



# INTERNATIONAL JOURNAL OF ADVANCE RESEARCH, IDEAS AND INNOVATIONS IN TECHNOLOGY

ISSN: 2454-132X

Impact factor: 4.295

(Volume3, Issue2)

Available online at [www.ijariit.com](http://www.ijariit.com)

## Iot Based Waste Management for Smart City

**Nikam Mangesh<sup>1</sup>**

Sandip Institute of  
Engineering and  
Management, Nashik, India

**Kuwar Swapnil<sup>2</sup>**

Sandip Institute of  
Engineering and  
Management, Nashik, India

**Patil Avinash<sup>3</sup>**

Sandip Institute of  
Engineering and  
Management, Nashik, India

**Godse Avinash<sup>4</sup>**

Sandip Institute of  
Engineering and  
Management, Nashik,  
India

**ABSTRACT:** Many times we see in the societies the garbage bins or dustbins are placed at public places in the cities. Sometimes they overflow due to increasing in the waste or garbage. There is no automatic system to inform that dustbin is full to garbage office. In IOT based waste management proposed system, we are using smart dustbins to overcome these garbage problems. In this the garbage vehicle has a GPS module and all information about location of the dustbins if one of the dustbins is get filled then this dustbin informs the status of garbage to the garbage vehicle as well as garbage office through the internet. As soon as the garbage vehicle get information then it goes to the appropriate location and collects the waste or garbage.

**Keywords:** Arduino, ESP8266 WIFI Module, GPS.

### INTRODUCTION

Nowadays in our society, there is a big problem of garbage management the garbage vehicle comes at twice and thrice in a day but sometimes the garbage bins are not full then that's vehicle are not get full & hence in our project we using smart dustbins which give the indication to garbage office. Then garbage office tells the garbage percentage to the garbage vehicle. People's also gets the location of the dustbins, as well as garbage vehicle's drivers of the garbage vehicle, have the login ID, password when they get logged in then they get the information of the dustbin who is full and also have the path to go the appropriate location. In this paper, we show that how the digital dustbins are worked. "Swachh Bharat Abhiyan" was initiated to cleaning environment. Due to the polluted environment, there are bacterial infections occurred. At present day for the safeguarding of the environment, we should use technology sources. Due to the waste material majority of the public places are get polluted.

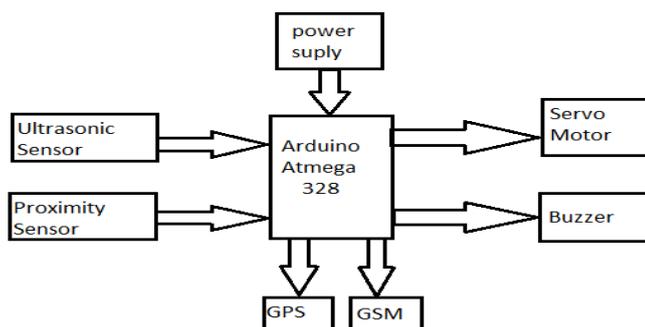
### BLOCK DIAGRAM

In this project, the system is divided into two part.

- 1) Dustbin section
- 2) Vehicle section

In the dustbin section the ultrasonic sensor calculates the distance of the dustbin and then, it sends the appropriate dustbin level to the garbage system. And In the vehicle section, there is one GPS module, that module sends the garbage vehicle's location to the website.

- **Dustbin section**

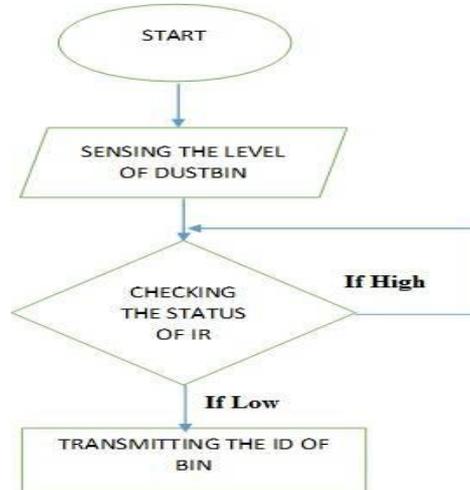


In this section the Arduino is connected to the ultrasonic section as well as the wifi module ESP8266 the ultrasonic sensor is continuously send the distance data to the Arduino and Arduino Uno is send this data to the website through Wi-Fi module esp8266.

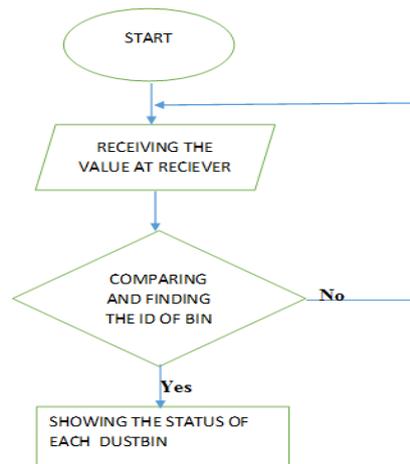
- **Vehicle section**

In this section gpsgy, 6mv2 is continuously sent the location of the vehicle in the form of latitude and longitude format. This GPS data is sent through Arduino and Wi-Fi module to the website.

