SMART DUSTBIN

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ABSTRACT: - The main objective of the project "SMART DUSTBIN" is to develop an Arduino based dustbin in which smart bin is built on a microcontroller-based platform Arduino Uno board which is interfaced with GSM modem and Ultrasonic sensor. Ultrasonic sensor is placed at the top of the dustbin which will measure the stature of the dustbin.

Arduino will be programmed in such a way that when the dustbin is being filled, the remaining height from the threshold height will be displayed. Once the garbage reaches the threshold level ultrasonic sensor will trigger the GSM modem which will continuously alert the required authority until the garbage in the dustbin is squashed.

Once the dustbin is squashed, people can reuse the dustbin. At regular intervals dustbin will be squashed. Once these smart bins are implemented on a large scale, by replacing our traditional bins present today, waste can be managed efficiently as it avoids unnecessary lumping of wastes on roadside.

1. INTRODUCTION

The rate increasing population in our country has increasing rapidly and also, we have increase in garbage which have increased environmental issue. Dustbin is a container which collects garbage's or stores items which recyclable or non-recyclable, decompose and non-decompose. They are usually used in homes, offices etc., but in case they are full no one is there to clean it and the garbage area spilled out. The surrounding of a dustbin is also conducive for increasing the pollution level.

Air pollution due to a dustbin can produce bacteria and virus which can produce bacteria and virus which can produce life harmful diseases for human. Therefore, we have designed a smart dustbin using Arduino Uno. Ultrasonic sensor which well sente the item to be thrown in the dustbin and open the lid with the help of the motor.

It is an IOT based project that will bring a new and smart way of cleanliness. It is a decent gadget to make your home clean, due to practically all offspring of home consistently make it grimy and spread litter to a great extent by electronics, wrappers and various other things

2. LITERATURE SURVEY

2.1 EXISTING SYSTEM

1. Smart Dustbin for Waste Management System D.Naveenreddy I.V. Sudarsan Reddy M.PavanKumar Reddy E. Hemanth Kumar ReddyShanky Saxena

Now a days one of the big issues is garbage.to control this waste management system we have to provide smart dustbins in home, in our surroundings, in bus stands, in many people leaving areas, in railway stations, in colleges, in hospitals etc. Now we have to reduce waste in all places we have to put dustbins wherever it needs these is garbage management system. For Smart dustbin operation we are using ULTRASONIC sensor for detecting distance and object and another sensor SERVOMOTOR is used for opening and closing the dustbin top and we are also using PIR sensor which is used for calculating the level of dustbin is filled and also we are using GAS sensor which is used for finding which harmful gases present inside the dustbin like methane gas and also we are using buzzer and LED which is used for when the dustbin is filled completely the buzzer will start some sound like alarm and also it glows led and also we are using LCD which is used for showing the level of dustbin is filled and also it shows when dustbin filled it is showing dustbin is filled.

2. Digital Dustbin - Smart Bins for Smart Cities International Journal of Innovative Technology and Exploring Engineering (IJITEE) ISSN: 2278-3075, Volume-9 Issue-7S, May 2020

This paper researches around the area of the solution of the garbage disposal and waste management with the help of technology. It gives a detailed model of how we can achieve the goal of 'Clean India' together with the use of sensors, cameras, servers, and even human psychology. With the revolutions taking place all over the world on the subject of the climate crisis and global warmings, it becomes a duty of every citizen to contribute to the future lifestyle. Satisfying all the parameters, at first, past researches have been compared, objectives have been defined and then a working model is thus presented. It has always been difficult to change the mind-set of a whole lot of people, and thus in this research paper, addressing this problem, the solution of such product development is given which satisfies the need of the citizens and also contributes effectively to the waste management system. The model is proved with a prototype, and all the facts & figures are provided, which are necessary.

3. Smart E-dustbin Publisher: IEEE Chinmay Kolhatkar; Bhavesh Joshi; Prachi Choudhari; Dhruvin Bhuva The basic Idea behind project is to

implement a smart way of handling the garbage in a smart way which is done by using the IOT protocol for transmitting the dustbin status wirelessly, which can generate email to notify to the concerned person that system is filled with garbage and need to be replaced We have selected the Espresso chip which is a node MCU ESP8266 platform. The ultrasonic sensor will show the level of garbage filled in dustbin, whereas the proximity sensors will detect the obstacle present in front of dustbin to avoid collision. LCD interfacing has been done to show the current situation of dustbin.

4. Smart Dustbin Research Original Title: SMART DUSTBIN RESEARCH PAPER https://www.scribd.com/document/518725572/SMART-DUSTBIN-RESEARCH-PAPER Dustbin levels are transmitted from Arduino setup with the help of ultrasonic sensors. Ata time we can't get signaled with the glowing led and a beeping buzzer. The indication would be sufficient to tell that the dustbin is fully filled. Hence the dustbin can be cleaned before it gets overfilled.

5. Smart Waste Management Using IOT Powered Dustbin: Mandhare Gulab M, Dixit Shweta P, Londhe Sonali P, Todkar Priyanka Devices are connected used for the purpose of safety and quality of life, city is surrounded by vehicle and infrastructure. System integrators, network operators and technology provide these are used in the working of government to give the smart solution. On standards-based communications platform it is difficult to generate the solution. Hence, we proposed solution for a smart waste collection management based on providing, IoT prototype with sensors. This will make things to become "SMART" and influence the lives of humans. Data can be read, collect and transmit large amount of data over the Internet. As the technological advancement increases in urbanization, industrialization and population governments across the global will need to device sustainable development plans.

2.2 PROPOSED SYSTEM

The proposed system is based on the concept by constructing sensor nodes which can detect and report the level of solid waste to appropriate nodes for further action. The architecture of the system nodes for further action. The architecture of system consists of the hardware and software parts. The various phases for the proposed system are described in the subsequent sections.

