SMART DUSTBIN

SUMMARY:

In this recent world, urbanization has increased tremendously. At the same phase,
there is increasing amount of in waste production. Waste management has been a
crucial issue to be considered. This report is a different way to achieve this good
cause. In this report, Automatic dustbin is built on a microcontroller based platform Arduino -
Uno board, which is interfaced with Ultrasonic sensor and pir sensor. It will stop overflowing of
dustbins along roadsides and localities as smart Dustbins are managed in

Once these smart bins are implemented on a large scale by replacing the traditional
bins, the waste can be quickly managed to its efficient level as it avoids unnecessary

lumping of wastes on roadside. So I was implement this project of smart dustbin depend on what am told you above ,this project will solve many problem statements and will help people got physical disabilities to waste carbage very easy.

INTRODUCTION:

About the Definition

   The smart bins are used as ultrasonic sensors which

detect the garbage or what dirty you gone to waste it. The

container is divided
into three levels of garbage being collected in it. Every time the garbage crosses a level the sensors
receives the data of comes garbage to the bin. This data is further goes to the servo motor threw the
Arduino Uno circuit board. Placing the ultrasonic sensors at the top of the bin, like on the cover of

the bin [2]. The comparison is done with help of microcontroller. After analyzing the image an
idea about level of garbage in the can and from the load cell sensor, weight of garbage can be
known. Accordingly, information is processed that is controller checks if the threshold level is
exceeded or not. This is convenient to use but economically not reliable. Instead of using plenty

of bins in an unordered fashion around the city, minimal number of smart bins can be used. Using
only one sensor at the surface level instead of three not only makes it affordable but also achieves
the same result [6, 8, 14].

## THERE IS THE COMPONENT OR DEVICE USED TO MAKE THIS PROJECT:

- Arduino Uno x 1

- Ultrasonic Sensor x 1

- Servo Motor x 1

- Breadboard

  pir sensor

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Description

Arduino uno: is an open-source platform used for building electronics projects. Arduino consists of both a physical programmable circuit board (often referred to as a **microcontroller**) and a piece of **software**, or IDE (Integrated Development Environment) that runs on your computer, used to write and upload computer code to the physical board.

The Arduino platform has become quite popular with people just starting out with electronics, and for good reason.

Unlike most previous programmable circuit boards, the Arduino does not need a separate piece of hardware (called a programmer) in order to load new code onto the board -- you can simply use a USB cable. Additionally, the Arduino IDE uses a simplified version of C++, making it easier to learn to program. Finally, Arduino provides a standard form factor that breaks out the functions of the micro-controller into a more accessible package.
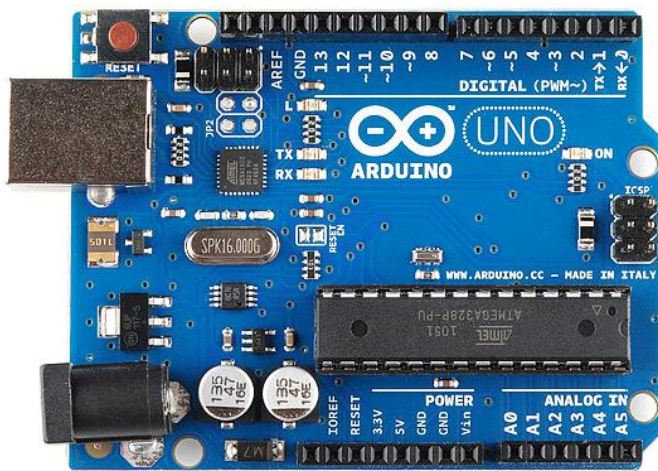
Ultrasonic sensor: is an electronic device that measures the distance of a target object by emitting ultrasonic sound waves, and converts the reflected sound into an electrical signal. Ultrasonic waves travel faster than the speed of audible sound (i.e. the sound that humans can hear). Ultrasonic sensors have two main components: the transmitter (which emits the sound using piezoelectric crystals) and the receiver (which encounters the sound after it has travelled to and from the target). is an electronic device that measures the distance of a target object by emitting ultrasonic sound waves, and converts the reflected

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Servo motor: a small device that has an output shaft. This shaft can be positioned to specific angular positions by sending the servo a coded signal. As long as the coded signal exists on the input line, the servo will maintain the angular position of the shaft.

Bread board: A breadboard (sometimes called a plugblock) is **used for building temporary circuits**. It is useful to designers because it allows components to be removed and replaced easily. It is useful to the person who wants to build a circuit to demonstrate its action, then to reuse the components in another circuit.

BREAD BOARD

PIR SENSOR

A PIR (Passive Infrared) sensor is an electronic device that detects the presence of humans and animals by sensing their body heat. PIR sensors are commonly used in security systems, lighting control, and other applications where detecting motion is important.

A typical PIR sensor consists of a pyroelectric sensor, which is a type of detector that responds to changes in temperature by generating a small voltage. The pyroelectric sensor is usually made of a thin film of pyroelectric material, such as lithium tantalate or polyvinyl fluorid. It is housed in a protective case that shields it from external interference and provides a lens to focus the infrared radiation onto the sensor.

When a person or animal moves within the sensor's detection range, their body heat causes a change in the infrared radiation detected by the sensor. This change is converted into an electrical signal, which is then amplified and processed by the sensor's electronics to trigger an output signal.

