ORIGINAL CONTRIBUTION

Trash Talker

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ABSTRACT

As urbanization is spreading quickly, there is an expansion in the creation of waste. Nowadays people are facing more problems in waste collection and management. Cram full of wastes in the garbage bins are roots of many problems to the neighboring humankind and also contaminates the environs. Uncovering the garbage bins whether it is filled or not is immensely arduous. Hence we introduce our system to solve this problem. This proposed system will save the time and it also prevents the environement from contamination. This method is used to automatically identify the level of garbage in bin and sends alert message to telegram app which is the main aim of our paper .In this paper, the level in the dustbins will be detected with the assistance of the Ultrasonic sensor. The output from ultrasonic sensor is sent to Arduino Uno, further the information from Arduino is sent to Wi-Fi module, which helps in communication with the authorized person and cooperation workers.

Keywords—**Ultrasonic sensor HC-SR04, WIFI module ESP-12E, Arduino UNO ATmega328P**

1. INTRODUCTION

Over population in world may leads to increase in waste. People faces major environmental challenges associated with reduced waste collection, transport and disposal. Hence garbage management is becoming a major problem.

Waste management system includes monitoring of garbage, collection, transport, sorting, recycling or disposal, and waste material monitoring. So one of the critical issues that is becoming difficult to lead hygienic life is an efficient waste management system[1].the important challenges is from its inception till its disposal[2].

Due to the quick pace of urbanization, waste management is turning into a greater issue every day in each developed and developing nations. Fast urbanization and industrialization progress have changed the solid waste characteristics. The waste from different sources will be lead to ecological contamination. The conventional method of manually monitoring the wastes in waste bins is a tedious process and uses a lot of human effort, time, and cost which can easily be avoided with the current innovations. The garbage collection process is also highly redundant, inefficient[3].

A powerful solid waste administration rehearses should be refreshed to suit the present waste amount and structure. Municipal waste administration has experienced a few transitions. In the approach of smart city, the goal is to furnish a city with a fundamental foundation to give a personal satisfaction, a spotless and supportable condition through the utilization of some keen solutions. One of the essential frameworks is sanitation and solid waste administration.[4]

Smart Bin, is a garbage collecting dust bin, which is self- aware and detects the level of the waste in the dustbin and send alert message when bin gets filled using Internet of things[5].Smart Waste Collection Monitoring and Alert System to monitor the waste material at the selected site of garbage collection area[6].

Internet of Things (IoT) is a latest technology which is belongs to the interconnection of objects with internet.

IOT gives the capacity to interconnect countless devices through web and it creates an elegant condition by associating the gadgets with internet and result them with capacity to trade and assemble information.[7]

All the above problems can be solved by implementing trash talker. If in the public places the wastage are there then the corporation workers will get the alert to clean the particular area. So it will be helpful for them to identity whether the dustbins are fully filled or not. With the help of garbage monitoring time to time to make the environment healthy.

This proposed paper diminishes the advancement cost and keep environment clean and green.

2. PROPOSED METHOD

The components used in the project are ultrasonic sensor, WIFI module, Arduino UNO .Trash talker has ultrasonic sensor and it is used to detect the level of garbage in the bin. Firstly,the level of the garbage in the bin is measured using ultrasonic sensor. Secondly, the Arduino collects the data from the ultrasonic sensor and then sends the data to wifi module. Atlast when the bin is 90% filled, an alert message is sent to telegram app.

3. SYSTEM OVERVIEW

The sensor based automation system is developed to automate the detection of bin level and send information about bin level to authorized person. The proposed system use ultrasonic sensor to identify the level of the bin and sends information about bin level to telegram app. Sensors and Wi-Fi module is programmed using Arduino IDE, VMware workstation and Ubuntu coding platform.

Figure 1: Block diagram of proposed system

4. WORKING PRINCIPLE

The 12V power supply is given to Arduino. The Arduino is connected to ultrasonic sensor and Wi-Fi module .The 5V power supply is given to ultrasonic sensor and 3.3V power supply is given to Wi-Fi module via Arduino. The ultrasonic sensor sends signal to Arduino, the code uploaded in Arduino from Arduino ide calculates distance between ultrasonic sensor and garbage

in order to measure empty space in bin. The information is further sent to Wi-Fi module which sends alert message when garbage in bin reaches maximum limit, the required coding for receiving alert message from Wi-Fi module to telegram app is performed in VMware workstation and Ubuntu coding platform. Refer fig 1(block diagram) which is dramatically shown.

Ultrasonic sensor

Ultrasonic sensor is used to measure the level of garbage in bin. It is a four –pin module, VCC, trigger, echo, ground. It works on simple distance=speed *time. It has a transmitter and receiver .It transmits ultrasonic wave in air, when it gets objected by any material it gets reflected back.

WIFI module

It is a miniature Wi-Fi module used for establishing wireless network connection for micro controller .It does not have complex circuitry hence using it is very easy to use.

When the filled garbage Level of the bin is 0cm which indicates 0 percent of the bin is filled.

➢ When the filled garbage Level of bin is 70cm filled indicates 35 percent bin is filled.

