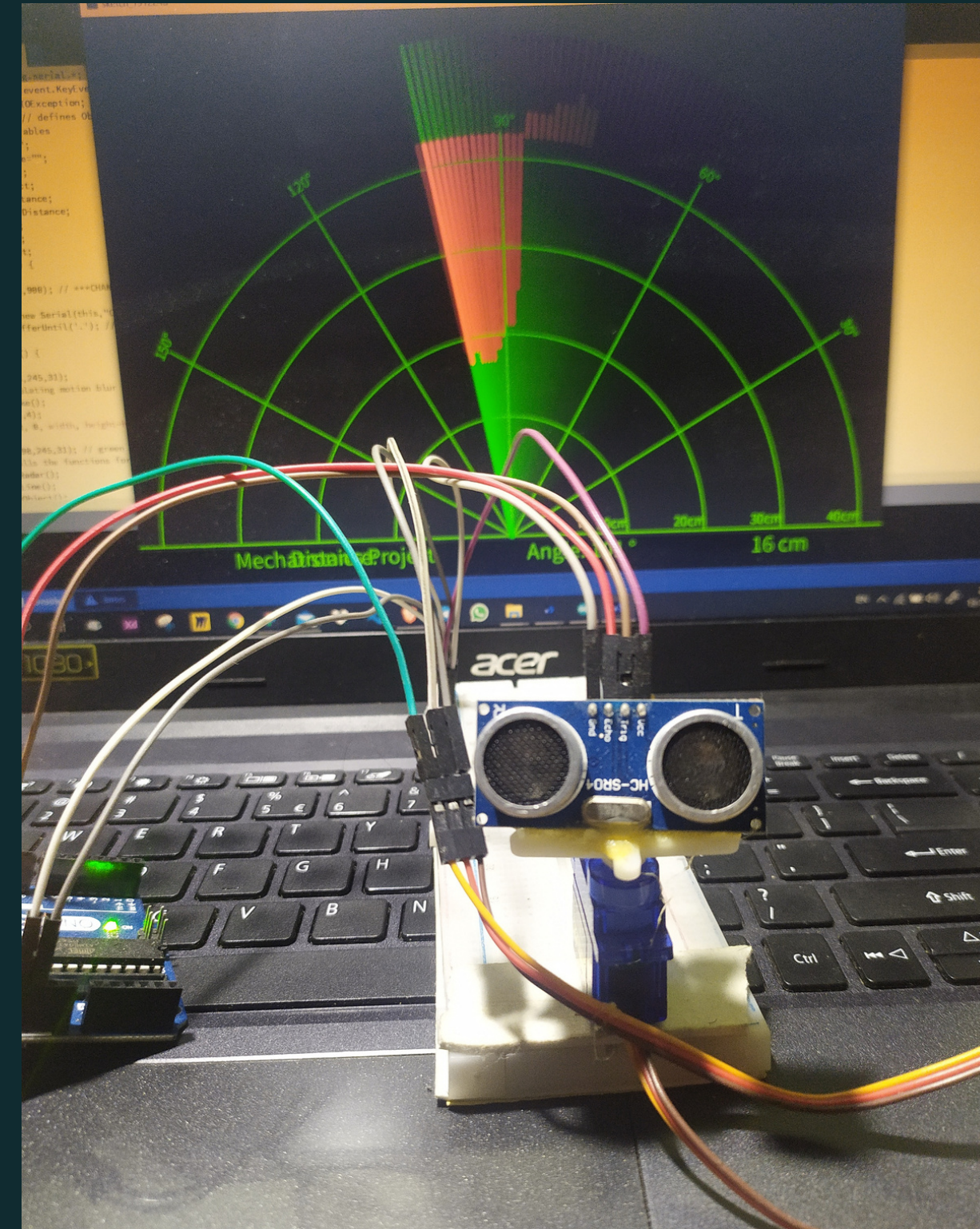
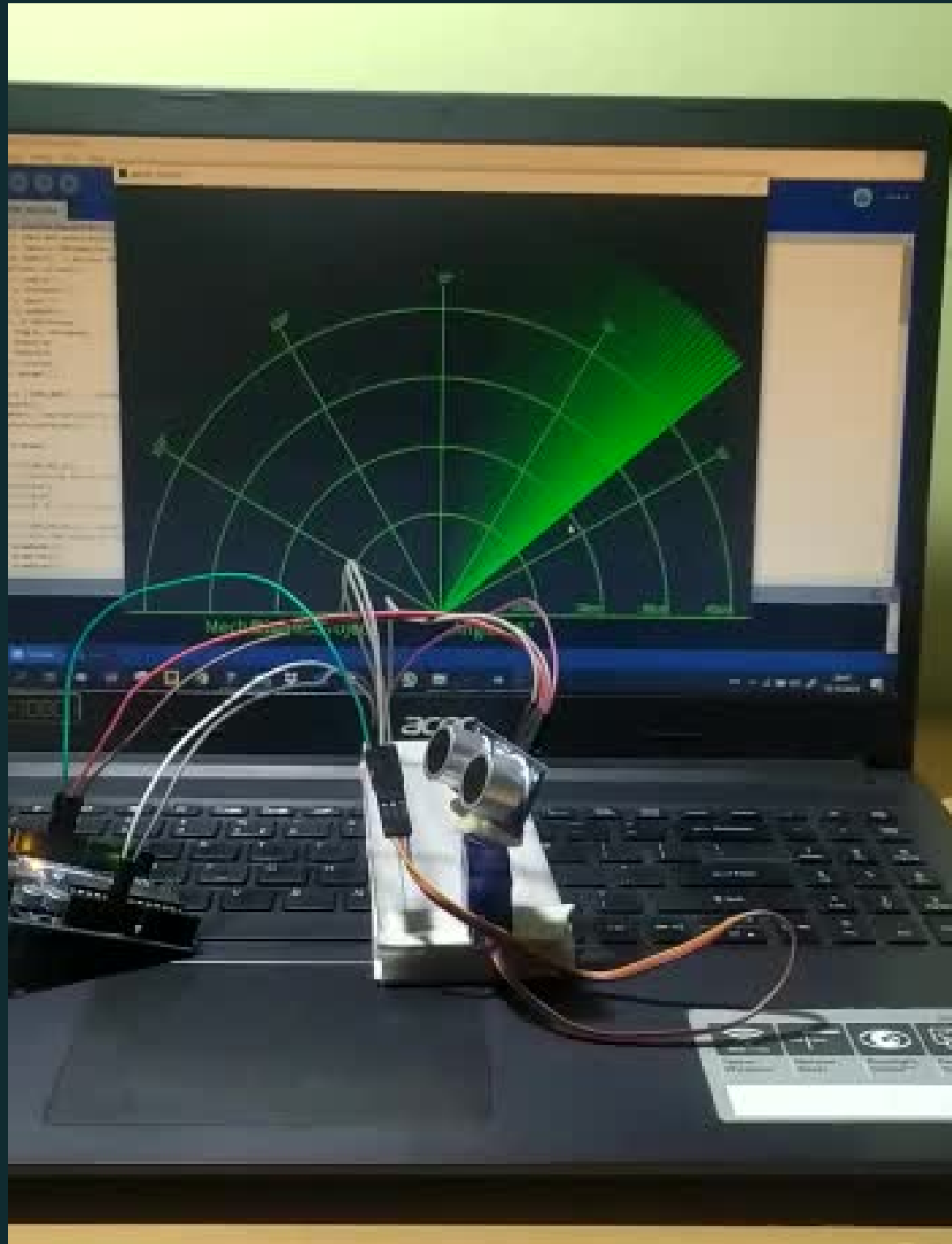
Servo myServo; // Creates a servo object for controlling the servo motor

void setup() {
  pinMode(trigPin, OUTPUT); // Sets the trigPin as an Output
  pinMode(echoPin, INPUT); // Sets the echoPin as an Input
  Serial.begin(9600);
  myServo.attach(12); // Defines on which pin is the servo motor attached

void loop() {
  // rotates the servo motor from 15 to 165 degrees
  for(int i=15;i<=165;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=165;i>15;i--){
    myServo.write(i);
    delay(30);
    distance = calculateDistance();
    Serial.print(i);
    Serial.print(",");
    Serial.print(distance);
```


WORKING:





Advantages



07

1. It is not affected by color or transparency.
2. Any dark environments have no effect on this Arduino radar sensor's detection procedure. So, it can also use at night.
3. Easy to design and low price.
4. It has high frequency, high sensitivity, therefore, it can easily detect the external or deep objects.
5. This radar sensor is not affected by dust, rain, snow, and many more.
6. The Arduino Radar Sensor is easy to use. Also, it is completely safe during the operation to nearby objects, humans or equipment.
7. The Ultrasonic sensor can easily interface with any type of microcontroller.

Limitations

1. The Arduino Radar Sensor conducts sound to continue the work. So, it is not working in a vacuum, as there is no air for the sound to travel through.
2. A very soft fabric can absorb more sound waves. Therefore, it is hard to detect objects which are covered with soft fabric.
3. Another limitation is the detection range. This depends on which Ultrasonic sensor has been used to make the Arduino Radar Sensor.



Working Model Link:

<https://drive.google.com/file/d/1meVoLTzPKNu-cuwpUZN3tOQCSSP6ODms/view?usp=sharing>

The background is a solid dark navy blue. It features several thin, parallel, wavy lines in a light teal or cyan color. These lines are positioned in the top right and bottom left corners, creating a sense of movement and depth. The lines are more densely packed in some areas and more spread out in others, giving them a fluid, organic appearance.

THANK YOU