ARDUINO   BASED ON DESIGN OF SMART GARBAGE BIN

B Thirupathi, Assistant Professor Dept. Ece, Sri Indu College Of Engineering And Technology

Sandhya Bolla, Associate Professor Dept. Ece, Sri Indu College Of Engineering And Technology

Swathi Payyavula, Assistant Professor Dept. Ece, Sri Indu College Of Engineering And Technology

Abstract:

In our surroundings, many times an observation is made that the garbage bins kept at public places overflows because of increase in the garbage regularly. It results in unhealthy condition for the people and spreads bad smell which results in spreading some serious diseases in Human Beings. So to avoid such a situation, the basic idea is to develop a system named "IOT Based Garbage Monitoring System". In this system multiple dustbins are located throughout the city and these dustbins has micro-controllers which help to track the garbage bins level and a unique ID will be provided for each and every dustbin so it will be easy to identify which particular garbage bin is full.

The device will transmit the level along with the unique ID provided to the concern authorities when the garbage bin will reach defined threshold limit. We will be implementing the k-means clustering algorithm to form the clusters of the days according to the percentage of garbage collected so it will be easy to predict the garbage collection and notify accordingly. These details can be accessed by the authorized personnel from their place and action can be taken in shorter time to maintain the dustbins.

I INTRODUCTION

We are living in an age where tasks and systems are fusing together with the power of IOT to have a more efficient system of working and to execute jobs quickly! With all the power at our finger tips this is what we have come up with. The Internet of Things (IoT) shall be able to incorporate transparently and seamlessly a large number of different systems, while providing data for millions of people to use and capitalize. Building a general architecture for the IoT is hence a very complex task, mainly because of the extremely large variety of devices, link layer technologies, and services that may be involved in such a system. One of the main concerns with our environment has been solid waste management which impacts the health and environment of our society.

The detection, monitoring and management of wastes is one of the primary problems of the present era. The traditional way of manually monitoring the wastes in waste bins is a cumbersome process and utilizes more human effort, time and cost which can easily be avoided with our present technologies. This is our solution, a method in which waste management is automated. This is our IoT Garbage Monitoring system, an innovative way that will help to keep the cities clean and healthy.

Nowadays, there are tons of flats and apartments which have been built in the rapid urbanization area. This is due to high housing demands which have been drastically risen as a result of migration from villages to cities to find work. In order to accommodate the growing population in the urban area, the government has also constructed more apartment complexes. There are several issues faced by the residents of the flats. One of them is disposal of solid waste. Unlike private houses, the residents of all the apartments use a common dustbin, which tends to fill up very quickly. This overflowing of garbage is a sanitary issue which might cause diseases like cholera and dengue. Moreover it is a waste of fuel to travel around a complex or an area to

find that some of the garbage are filled and some are not. Also, on rare days, problems might arise that there is so much garbage that the truck doesn't have enough capacity. The idea struck us when we observed that the garbage truck use to go around the town to collect solid waste twice a day. Although this system was thorough it was very in efficient**.**

II LITRATURE SURVEY

Municipality takes numerous measures to keep up the neatness of the city. One of which is setting up dustbins in customary separation for the comfort of general society to dispose of things. This avoids lumping of rubbish in the roadside dustbin which winds up giving foul smell and disease to people. The circuit to control up the mechanical gadgets is additionally gathered to get the expected output. The paper [1] Smart Garbage Management in Smart Cities using IoT proposed a method as follows.

The level of trash in the dustbins is observed with the assistance for ultrasonic sensors framework and interfaced to the approved control room through GSM framework. An alternate system to waste management is acquainted likewise. A dustbin is interfaced with an microcontroller-based framework Hosting

IR remote frameworks alongside central framework indicating that current status about garbage, with respect to portable web program for HTML page. Henceforth the status will be updated once on the HTML page. Thereby to decrease human assets and deliberations alongside with the improvement of an advanced mobile city.