➢ When the filled garbage Level of bin is 120cm filled indicates 60 percent bin is filled.

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➢ When the filled garbage Level of bon is 150cm filled indicates 75 percent bin is filled.

➢ When the garbage reaches 180 cm indicating 90 percent of bin is filled then the authorized person will receive an alert message in the telegram app. refer fig 4.

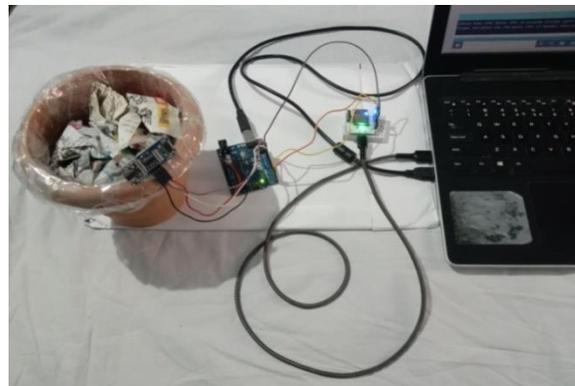| S.No	Pergentage of garbage lebel in the Bin(%)	Filled Garbage level in bin (cm)	Level of empty space in bin (cm)	Alert Message to the Authorized person
1	0	0	200	No Alert
2	35	70	130	No Alert
3	60	120	80	No Alert
4	75	150	50	No Alert
5	90	180	20	Alert message is generated

Figure 2: Resemblance of prototype

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When the garbage reaches 180 cm indicating 90 percent of bin is filled ARDUINO IDE CODE:

5. RESULT

Microcontroller, operating voltage is 5V.It has 14 digital input output pins and 6 analog input pins of which 6 can be used as To test the proposed model,refer fig 2 a 200cm tall trash bin PWM outputs. A 16 MHz ceramic crystal resonator, a USB-B equipped with ultrasonic sensor is considered. port, an ICSP header, a power jack and a reset button   A 200cm tall trash bin was filled progressively with garbage to   .Embedded C program is used for programming. Refer fig 3   reach desired level in order   to   test   the proposed   (output of arduino) displays the output of arduino ide code. prototype. Various percentage of garbage in big and alert message is tabulated in table 1

 #include

```
<Ultrasonic.h> Ultrasonic ultrasonic(13, 12);
void setup() { Serial.begin(9600);
 }void loop()
 {Serial.println(ultrasonic.distanceRead());
delay(1000);
 }
```

UBUNTU CODE:

```
from boltiot import Bolt import json,
time,requestsgarbage_full_limit = 7

Bolt_ID="dob5b8bb-2274-4977-8138-
e60044a5a834"
API_Key="BOLT14916889"mybolt        =
Bolt(API_Key,Bolt_ID)
telegram_bot_id="bot1652582323:AAEhTWIFf
0n2P KLc8KQtZLYFhNnxrBEV4"

telegram_chat_id="@trash_talker"defget_sensor
_value_from_pin(pin):

try:
```

```
response    =    mybolt.serialRead(pin)    data    =
json.loads(response)if    data["success"]    !=    1:
print("Request not succesfull") print("This is the
response>",data)    return    -999sensor_value    =
int(data["value"])    return    sensor_valueexcept
Exception as e:

print("Something went wrong when returning
the sensor

value")print(e)                return              -
999defsend_telegram_message(message):

url='https://api.telegram.org/'+telegram_bot_id +

"/sendMessage"data={

"chat_id":telegram_chat_id,

"text":message}try:

response=requests.request( "POST",url,

params=data

)
print("This is the Telegram URL") print(url)

print('This    is    the    Telegram    response')
print(response.text)

telegram_data=json.loads(response.text)    return
telegram_data["ok"]

except Exception as e:
print("Error occured in sending message via

Telegram")print(e) return

Falsewhile            True:sensor_value            =
get_sensor_value_from_pin("10")        print("The
Garbage Level is",sensor_value)if sensor_value
== -

999:print("Request                           was
unsuccessfull.Skipping.") time.sleep(10)continue

if            sensor_value<garbage_full_limit:
message="Hello , the trash can is full"
telegram_status =

send_telegram_message(message) print("This is
the    Terlegram    status:",telegram_status)
time.sleep(10)
```

Figure 3: Arduino output

Figure 4: Telegram message

6. CONCLUSION

This model describes the planning of a sensible waste bin useful to users around the world by reducing the overflowing trash .It is also efficient and eco friendly .The main goal of this project is to eliminate any risk of overflowing trash. In major cities, the waste assortment vehicle visits the bins daily twice or thrice depending on the population of the particular place and usually, these trash bins may not be full. Our system will inform the condition of each and every dustbin in real time, therefore the concerned authority can send the rubbish assortment vehicle only to the trash can which are filled. This technique not only saves fuel but also aids in the construction of greener and cleaner environment.

7. FUTURE SCOPE

Future scope of this paper is to enforce a compressor which is used to compress the trash, which will increase one bin garbage storage capacity nearby or equal to capacity of 4 bin and also a dry and wet waste separation facility can be incorporated. [4]

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