Iot Based Garbage Monitoring System

A.Shiny
Assistant Professor
Department of Computer Science and Engineering
SRM Institute of Science and Technology
Ramapuram ,Chennai, Tamilnadu , India

U.Sai kiran, B.kasi kumar, T.Siva krishna teja, sagar sony
Department of Computer Science and Engineering
SRM Institute of Science and Technology
Ramapuram ,Chennai, Tamilnadu , India

Abstract

Solid waste management is one of the primary problems that India faces irrespective of the case of developed or under development states.In our city many times the garbage at public places are overflowing. It creates unpleasant look for that place and spread smell which is harmful for people. It is seen that most of the garbage's across the roadside are overloaded because the waste is not collected periodically.It creates unhygienic condition for the people and creates bad odor around the surroundings.This leads in spreading some deadly diseases and human illness.Most of the time wet and dry wastes are not separately collected so that proper processing like composting, recycling, incineration cannot be applied to different kinds of waste.To avoid all this situations we are going to implement a project called Garbage Management System using IOT technology (Internet of Things). As the van coming to collect the Garbage the Massage will sent to all users of that particular Area. We are going to place a sensor (Ultrasonic sensor) under the dustbin van to detect the level of garbage. When the sensor signal reaches to 75% value a notification (like message) will be sent to respective Municipal authority person. So that person can send the second collection van to collect the garbage. Keywords: IOT, Ultrasonic Sensor, System on Chip (SOC)

I INTRODUCTION

This project IOT Garbage Monitoring system is a very innovative system which will help to keep the cities clean. This system monitors the garbage bins and informs about the level of garbage collected in the garbage bins via a web page. For this the system uses ultrasonic sensors placed over the bins to detect the garbage level and compare it with the garbage bins depth. The system makes use of AVR family microcontroller, LCD screen, Wifi modem for sending data and a buzzer. The system is powered by a 12V transformer. The LCD screen is used to display the status of the level of garbage collected in the bins. Whereas a web page is built to show the status to the user monitoring it. The web page gives a graphical view of the garbage bins and highlights the garbage collected in colour in order to show the level of garbage collected. The LCD screen shows the status of the garbage level. The system puts on the buzzer when the level of garbage collected crosses the set limit. Thus this system helps to keep the city clean by informing about the garbage levels of the bins by providing graphical image of the bins via IOT Gecko web development platform.

II FUTURE WORK

Garbage Management is very much important towards having clean and smart society.

Traditional Garbage management employing human is not very effective with no proper supervision. There were certain drawbacks in the existing IoT based system which led to the development of IoT based Smart Garbage Management System employing ultrasonic sensors. So accordingly IoT based Smart Garbage Management System been developed as a prototype where ultrasonic sensor fitted in bin for monitoring the depth of bin and accordingly once threshold reached alarm and LED triggered for cleaning the bin. This information updated in webpage of Cloud.

In addition the rate at which bin getting filled is monitored for planning the bin collection dynamically. This information also updated with date, time and rate at which bin getting filled in webpage for municipal authorities for planning the bin collection. The project developed towards smart Garbage Management got lot of scope for future enhancement.

IV IMPLEMENTING SUSTAINABILITY

The main objective of this system is to avoid garbage flow.most of the areas we can see garbage flow in india.The tools are

Ultrasonic sensor

1. Raspberry PI3
2. LCD Display
3. Infrared sensor
4. Moisture sensor
5. Gprs
6. Gps
7. Zig bee pro
8. Gsm

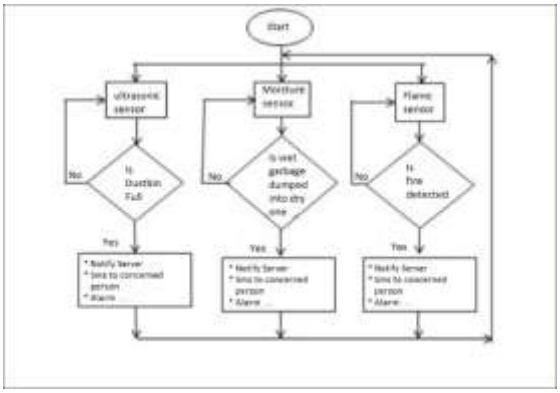

Fig 1.Workflow Diagram

Description

This project iot garbagr monitoring system is very innovative system which will help to keep the cities clean.This system monitors the garbage bins and informs about the garbage collect in the garbage bins via a web page. For this system uses ultrasonic sensors placed over the bins to detect the garbage level and compare it with the garbage bins depth. The system makes use of AVR family micro controller, Lcd screen, wifi modem for sending data and a buzzer.This system is powered by a 12 volts transformer. The Lcd screen is used to display the status of the level of garbage collected in the bins .

