IJIRCCE

e-ISSN: 2320-9801 | p-ISSN: 2320-9798

INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN COMPUTER & COMMUNICATION ENGINEERING

Volume 11, Issue 5, May 2023

INTERNATIONAL STANDARD SERIAL NUMBER INDIA

Impact Factor: 8.379

International Journal of Innovative Research in Computer and Communication Engineering

| e-ISSN: 2320-9801, p-ISSN: 2320-9798| www.ijircce.com | |Impact Factor: 8.379 |

|| Volume 11, Issue 5, May 2023 ||

| DOI: 10.15680/IJIRCCE.2023.1105231 |

IOT Based Smart Dustbin

Prof. Shirbahadurkar. S. D, Hemant Patil, Aniket Kavankar, Tushar Nanaware

Professor(HOD), Dept. of EnTC., Zeal College of Engineering and Research- Pune, India[1]

UG Students, Dept. of EnTC., Zeal College of Engineering and Research- Pune, India [2,3]

ABSTRACT*:* In the perspective of a developing country like India, the problem of garbage management is becoming a major issue as the overpopulation of the country is producing a lot of wastes per day and does not have any proper treatment system for these wastes. For the better living of the people of a country,it needs to solve the problem related to garbage management and treatment. This paper proposed a system of garbage management which can monitor the garbage level, the humidity, the temperature and can sense the response of flame. To ensure the clearance of the garbage, radio frequency identification (RFID) system is installed and with the help of Internet of Things (IOT) all the system can be monitored from the server by the authority. Two types of communication protocol are used here one is Message Queuing Telemetry transport (MQTT) protocol, and the other is Long Range Wide Area Network (LRWAN) technology which is used as a backup. After collecting all the garbage from individuals bins, they have to be dumped centrally, and machine learning model is used here to segregate the garbage into biodegradable. This helps in clearing the wastage from dustbin in an efficient and smartest way

KEYWORDS – IOT device, Sensor technology, management system, waste management, plastic segregation, waste management , waste segregation system, waste management system, metal waste segregation, IOT based system, image processing, machine learning, etc.

I.INTODUCTION

Internet of Things (IOT) is the expansion of web availability into physical gadgets and everyday items are inserted with gadgets, net availability and diverse sort of equipment, (for example, sensors). India is a developing country, and the Government of India has promoted a scheme called “Digital India” to develop the country thriving information technology sector. India is developing with high potential, but it is uprising the problem of overpopulation. With the rapid growth of population garbage management has become hazardous issue due to irregular observation, collection and improper treatment of garbage. These contraptions will convey and connect with others over the web and that they can be remotely observed and controlled. It is registering thought that depicts the idea of regular physical items being associated with web and being able the spot themselves to elective gadgets. Usages of the system of sensors and different gadgets through the methods for electronic and other programming so as to get information about that physical gadget.

As IOT is one of the world’s most trending technology, a garbage monitoring systems with IOT has proposed here as a solution to the garbage management and treatment problem. This system has some physical devices (like sensors, micro-controller,wi-fimodule) connected with wireless communication and publish the real-time information to the people involved with garbage management system.

The paper proposes IOT related propelled trash segregation and the management framework which verifies the garbage in dustbins using sensors and once it is recognized the waste materials in it will be segregated with the assistance of sensors and quickly this framework adjusted to cloud database through IOT.

II. WORKING PRINCIPAL

determining whether the garbage is wet or dry it happens in a way that the garbage present on the second lid has a moisture sensor in it whereas it also has a IR Sensor in it which sense the presence of garbage present upon the lid then the moisture sensor determines whether the garbage present in it is wet or dry. Once the moisture sensor is done with it the servo motor gets the command of rotating and putting the garbage in the respected side.

| e-ISSN: 2320-9801, p-ISSN: 2320-9798| www.ijircce.com | |Impact Factor: 8.379 |

|| Volume 11, Issue 5, May 2023 ||

| DOI: 10.15680/IJIRCCE.2023.1105231 |

once the dustbin gets filled up to a certain level or a mark then the depth sensor present in it gets activated and send a signal using the GSM Module to the registered number with a typed message that "YOUR DUSTBIN IS FULL". With this message a beep of 3 sec is followed until the authority don't get it vacant. Once it is vacant the its again ready for use.

