SMART DUSTBIN

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***Abstract*:** With increase in population in cities the waste production also increases. Many of the world's developing cities are still lacking in waste management, in particular, the collection of garbage within the cities. Because of such production of garbage, it tends to pile up in certain locations. This not only creates a health risk to the surrounding residences, but also creates unpleasant environments for the society .A smart garbage monitoring system is proposed to tackle such issues and provide solution to it. The proposed system will help the garbage collector authorities to manage the garbage and create a platformthat will provide efficient garbage monitoring system. The user will be provided with the options depending upon the type of garbage to be dumped. If it is wet garbage then the section allotted for wet garbage will automatically open. This dustbin can be monitored by the city authorities so that they can make arrangements for properly management this waste.

Keywords— Garbage monitoring system, Solid waste collection.

I. INTRODUCTION

One of the best inventions of time is Internet of Things. IoT is nothing but a technology in which all of the physical devices are connected to each other by mainly a wireless network connection without a minimum of human involvement in order to maintain a clean environment. Using IOT in Garbage Monitoring System can reduce human efforts needed to monitor garbage in different places. In some areas where the population is less the garbage storage is also less but in places where there is more number of habitants the garbage is generally more. If the garbage collector truck can able to keep a online tracking of where the garbage is required immediate clearance then it will follow the route where the truck is first required to clean the garbage, without on the spot monitoring. To avoid unhygienic consequences the smart bin containing garbage for more than two days will be able to send immediate alerts. By 2030 the many parts of the universe will get developed as well as more populated as a result of which the garbage amount will also increase. So to overcome this problem the implementation of this paper may be useful. This paper also proposes the route tracking system which will provide the route the truck will follow while collecting the garbage and visit the bins which is more filled. As a result of which it does not have to travel all bins and petrol or diesel will be saved .

II. LITERATURE SURVEY

[1] In solid waste dustbin 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 truck is mounted with RFID reader and camera, all information is sent when truck come closer to the bin RFID reader communicates RFID tag. The System are use controlling Hut. This Controlling Hut are SMS Technology. To analyzing data of various location the GPS and GPRS mapping server is used.All the information is compiled by the control station and stored in the database of the system. The status of the bin and dump truck was monitored.

III. PROPOSED SYSTEM

Today main issue for pollution is Garbage Overflow. It creates unhygienic condition for the people and creates bad smell around the surroundings this leads in spreading some deadly diseases & human illness. To avoid all such situations we are going to implement a project called IoT Based waste management using smart dustbin. Implementation is done with the help of IoT concept. The Internet of Things (IoT) is a concept in which surrounding objects are connected through wired and wireless networks without user intervention. Objects communicate and exchange information. In this system multiple dustbins are located throughout the city or the Campus, these dustbins are provided with a sensor which helps in tracking the level and weight of the garbage bins and a unique ID will be provided for every dustbin in the city so that it is easy to identify which garbage bin is full. When the level and weight of the bin reaches the threshold limit, the device will transmit the reading along with the unique ID provided. Once the bins are full then user will not be able to access the bins. In such circumstances the bin displays the direction of the nearby bins on LCD display also generate the voice messages if the user place the waste on the floor. The status of the bin is accessed by the concerned authorities from their place with the help of Internet and an immediate action will be taken to replace overflowing bins with the empty bins.