A Geological data framework transportation model for robust waste accumulation that elaborates arrangements to waste storage, gathering and transfer has been suggested in [3] for the city of Asansol situated in India. An improved directing and planning waste gathering model is suggested to the Eastern Finland, emphasizing the use of a guided variable

neighbourhood threshold meta-heuristic. The main motive is to create an ideal calendar to trucks looking into characterized gather. This proposes an advanced mobile caution framework for trash cleaning by eventually providing for a caution indicator to the metropolitan web server for immediate cleaning of dustbin with proper confirmation of level of trash filling.

IV EXISTING SYSTEM

The existing system collects garbage once a day. It can also happen that

sometimes waste spills out of the bins. Its unhygienic for the people too and leads to badod or around the surrounding and leads to spreading some deadly diseases. To tackle such situation, a system is proposed named as IOT based Garbage monitoring system.

In the existing system there is no indication whether the dustbin is over flown. It is more time consuming task and it is less effective. It leads to the wastage of time since the truck will go and clean whether the dustbin is full or empty. This system need high cost. This system will create a unhygienic environment and make the city unclean. In this system the level of the dustbin will not be known and create the bad smell spreads and cause illness to human beings. It also make more traffic and noise.

III PROPOSED SYSTEM

In present day the dustbin is over flown, the proposed system will help to avoid the overflow of dustbin. It will give the real time information about the level of the dustbin. It will send the message immediately when the dustbin is full. Deployment of dustbin based on actual needs. Cost of this system is minimum the resources are available easily. Improves environment quality by reducing the smell and make the cities clean. It has effective

usage of dustbins. It will also reduce the wastage of time and energy for truck drivers. It will also indicate the availability of toxic substance in the bin.

Figure. 4. 1 PIN DIGRAM

In this each dustbin is given a unique ID for easy identification. We continually monitor all the dustbin in our system through an Android App Blink and also monitor all the events in the system. In this system many number of dustbins are connected through the internet. The ultrasonic sensor is connected to detect the level of dustbin. The dustbin is divided into three level. The Ultrasonic sensor detect the level of the dustbin and send it to the RF transmitter. The availability of waste could be monitored through android app. The ultrasonic sensor will be interfaced to Arduino Mega and will be the input section of the system. Arduino Mega will be programmed to perform the task to measure via sensor and give output.

Arduino Mega will be connected to Internet and it will be logged onto the server through the Ethernet shield. This information is then given to the web using internet. The municipality officer get the output in virtualization.
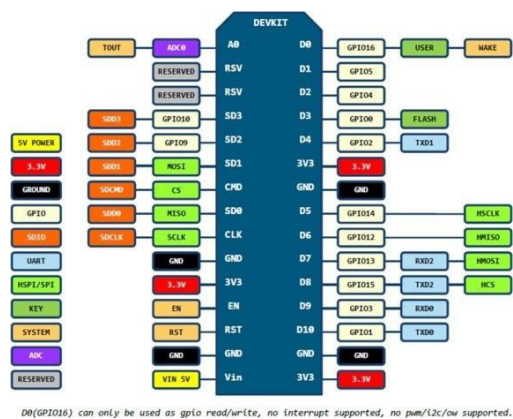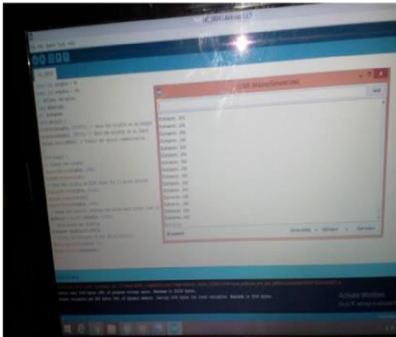
V RESULTS AND OBSERVATION

| Figure 5.1 | Figure 5.2 |

Fig5.1 Output as text message on phone

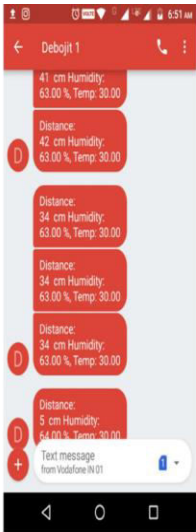**Fig5.2 Output of sesnor**

The output of this project should have been the values of the distance, temperature and humidity, which we were supposed to get via a text message. For, the GSM Module to send data, the sensors must be working perfectly which can be

seen in figure 13. This brings us to figure 14 in which we see the text messages sent from the GSM Module. Also, the output in Blynk app is shown in figure 11, which shows the real time data on the app, via WIFI.