- **Flow chart of the transmitting section**



- **Flow chart of the receiving section**



At the dustbin section when we put the garbage in the dustbin then and only then the door of the bin is open. This is done through a proximity sensor, if the proximity sensor value is high then the servo motor is operated and the door of the dustbin is opened, otherwise door is closed.

### WEBSITE PART

At the website, there is few PHP file which is used to get the data from the dustbin and garbage vehicle. The data of ultrasonic sensor is sent through the Arduino Uno through Wi-Fi module using GET request. At the websites end, there is one PHP script which is used to get the data from URL and store that data in the text file.

When the arduino touches the website url then the data is stored in the text file and this data is shown then on the web page using another PHP script. At the garbage vehicle, there is also same procedure for transferring the data of the GPS like latitude and longitude. This data stored in the database and there is one embedded Google map script that shows the location of the garbage vehicle as well as the track that shows the rout of the vehicle to the dustbin location.

### METHODOLOGY

Since this system consists of three sub-systems and the main system on which the others work is the Smart Dustbin System which has the functional unit called as Smart Dustbin Bin. It consists of ultrasonic and proximity sensors and Wi-Fi module. Sensors are

used to detect the level of the waste in the Smart Trash Bin. The Smart Trash Bin are always monitoring by the sensors and give the signal which is transmitted through the ESP8266 Wi-Fi module. This transmitted signal is received by the web servers. The Arduino in local base station receives the signal and then the signal is sent to monitoring cum controlling hut over the internet. At this monitoring cum controlling hut site, the information and status of the Smart Trash Bin are displayed. The details like height and status of the filled Smart Trash Bin are displayed on the Smart Monitoring and controlling Hut Interface. The Smart Monitoring and controlling Hut then sends the information signal to the Vehicle System. Once the job detail is received by the vehicle, the person in the vehicle moves to the spot and disposes of the waste from that Trash bin.

The public user also can access this website and can monitor the status of the dustbins and they can also trace the location of the garbage vehicle.

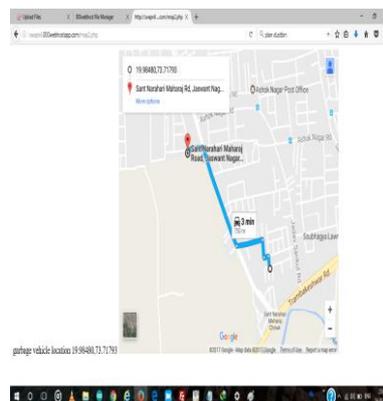
### RESULTS

in this project, the Wi-Fi module continuously sends the signal to the web server when the user logs in at the website they can see the output if the dustbin is full or empty. When garbage vehicle driver logs into the system then they can get notification of the dustbins which is full and when driver clicks on that link then they can see the map of the route from the current location to the destination.

The output of the web page of the garbage bin level is as shown in the fig.



The output of the garbage vehicle route is as follows



### **CONCLUSION**

Using this system we can easily know the level of the dustbin whether the dustbin is full or empty.

In many cities, the garbage collection vehicle's visit the area everyday twice or thrice depends on the population of the particular area and sometimes these dustbins may not be full. Our System will inform the status of each and every dust bin in real time so that the concerned authority can send the garbage collection vehicle only when the dustbin is full.

Environmental pollution is causing a lot of distress not only to humans but also animals, driving many animal species to endangerment and even extinction.

We have implemented the real time waste management system, Due to the use of the digital dustbin our city will keep clean. Using this project we can easily trace dustbin vehicle as well as the location of the dustbin.

### **REFERENCES**

- [1] Kanchan Mahajan, "Waste Bin Monitoring System Using Integrated Technologies", International Journal of Innovative Research in Science, Engineering, and Technology, Issue 3, Issue 7, July 2014.
- [2] M. Al-Maaded, N. K. Madi, RamazanKahraman, A. Hodzic, N. G. Ozerkan , An Overview of Solid Waste Management and Plastic Recycling in Qatar, Springer Journal of Polymers and the Environment, March 2012, Volume 20, Issue 1, pp 186-194.
- [3]Islam, M.S. Are by, M.; Hannan, M.A.; Basri, H,"Overview for solid waste bin monitoring and collection system" Innovation Management and Technology Research (ICIMTR), 2012 International Conference, Malacca, 258 –262.
- [4]Raghumani Singh, C. Dey, M. Solid waste management of Thoubal Municipality, Manipur-a case study Green Technology andEnvironmental Conservation (GTEC 2011), 2011 International Conference Chennai 21 –24.
- [5]Vikrant Bhor, "Smart Garbage management System International Journal of Engineering Research & Technology (IJERT),Vol. 4 Issue 03, March-20152000.
- [6]Narayan Sharma,, "Smart Bin Implemented for Smart City", International Journal of Scientific & Engineering Research, Volume 6, Issue 9, September-2015.