Here's an image of a typical PIR sensor:

CIRCUIT OF SMART DUSTNBIN
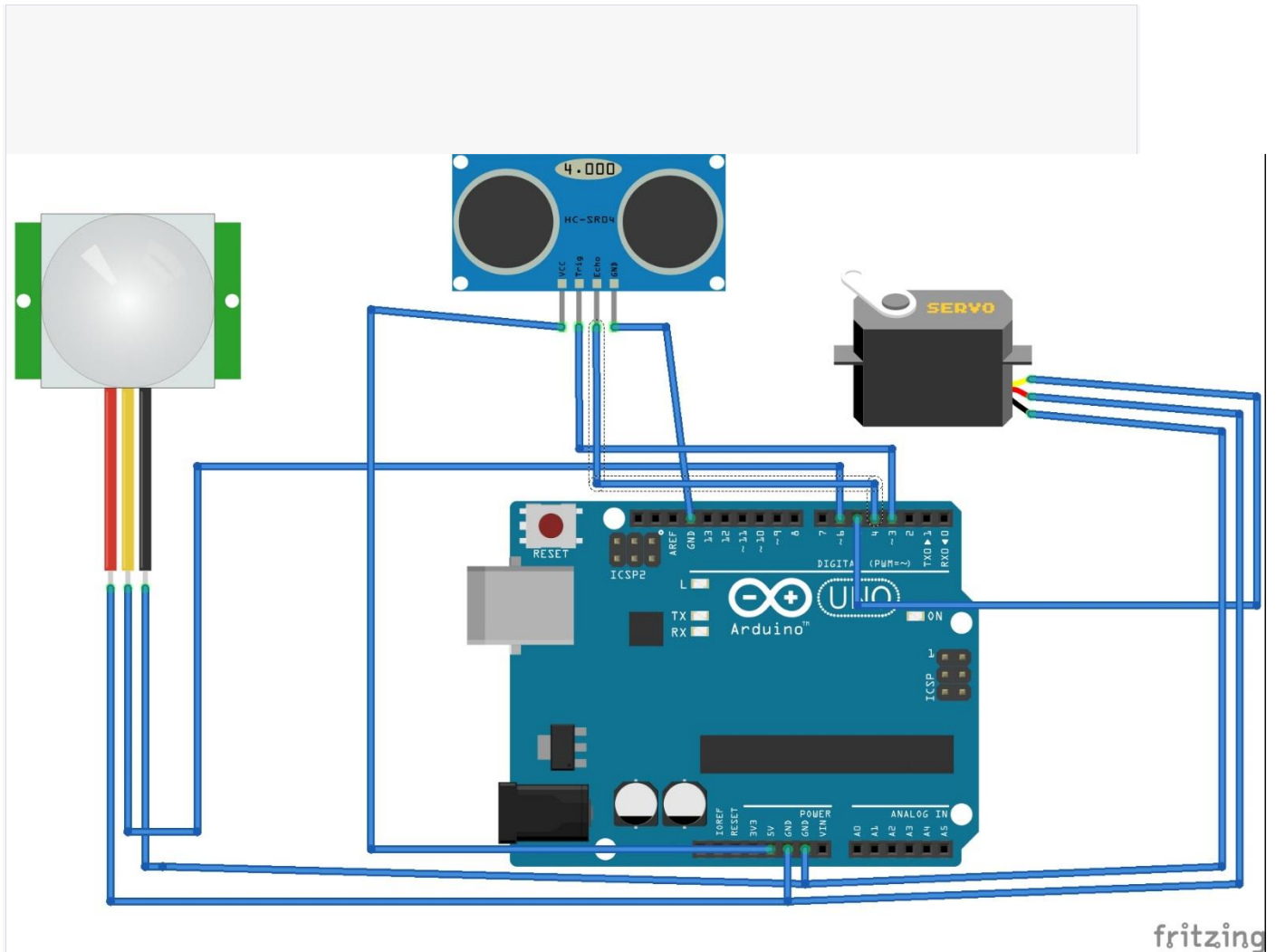
PROGRAMING CODE

```
#include <Servo.h>

Const int pir=6;
const int trigPin = 3;        // Ultrasonic sensor trig pin
const int echoPin = 4;        // Ultrasonic sensor echo pin
const int servoPin = 5;       // Servo motor pin
```

```
long duration;                // Ultrasonic sensor variables
int distance;

Servo myServo;                // Servo motor object

void setup() {
  pinMode(pir, INPUT);
  pinMode(trigPin, OUTPUT);     // Set Ultrasonic sensor trig
pin as output
  pinMode(echoPin, INPUT);      // Set Ultrasonic sensor echo
pin as input
  myServo.attach(servoPin);     // Attach servo motor to servo
pin
  myServo.write(0);             // Move servo motor to starting
position
}

void loop() {

if(pir==HIGH){
    myServo.write(90);                 // Stop servo motor
     delay(5000);
      myServo.write(0);                // Wait 1 second
};

  digitalWrite(trigPin, LOW);        // Set trig pin to low
  delayMicroseconds(2);
  digitalWrite(trigPin, HIGH);       // Set trig pin to high
  delayMicroseconds(10);
  digitalWrite(trigPin, LOW);        // Set trig pin to low
  duration = pulseIn(echoPin, HIGH);     // Measure echo pin
pulse duration
```

```
   distance = duration * 0.034 / 2;        // Calculate distance
from pulse duration

   if (distance < 9) {                      // If distance is less than 10
cm

mySrvo.write(0);
   }
 else {
```

Conclusion :

This project work is the implementation of SMART DUSTBIN Fill Alerting system using ARDUINO UNO ,ULTRASONIC SENSOR,PIR SENSOR AND DC SERVO MOTOR.