III. HARDWARE & SOFTWARE PART

A. Hardware part:

- SG90 Servo motors
- Moisture Sensor
- SIM900A GSM modem
- NEO-7M GPS
- E18-D80NK IR sensor
- TCRT IR sensor
- Arduino UNO'
- Arduino Nano

B. Software Part:

- Arduino IDE

IV. BLOCK DIAGRAM & METHODOLOGY:

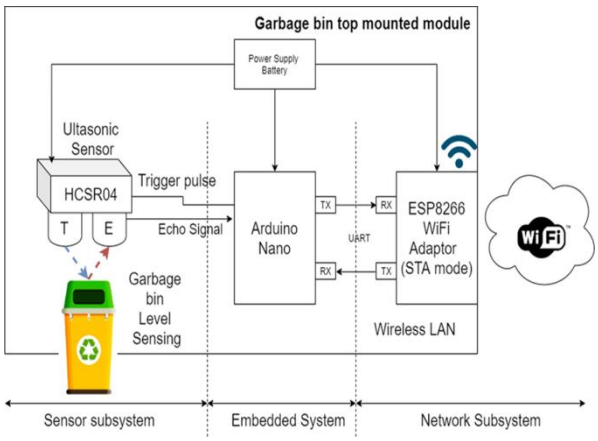

Fig. 1 Block diagram for smart dustbin

4.1 EXISTING METHOD

In this project, we will try to build an Internet of Things (IOT) based system will automatically notify and keep such garbage clean in a proper manner. Each and every person in the world disposes the waste in the dustbin and it full, they empty the waste inside the bin. This is the basic use of a normal dustbin where no components are used, no coding is performed, and everything is manual.

The maintenance of the bin is also not proper where the lid in the overflowing of the waste from the bin. The second method is use of dustbin with different segregations like green and blue bins which is placed together or the dustbin where only recyclable waste should be disposed. The third method uses arduino, servomotor, GSM module, ultrasonic sensor for doing the same result and it is not cost efficient. Ultrasonic sensor is present inside the dustbin where the height of the waste inside the dustbin is measured and it send a mail when the dustbin is above 70 percent. Only sending the notification is the existing method.

| e-ISSN: 2320-9801, p-ISSN: 2320-9798| www.ijircce.com | |Impact Factor: 8.379 |

|| Volume 11, Issue 5, May 2023 ||

| DOI: 10.15680/IJIRCCE.2023.1105231 |

4.2 PROPOSED SYSTEM

The proposed technique will create an IOT-based dustbin. The existing system is the Traditional methods which requires man Power. The air will become unsanitary if garbage is not properly disposed of, and serious disease can spread rapidly. Many of these drawbacks will be addressed by the proposed scheme.

To determine that trashcans were completed or not, their capacity is measured using actual sustainability. A sensor and a node that gathers and transmits data make up a smart bin. We have to design the project, where the dustbin are completed and is measured.

position control surfaces like the lifts and rubbers. They are similarly used in radio-controlled vehicles, puppets, and clearly robots.

V. CONCLUSION AND FUTURE WORK

The proposed model will give a solution to the total garbage management system for India. For an overpopulated country like India, it is troublesome to maintain the procedure for garbage management and treatment. The proposed model can solve the problem of management of garbage system by observing the level of garbage, and its condition like humidity, temperature, flame etc. Along with that,the real-time garbage management is also being monitored indicating the cleansing status of dustbin. Thus, individuals garbage dumping system will be observed, and biodegradable and non-biodegradable segregation architecture is proposed for central garbage system. Then the segregated products can be processed for further operation. So, it can be said that this model is giving an ultimate solution to the major problems of garbage management system of India and can make the environment clean and population-free.

This paper mainly concentrated on home automation system (can be used in malls, other public places, etc.) and this can be done in large scale in future. Compared to the existing systems, the wastes are only monitored and separates metallic and non metallic wastes, wet and dry wastes but our systems monitored the wastes and also segregates the monitored waste as metals, degradable and non degradablewastes.

REFERENCES

[1] KrishangiDeka, krishangiGoswami and Sagarika ‘IoT-Based Monitoring and Smart Planning of Urban Solid Waste Management’ – Spirnger 2018

[2] ‘Smart Garbage Monitoring and Clearance System using Internet of Things’ S. Vinoth Kumar, T. SenthilKumaran, A. Krishna Kumar and Mahantesh Mathapati-2017 IEEE International Conference

[3] Balagungan, Raja S, Maheswaran T, Savitra S ‘Implementation of Automated Waste Segregator at Household Level’ –IJIRSET 2017

[4] Abhishek Kumar Singh, ChethanKumarM, Reshma S, Shwetha GH, Rajashekhar B S ‘ IOT Based Monitoring and Smart Planning of Urban Solid Waste Management’ RATE-2017 national conference

[5] RatnaPatil, ShrawaniTamane. “A Comparative Analysis on the Evaluation of Classification Algorithm in the predication of Diabetes”, International Journal of Electrical and Computer Engineering (IJECE), 2018

INNO SPACE
SJIF Scientific Journal Impact Factor

Impact Factor: 8.379

doi cross ref

ISSN INTERNATIONAL STANDARD SERIAL NUMBER INDIA

निस्केयर NISCAIR

INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN COMPUTER & COMMUNICATION ENGINEERING

9940 572 462 6381 907 438 ijircce@gmail.com

www.ijircce.com

Scan to save the contact details