

IoT Based Garbage Monitoring System

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ABSTRACT

This paper has been related to do The Internet of Things (IoT) shall be able to incorporate transparently and seamlessly a large number of different and heterogeneous end systems, while providing open access to selected subsets of data for the development of a plethora of digital services. 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 in addition to disturbing the balance of the environment also has adverse effects on the health of the 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 complex, cumbersome process and utilizes more human effort, time and cost which is not compatible with the present day technologies in any way. This an advanced method in which waste management is automated.

KEYWORDS: *Internet of Things (IoT), Ultrasonic Sensors, GSM, Microcontroller*

INTRODUCTION

Garbage Monitoring System: - Garbage may consists of the unwanted material left over from City, Public area, Society, College, home etc. This project is related to the “Smart City” and based on “Internet of Things” (IOT). So for smart lifestyle, cleanliness is needed, and cleanliness is begins with Garbage Bin. This project will helps to eradicate or minimize the garbage disposal problem. The Internet of Things (IoT) is a recent communication paradigm that envisions near future, in which the objects of everyday life will be make them able to communicate with one another and with the users, becoming an integral part of the Internet . 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 Arduino family microcontroller, LCD screen, Wi-Fi modem for sending data and a buzzer. The system is powered by a 12V transformer.

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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 a web page. Some of the following garbage type Packaging waste, Agricultural waste, Inorganic waste, Liquid waste etc.

In solid waste bin monitoring system garbage bin set the public place then Camera set for garbage bin location. The camera captured image for garbage bin. Radio Frequency Identification (RFID), GPS and GIS send image for work station. The RFID reader and camera are mounted in the truck, when truck come closer to the bin RFID reader communicated RFID tag. & send all information. The System are use controlling Hut. This Controlling Hut are SMS

Technology. The GPS and GPRS mapping server to analysing data of various location. The control station compiled all the information and stored in the system database. The bin status and waste truck was monitored.

BLOCK DIAGRAM

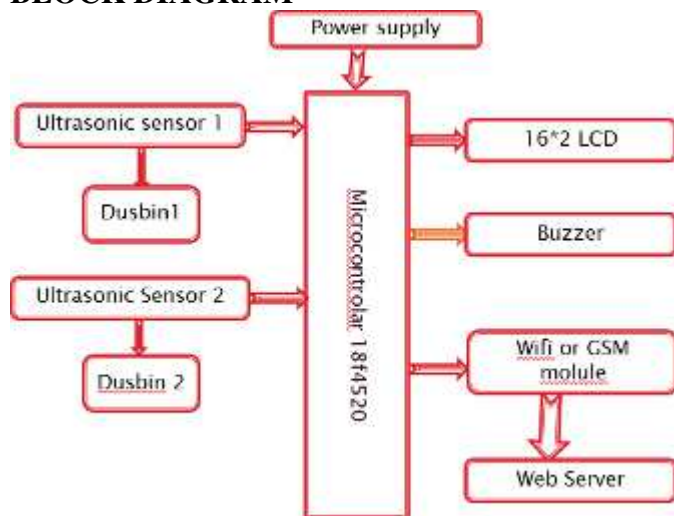


Figure1:- IOT BASED GARBAGE

MONITORING SYSTEM

The 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 Arduino family microcontroller, LCD screen, Wi-Fi 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 color 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 a web page.

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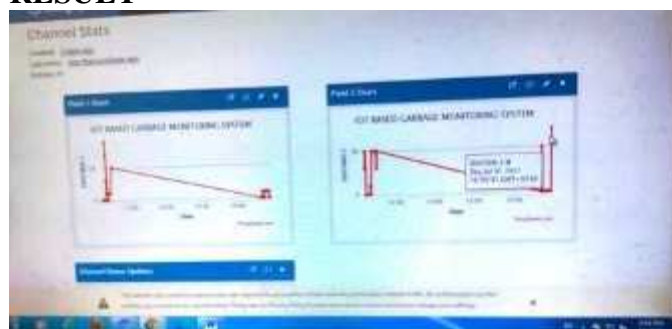
GPS and GPRS mapping server to analyzing data of various location. The control station compiled all the information and stored in the system database. The bin status and waste truck was monitored.

In waste bin monitoring system using zig bee and Global mobile communication system (GSM). The sensors are place in the common garbage bins placed at the public place when the garbage reaches the level of the sensors. Then that indicated will give in indication to the driver by PIC18F4520 they sending SMS using GSM technology. The technology use by Zig bee, Global mobile system (GSM), ARM 7 Controller. The range of communication of the zigbee is almost 50 meter. They use for range GSM Module, analyzing the image we get an idea about level of garbage. The zig bee and GSM system would be able to monitor the solid waste collection process. This technique overcome some disadvantages which are use of minimum route, low cost, fuel use, clean environment.

This paper IOT solid waste management 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 18f4520 microcontroller, LCD screen, GSM 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.

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RESULT





Conclusion-

In this paper an integrated system of Wi-Fi modem, IoT, GSM, Ultrasonic Sensor is introduced for efficient and economic garbage collection. The developed system provides improved database for garbage collection time and waste amount at each location. We analysed the solutions currently available for the implementation of IoT. By implementing this project we will avoid overflowing of garbage from the container in residential area which is previously either loaded manually or with the help of loaders in traditional trucks. It can automatically monitor the garbage level & send the information to collection truck. The technologies which are used in the proposed system are good enough to ensure the practical and perfect for solid garbage collection process monitoring and management for green environment.

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