UNVEILING THE POTENTIAL OF ARDUINO RADAR

Introduction: RADAR ("**Radio Detection and Ranging**") It's a system that uses radio waves to detect the presence, direction, distance, and speed of objects such as aircraft, ships, spacecraft, and even weather formations.

Arduino Radar—a gateway to exploring the fascinating world of radar sensing using Arduino microcontrollers. Radar technology has traditionally been associated with complex and *costly* systems, but with Arduino, we unlock new possibilities for affordable and accessible radar applications. In this presentation, we will delve into the basics of radar technology, examine how Arduino can be utilized to build radar systems, explore practical implementation strategies, and showcase exciting applications across various domains. Whether you're a hobbyist, student, or industry professional, join us on this journey as we uncover the versatility and potential of Arduino Radar.

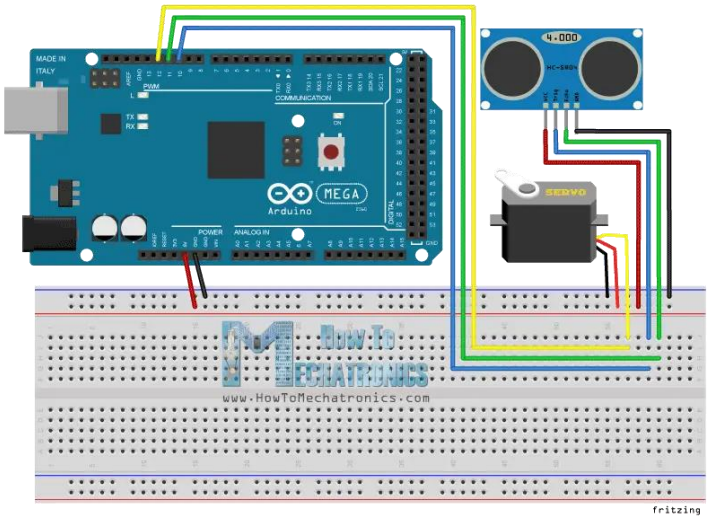
Methodology:

Componenets used:- 1. Ultrasonic Sensor HC-SR04

2. Servo Motor
3. Arduino Board
4. Breadboard and Jump Wires

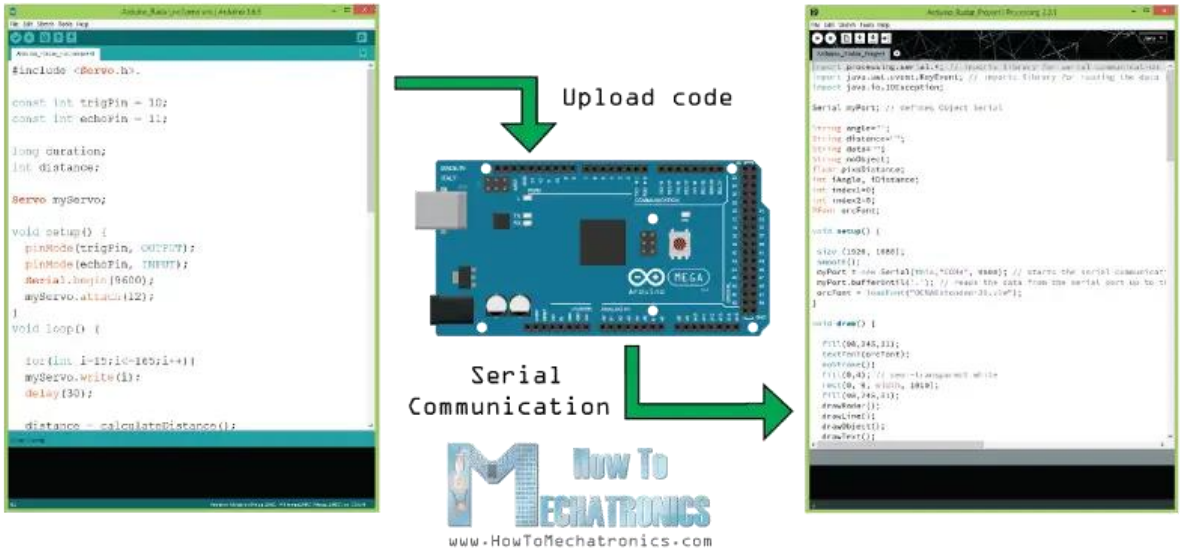
Arduino Radar Circuit Schematics :-

I connected the Ultrasonic Sensor HC-SR04 to the pins number 10 and 11 and the servo motor to the pin number 12 on the Arduino Board.



Source code :-

Now we need to make a code and upload it to the Arduino Board that will enable the interaction between the Arduino and the Processing IDE. For understanding how the connection works click here to visit my Arduino and Processing Tutorial.



Here is the code :-

```
#include <Stepper.h>

#define STEPS 2038 // the number of steps in one revolution of your motor (28BYJ-48)

const int stepsPerRevolution = 2038;

const int trigPin = 5;

const int echoPin = 6;


long duration;

int distance;

int roundAngle;

int Angle;
```

```
Stepper stepper(STEPS, 8, 10, 9, 11);

int stepCount = 0;

void setup() {
// nothing to do
 pinMode(trigPin, OUTPUT);
 pinMode(echoPin, INPUT);
 Serial.begin(9600);
}

void loop() {
  stepper.setSpeed(20);
  stepper.step(-10);
  distance = calculateDistance();
  delay(0);
  Angle = stepCount*0.883218842;
  roundAngle = (int)Angle;
  Serial.print(Angle);
  Serial.print(",");
  Serial.print(distance);
  Serial.print(".");
  stepCount++;
  if (stepCount==408) {stepCount =0;}


}
```

```
int calculateDistance(){

  digitalWrite(trigPin, LOW);
  delayMicroseconds(2);
  digitalWrite(trigPin, HIGH);
  delayMicroseconds(10);
  digitalWrite(trigPin, LOW);
  duration = pulseIn(echoPin, HIGH);
  distance = duration*0.034/2;

  return distance;
}
```

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