GOVERNMENT COLLEGE OF TECHNOLOGY

DEPARTMENT OF ECE

TECHTALK-23

# METAL AND NON-METAL TRASH SEPARATOR USING ARDUINO


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ABSTRACT :

In recent years,sorting of metals and non-metals has gained lot of focus.In our project,we propose the concept of "METAL AND NON-METAL Trash Separation using Arduino UNO".

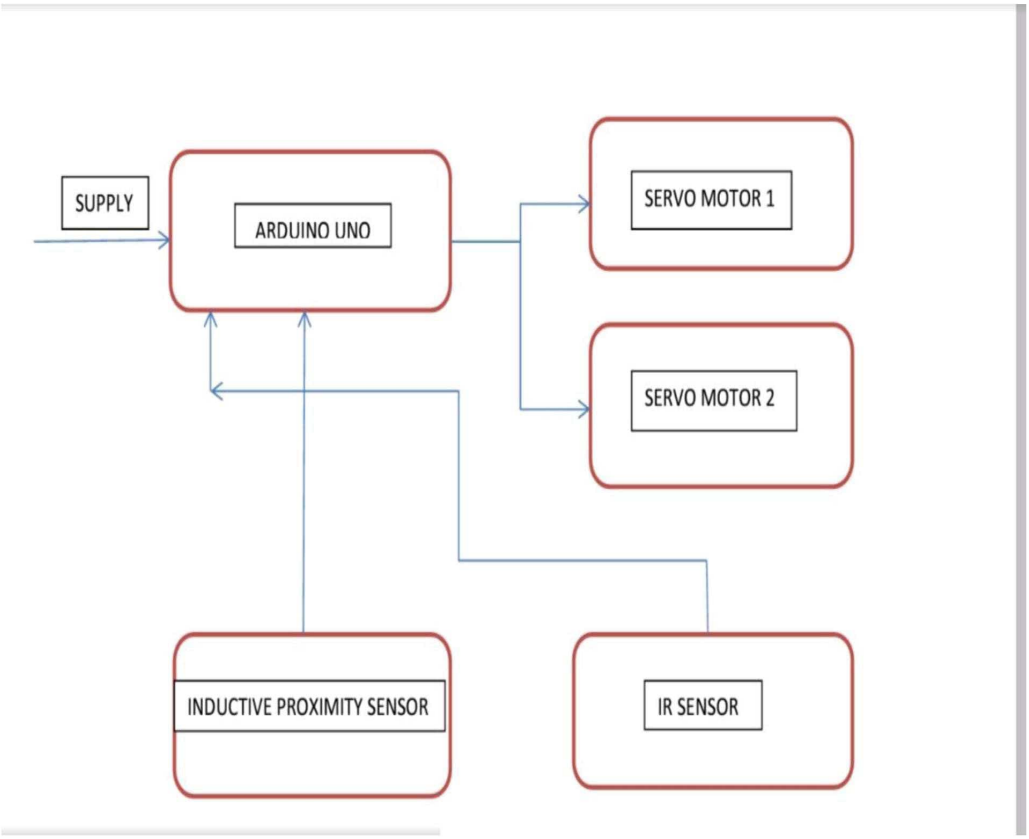
The system of sorting is done using a inductive proximity sensor also known as metal detector. The IR sensor and Proximity sensor combinely senses the product and if it is metal ,then it will be separated in one side of the dustbin. Otherwise it will be trashed in other side of the dustbin.

The lid of the two sides of the dustbin opens by the 90` angle rotation of servo motors. After 4 seconds the servo motor rotates back and the lid gets closed.

## COMPONENTS USED :

1) Arduino UNO
2) Inductive proximity sensor
3) IR sensor
4) Solderless breadboard
5) Servo motors- 2
6) Jumper cables

## BLOCK DIAGRAM:



COMPONENT DESCRIPTION :

a) Arduino UNO:

An Open source microcontroller board based on the microchip ATmega328p microcontroller.The board is equipped with sets of digital and analog I/O pins that may be interfaced to various expansion boards and other circuits.There are 6PWM(Pulse Width Modulation )pins among the 14 digital pins.