EXISTING SYSTEM

The existing system uses ultrasonic sensors (as they are precise and have large range) to sense the level of garbage in the bin, flame sensor to detect the fire and moisture sensor to separate out wet and dry garbage.

By using global system for mobile (GSM) the concerned persons (driver of garbage collecting vehicle as well as concerned authority) shall be informed through SMS. The officials shall monitor the status of waste bins through web page. As huge data is to be transmitted and processed fast

Raspberry Pi3 is preferred as controlling board.

In the present scenario, many times it is seen that the garbage bins or dust bin are placed at public places in the cities are overflowing due to increase in the waste every day.

These overflowed garbage bins can create an obnoxious smell and make an unhygienic environment.

This leads to the rapid growth of bacteria and viruses which can cause different types of diseases.

V PROPOSED SYSTEM

The proposed system uses ultrasonic sensors (as they are precise and have large range) to sense the level of garbage in the bin, flame sensor to detect the fire and moisture sensor to separate out wet and dry garbage.

By using global system for mobile (GSM) the concerned persons (driver of garbage collecting vehicle as well as concerned authority) shall be informed through SMS.

The officials shall monitor the status of waste bins through web page. As huge data is to be transmitted and processed fast Raspberry Pi3 is preferred as controlling board.

ADVANTAGES

The proposed system 'IoT based Garbage Management (monitor and acknowledgement) System' shall provide the smart solution regarding overflowing of garbage bins.

This system shall be beneficial in keeping dry and wet garbage separately so that different recycling, incineration shall be applied to different kinds of garbage.

By intimating the notification of garbage filled, the use of the garbage collecting vehicle shall be optimized.

By keeping the environment clean, contribution shall be given to the society for 'Clean India Concept'.

IV PROBLEM DESCRIPTION

This implementation of Smart Garbage Collection System using IoT, assures the cleaning of dustbins soon when the garbage level reaches its maximum. If the dustbin is not cleaned in specific time, then the record is sent to the higher authority who can take appropriate action against the concerned official. This system also helps to monitor the fake reports and hence can reduce the corruption in the overall management system. This reduces the total number of trips of garbage collection vehicle and hence reduces the overall expenditure associated with the garbage collection. It is ultimately helps to keep cleanliness in the society. This is quite a significant project in its originality and concept. We are using Internet of Things theory which gives this project its charisma and uniqueness about the concept. The project aims at cleanliness of the areas where trash bins are located and the very basic management that it contains with it. It aims at advanced management of the whole garbage collection system. We use ultrasonic sensors (details mentioned above) and its other hardware microcontrollers and processors such as Arduino for analyzing the garbage levels and sending information about it to administrators and then

garbage trucks are being deployed by them. Another very important aspect of our project is the web portal that is designed in such a way that operators and citizens both will find it user friendly to monitor the garbage information of various places.

VII CONCLUSION

The above work reviews various technologies that can be used to implement remote monitoring systems. Based on the comparison of various systems, techniques and algorithms we propose aIoT based Garbage Monitoring system. The system can be implemented using remote monitoring end devices are made from Arduino chipset. These nodes communicate with a central system that can be implemented on a standalone computer system. This system for the proposed system is implemented using a Raspberry Pi model. Communication between different devices can be achieved using RF based wireless communication modules. Finally the system status can be viewed via web browser which is in line with the IoT philosophy. Limitations of the system are in terms of dependence on reliability of communication modules. Since the sensor nodes are proposed to be deployed within the garbage cans, a physical damage can affect the communication or processing capability

VIII REFERENCES

[1] Monika K A, Rao N, Prapulla S B and Shobha G 2016 Smart Dustbin-An Efficient
Garbage Monitoring System International Journal of Engineering Science and
Computing 6 7113-16

[2] Navghane S S, Killedar M S and Rohokale D V 2016 IoT Based Smart Garbage and
Waste Collection Bin International Journal of Advanced Research in Electronics
and Communication Engineering (IJARECE) 5 1576-78

[3] Kasliwal Manasi H and Suryawanshi Smithkumar B 2016 A Novel approach to
Garbage Management Using Internet of Things for smart cities International Journal of
Current Trends in Engineering & Research 2 348-53.

[4] 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

[5] Schafer G 1994 U.S. Patent No. 5,326,939. Washington DC: U.S. Patent and
Trademark Office.

[6] Anitha A, Paul G and Kumari S 2016 A Cyber defence using Artificial Intelligence
International Journal of Pharmacy and Technology 8 25352-57

[7] Anitha A, Kalra S and Shrivastav 2016 A Cyber defense using artificialhome
automation system using IoT International Journal of Pharmacy and Technology 8
25358-64