A similar methodology is implemented here, where the Ultrasonic Sensor is placed on top of the dustbin's lid and when the sensor detects any object like a human hand, it will trigger Arduino to open the lid.

2.3 Objective

In this project is to design and build a prototype for an automatic open dustbin that can automatically open the lid when it detects the people who want to throw out their trash. It also can detect the level of the trash that insists the dustbin. If the dustbin is full of trash at the certain level, the lid will not open even when there are people who want to throw out their trash.

3. RESEARCH METHODOLOGY

Smart Dustbin using Arduino is an IOT based project. Here we are using Arduino for code execution, for sensing we used ultrasonic sensor which will open lid and wait for moment. It will bring drastic changes in term of cleanliness with the help of technology. Everything is getting with smart technology for the betterment of human being. So, this help in maintaining the environment clean with the help of technology. It is a sensor-based dustbin so it would be easy to access for any age group.

Our aim is also to make it cost effective so that many numbers of people can get the benefit from this. And it should be usable to anyone and helpful for them.
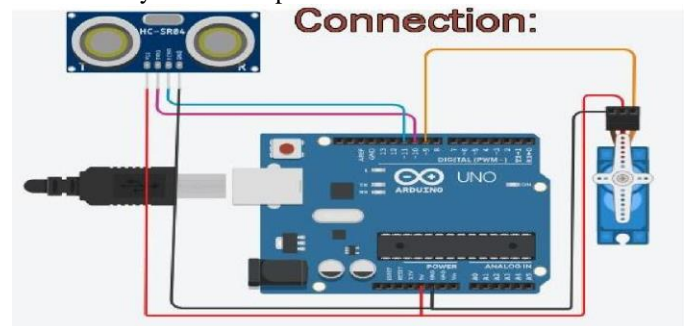

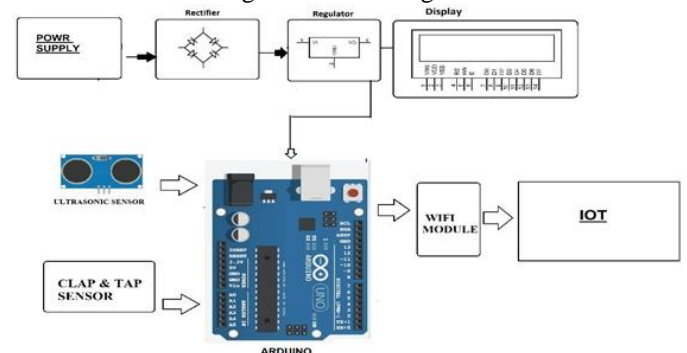Fig 1.1 Circuit Diagram

Fig 1.2 Flow Chart for Smart Dustbin

4: CODING

```
#include <Servo.h>
Servo myservo;
int pos = 20;
const int trigPin = 5;
const int echoPin = 6;
const int led = 13;

long duration;
float distance;

void setup()
{
myservo.attach(11);
pinMode(trigPin, OUTPUT);
```

```
pinMode(echoPin, INPUT);
pinMode(led, OUTPUT);
myservo.write(pos);
}

void loop()
{
//Serial.begin(9600);
digitalWrite(trigPin, LOW);
delayMicroseconds(2);
digitalWrite(trigPin, HIGH);
delayMicroseconds(10);
digitalWrite(trigPin, LOW);

duration = pulseIn(echoPin, HIGH);
distance = 0.034*(duration/2);
//Serial.println(distance);
if (distance < 27)
{
digitalWrite(led,HIGH);
myservo.write(pos+160);
delay(1000);
}
else
{
digitalWrite(led,LOW);
myservo.write(pos);
}
delay(300);
}
```

5. RESULT AND CONCLUSION

Here we are going to make an evolution change toward cleanliness. The combination of intelligent waste monitoring and trash compaction technologies, smart dustbins are better and shoulders above traditional garbage dustbin. It is equipped with smart devices like sensor Arduino tech. Lid of the dustbin will automatically open when an object comes near to the dustbin and after certain time period it will close the lid.

For social it will help toward health and hygiene, for business for we try to make it affordable to many possible. So that normal people to rich people can take benefit from it. Believe this will bring some changes in term of cleanliness as well as technology.

6. APPLICATION

1. Smart Dustbin can be used to avoid human contact with the dustbin hence avoiding diseases.
2. Smart Dustbin can help maintain sanitation as it will not accept litter after a certain point and hence avoid spilling of litter and waste
3. In Covid 19 pandemic times smart dustbin can help to reduce contact with others as the need to touch the dustbin will be diminished.

7. FUTURE SCOPE

The main aim of this project is to reduce human resources and efforts along with the enhancement of a smart city vision. We have often seen garbage spilling over from dustbins on to streets and this was an issue that required immediate attention. The proverb "Cleanliness is next to god and clean city is next to heaven" inspired us to conceptualized the project. Smart dustbin helps us to reduce the pollution.

Many times, garbage dustbin is overflow and many animals like dog or rat enters inside or near the dustbin. This creates a bad scene. Also, some birds are also trying to take out garbage from dustbin. This project can avoid such situations. And the message can be sent directly to the cleaning vehicle instead of the contractor's office.

Swatch Bharat Abhiyan (English: Clean India Mission and abbreviated as SBA or SBM for "Swatch Bharat Mission") is a national campaign by the Government of India, covering 4,041 statutory cities and towns, to clean the streets, roads and infrastructure of the country. In our system, the Smart dustbins are connected to the internet to get the real time information of the smart dustbins. In the recent years, there was a rapid growth in population which leads to more waste disposal. So, a proper waste management system is necessary to avoid spreading some deadly diseases

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