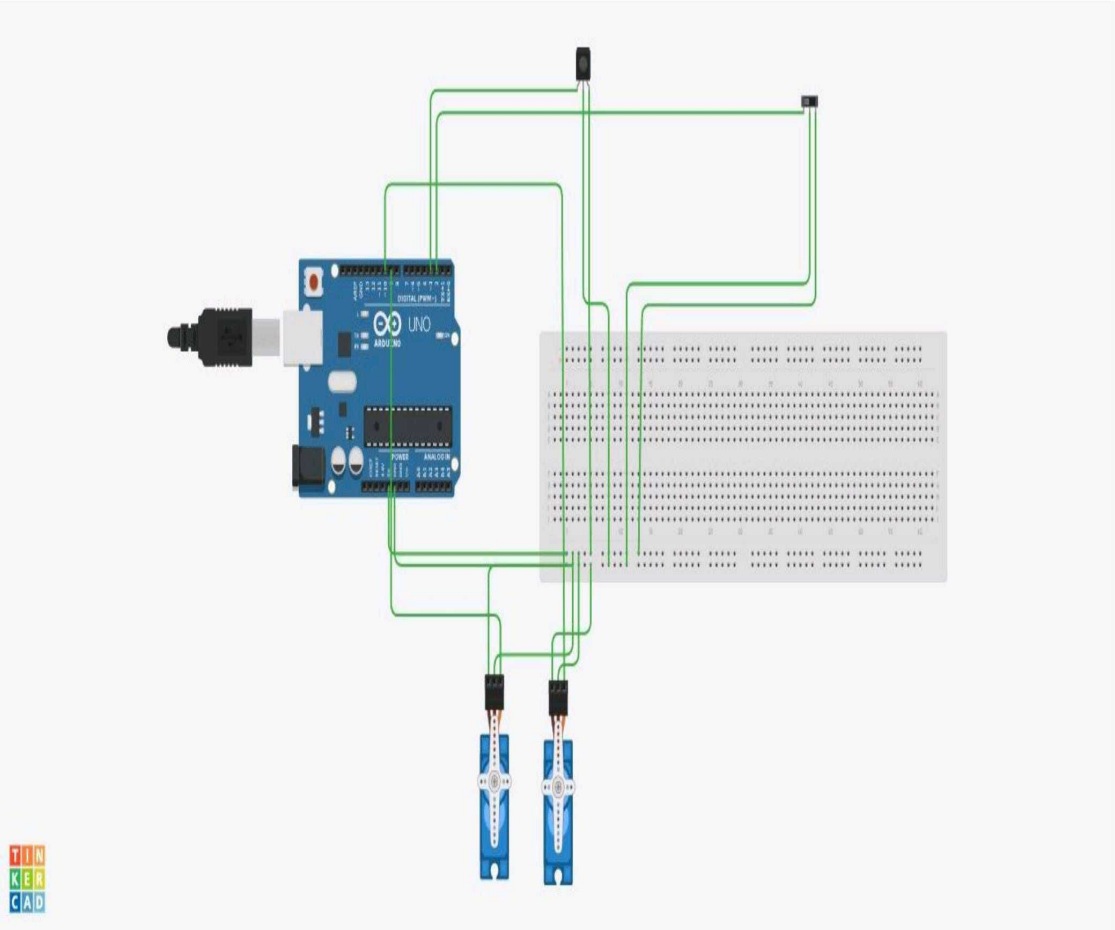
b) IR sensor:

An IR sensor is a radiation-sensitive optoelectronic component with a spectral sensitivity in the infrared wavelength range 780 nm...50 micro metre.

c) Inductive Proximity sensor:

This sensor operates under the electrical principle of inductance where fluctuating current induces an EMF in a

# CIRCUIT DIAGRAM :



# ARDUINO CODE :

```
#include<Servo.h>
Servo servo1;
Servo servo2;
void setup() {

  servo1.attach(9);
  servo2.attach(10);
  pinMode(2,INPUT);
```

target object.They consists of four major components:

i) a ferrite core with coils
ii) an oscillator
iii) a Schmitt trigger
iv) an Output amplifier

d) Servo motor:

The TowerPro SG90 9g mini servo is a 180` rotation servo.It is a digital servo motor that receives and processes PWM signal faster and better.

APPLICATIONS :

- In malls, theatres, Schools or Colleges for trash separation.
- The Prime Minister Modi's mission of Swaccha Bharat Abhiyan can also be successfully implemented by using our project.

```
 pinMode(3,INPUT);
 pinMode(9,OUTPUT);
 servo1.write(0);
 servo2.write(0);
}

void loop() {
int  read=digitalRead(2);
int  reaad=digitalRead(3);
delay(1000);

 if(read == HIGH)
 {
  if(reaad !=HIGH)
  {
  servo1.write(90);
  delay(4000);
  servo1.write(0);
     }
 }
 else if(reaad !=HIGH)
 {
  if(read !=HIGH)
  {
   servo2.write(90);
   delay(4000);
   servo2.write(0);
  }
 }}
```

## UPCOMING DEVELOPMENT :

- To separate plastic waste,Capacitive proximity sensors are used.
- For trash separation in massive scale additionally conveyor belt is included in this.
- Garbage level indication is done using sensors.
- To indicate the trash level and the type of waste,a LCD display may be included.
- Can be placed with GPS tracker for finding the location of a dustbin get filled.

## CONCLUSION :

Hence trash separator using Arduino was designed successfully. It will help in keeping our environment clean and also eco-friendly.