Efficient Garbage Management System

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ABSTRACT

Smart city is another powerful application of IOT generating curiosity among world's population not only to keep our city clean and neat but also to decreased the griminess, nastiness produced by the dustbins that will be controlled by using IOT garbage monitoring
Sometimes in various areas dustbins were overload and it cause viral diseases. To avoid these smart dustbins can be used which sends alert messages to the respected authority with the help of ultrasonic sensor and IOT. Most of the times hungry stray animals for e.g. –dogs, cats, cows, etc. Will eat that overflowed garbage which contain plastic, toxic medicine etc., it will cause harm to their health. the main purpose of these system is to control garbage, human efforts, to make smart city.

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I. INTRODUCTION

Due to massive increase in population as well as as economic development in India has led to tremendous growth in solid waste. Management of this generated solid waste is a major issue of concern in the entire world. Management of solid waste is not just a issue in the urban developing cities in India but also in most of the countries across the globe. Hence there is an urge to design and develop a system which should be quite efficient to solve the problem of solid waste and henceforth minimizing it to a certain extent.

Presently, today every concerned authorities across the nation are planning to develop smart cities or are transforming existing cities into smart cities. A smart city can be defined as a city that is well performing keeping in mind about the future. Smart Mobility, Smart Economy, Smart Governance and Smart Living are the key attributes of a smart city. In smart city collection of solid waste and its impact on society must be seriously considered.

Due to substantial increase in waste in many cities we find garbage bins overflown at various public places creating bad odor and unhygienic surroundings leading to spread of illness in humans as well as in animals and further more leading to deadly diseases.

Presently, most of the cities are transforming at a very passive rate into smart cities therefore it is the right time to achieve better management of garbage with the use of technology and design patterns.

II. OVERVIEW OF IOT

IOT is real time technology. IOT is a short form of internet of things refers to overgrowing network of physical object that feature am IP address for internet connectivity and the communication that occurs between these object and other internet enabled device and system In short internet of things is use of rapidly growing networks of connected objects which are able to connect and exchange the data using sensors .For example: - cars, lights, refrigerators, etc.

Fig. 1 Connectivity of IOT

III. LITERATURE SURVEY

Our first paper for literature survey is “IOT Based Smart Garbage and Waste Collection Bin”. This system monitors the garbage bins and informs about the level of garbage collected in the garbage bins and then send all information to garbage collection vehicles.

Our second paper for literature survey is “Smart Garbage Monitoring System using Internet of Things (IOT)”. There is difference between above two papers ultrasonic sensor are used in one paper and other uses infrared sensor.

Our third paper for literature survey is “Smart garbage collection bin overflow indicator using IOT” .In this System, when the sensor signal reaches to the threshold value a message notification will be sent to the municipality or garbage collector so then that person can send the collection vehicle to collect the garbage from the dustbin. There is main difference in this paper is that hardware used is raspberry pi and this system uses the IR Sensor for detecting the level of garbage in the dustbin.

IV. ARCHITECTURE

In this system when garbage reaches the particular level, it is sensed by the ultrasonic Sensor mounted on the dustbin. It also detects Overflow of garbage in the dustbin. When the level of garbage reaches to a particular threshold level an alert message will be sent to the respective garbage collector whose data is stored in the database. If the garbage collector doesn’t arrive even after sending the alert message than a message to the municipality will be sent regarding the issue.

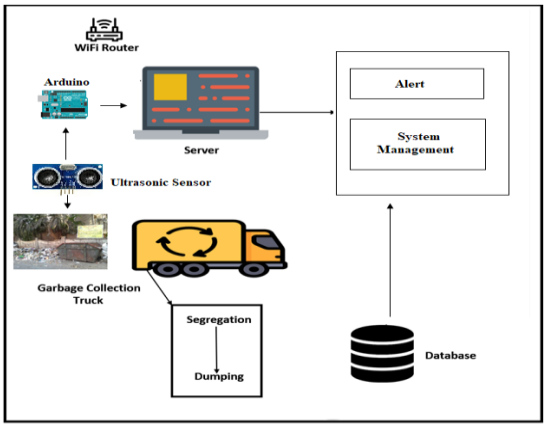


Fig. 2 System Architecture

System architecture is nothing but a block diagram and its working is shown as follows. With the following explanation we will get detail information of different components used in garbage monitoring system as follows.

A. Arduino

An Arduino is an open source electronics prototyping platform which is flexible and has easy to use hardware and software. It's intended for artists, designers, hobbyists, and anyone interested in creating interactive objects or environments

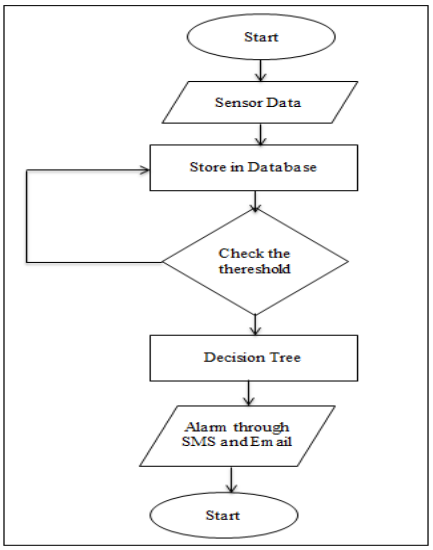
B. Ultrasonic Sensor

An Ultrasonic Sensor is a device that measures the distance of an object using ultrasonic sound waves. An ultrasonic sensor uses an transducer to send and receive ultrasonic pulses that relay back information about an objects proximity. High Frequency sound waves reflect from boundaries to produce distinct echo patterns.

C. PH Sensor

A PH sensor is used to check whether the garbage is wet or dry and accordingly a request is sent to the respected garbage collector for collection of waste.

V.FLOWCHART



VI.FUTURE SCOPE

- Smart garbage bin substantially helps in reducing the pollution.
- This project avoids overflowing of garbage bins and the message is sent diorectly to the garbage collector.
- It helps to detect the waste level inside the garbage bin. The transmission of the information is conveyed with the help of SMS.
- This project can serve useful for many of the municipal corporations and can be used by various private companies to tackle the problem of waste generated.
- Using this system waste collection becomes efficient and there is significant reduction in

transportation cost witnessed.

VII. CHALLENGES

- This prevent the lumping of garbage in the roadside garbage bin which ends up giving foul smell and spreading illness.
- The matter of the cleaning and emptying dustbins when they filled to a certain level by garbage will solve.
- Maintaining the cleanliness of the city.

VIII. CONCLUSION

Successful data gathering through sensor and proper decision making followed by successful alarm generation.

REFERENCES

[1] Smita S. Pawar Shivani Pise, Kranti Walke. Renuka Mohite "Smart Garbage Monitoring System Using AVR Microcontroller", 978-1-5386-5257-2/18/.00 ©2018 IEEE

[2] Sangita S. Chaudhari Varsha Y. Bhole, "Solid Waste Collection as a Service using IoT- Solution for Smart Cities", International Conference on Innovative and Advanced Technologies in Engineering, March, 2018.

[3] Parth Jajoo, Sushmit Mehra, Akshata Mehta "Smart Garbage Management System".

[4] Dr Prasun Choudharry, Ritika Sen, Dhrub Ray, Purshottam Roy, Sourdeep Sarkar "Garbage Monitoring and Disposal System for Smart City using IOT"

[5] Mrs Pallavi Nehte, Dhanshri Jangam, Nandini Barne, Prajakta Bhoite "Garbage Management using IOT" 978-1-5386-0965-1/18/$31.00©2018 IEEE