VI Conclusion

We built an efficient garbage monitoring system which can be used to monitor the level of garbage in the dump. This data can be further used to plan garbage collection trips more efficiently, ultimately reducing overflowing bins and helping have better public sanitation.

Advantages:

- Very simple circuit.

- The HCSR04 sensor is very rugged.

- Helps monitor garbage levels.

- Uses very small amount of electricity.

- Ultimately helps in better planning of garbage pickups.

- Can help in reducing overflowing bins.

- Reduce strips to are as where the bins still have a lot of capacity.

Disadvantages

- Cannot detect liquid waste.

- Only detects the top of the garbage level. It wouldn't realize if there is space left.

- GSM module needs a12v source.

VII FUTURE SCOPE

The system provides us with the real time information and status of garbage bins located in different areas. With the help of this real time information we can monitor the bins and once the bins are full the workers can collect the garbage and set them to empty again. This system is cost effective and can be accessed from anywhere. Traffic can be controlled as the workers collect the garbage only when the bin is full whereas in traditional way workers collect the garbage daily whether the bin is filled or not. This system has a future scope where this system can be used with time stamp where real-time clock will be made available to the authority stating at what time Garbage bins was full and at what time did the garbage is collected from the smart Garbage Bins.

VIII References

- Navghane S S, Killedar M S and Rohokale D V 2016 IoT Based Smart Garbage and waste collection, International Journal of

- Advanced Research in Electronics And Communication.

- Monika K A, Rao N, Prapulla S B and Shobha G 2016 Smart Dustbin-An EfficientGarbage Monitoring System International Journal of Engineering Science andComputing 6 7113-16.

- Medvedev A, Fedchenkov P, Zaslavsky A, Anagnostopoulos T and Khoruzhnikov S,2015 Waste management as an IoT-enabled service in smart cities In Conference on Smart Spaces Springer International Publishing 104-15.

- www.buildofy.in/smart_home_designs

- https://create.arduino.cc/projecthub/Techno vation/smart-garbage-monitoring-system-using-arduino-101-3b813c

- https://github.com/sourabhdeshmukh/Smart-Dustbin

- http://invent.module143.com/temperature-and-humidity-using-nodemcu-blynk/

- http://help.blynk.cc/getting-started-library-auth-token-code-examples/blynk-basics/what-is-virtual-pins

- http://help.blynk.cc/getting-started-library-auth-token-code-examples/blynk-basics/how-to-display-any-sensor-data-in-blynk-app

- http://help.blynk.cc/how-to-connect-different-hardware-with-blhttp://ieeexplore.ieee.org/xpl/articleDetails.jsp?arnumber=7264372&newsearch=true&queryText=iot%20garbage

- ynk/esp8266/nodemcu

- Kanchan Mahajan, "Waste Bin Monitoring System Using Integrated Technologies", International Journal of Innovative

- Narayan Sharma,, "Smart Bin Implemented for Smart City",International Journal of Scientific & Engineering Research, Volume 6, Issue 9, September-2015

- Raghumani Singh, C. Dey, M. Solid waste management of Thoubal Municipality, Manipur- a case study Green Technology and Environmental Conservation (GTEC 2011), 2011 International Conference Chennai .

- Al-Maaded, N. K. Madi, Ramazan Kahraman, 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.

- Vikrant Bhor, "Smart Garbage management System International Journal of Engineering Research & Technology (IJERT),Vol. 4 Issue 03, March-20152000.

- Research in Science, Engineering and Technology, Issue 3 ,Issue 7 , July 2014.

- Islam, M.S. Arebey, M. ; Hannan, M.A. ; Basri, H,"Overview for solid waste bin monitoring and collection system" Innovation Managementand Technology

Research (ICIMTR), 2012 International
Conference , Malacca, 258 – 262