IV.   Architectural view
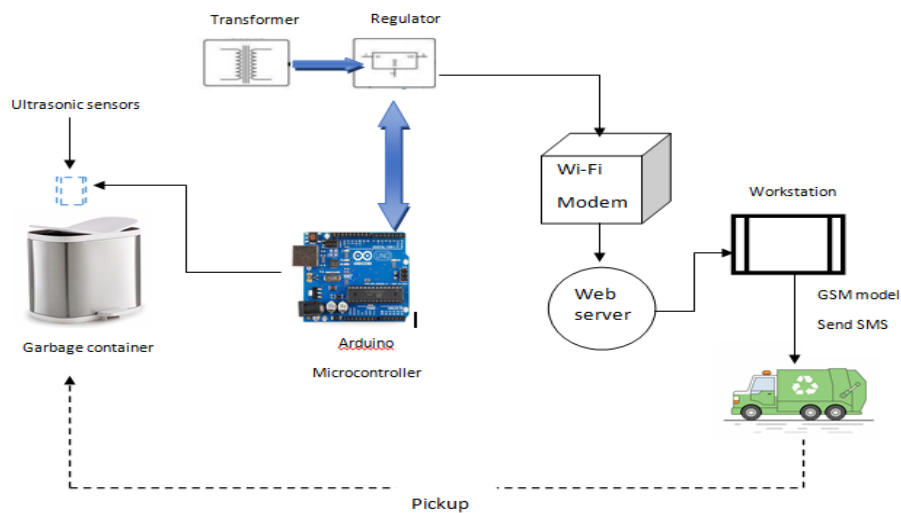
V.   Modular Description:

Sensor Based Waste Collection Bins is used to identify status of waste bins if it is empty or filled so as to customize the waste collection schedule accordingly and also save the cost. Real time waste management system by using smart dustbins to check the fill level of dustbins whether the dustbins are full or not, through this system the information of all smart dustbins can be accessed from anywhere and anytime by the concern person. It will inform the status of each and every dustbin in real time so that concerned authority can send the garbage collection vehicle only when the dustbin is full. By implementing this system resource optimization, cost reduction, effective usage of smart dustbins can be done. Scribes the scope of work of smart bins in managing the waste collection system for an entire city. The network of sensors enabled smart bins connected through the cellular network generates a large amount of data, which is further analyzed and visualized at real time to gain insights about the status of waste around the city. The scope for the future work of this system can be implement on various places like Bus stop, Railway stations etc. As shown in below figure it will display the Backside street information sticker, there will be a facilities like , LED Signboard and the Bio Enable Smarting sensor inside the dustbin.

VI.   ALGORITHMS :

User side:

➢ First he will see the dustbin with 2 partition
➢ Before throwing the garbage in dustbin user will see that Is it dustbin is empty or not.
➢ If empty it will go forward
➢ Then he will see the keypad and LCD screen
➢ On LCD screen he will see 2 option 1- Dry 2-wet like this.
➢ If user wants throw the wet garbage then he will press the key 1 on keypad. And then dry partition lead of dustbin will open.
➢ If user wants to throw wet garbage then he will press the key 2 on keypad. And then wet partition lead of dustbin will be open.
➢ After that user will get the message on serial monitor that which partition is full and empty.

Admin side:

➢ Admin will have all information about dustbin
➢ He will provide that information that dustbin is full or not
➢ If the dustbin is full it will get the message that , "dustbin is full don't throw the garbage in dustbin" by GSM Module.
➢ That message is also get to the corporation garbage collector that, "dustbin is full please come to take the garbage ".

VII.   Results and discussion:

➢ We conducted the test of the project in our testing lab.
➢ The initial testing was performed by our professors i.e the front end functionality like
    1.   Opening and closing the bin .
    2.   Inputs by keypad .
    3.   Display of LCD screen.
    4.   Whether the sensors shows proper functionality or not.
➢ Further the testing of sensors and microcontroller was tested by ourselves i.e the entire back end system was tested by us such as
    1.   Arduino code.
    2.   Whether message is send to the user or not.

3. Whether the arduino closes the bin if sensor is sensed.
4. Many more back end activities.
5. Functionality of the software application.

➢ We went to some societies to view the current working system in the real time.

We saw that there was a great disadvantage that the system was having the single lead .so our main motto was the segregation of waste i.e to separate the dry and wet . those systems were not having any centralized management i.e once the bin is filled society members have to wait until the bin is made empty.

VIII.   Conclusion and Future scope:

➢ The system mainly aims towards the segregation of the waste .one should throw the garbage in particular section by entering the valid input.

➢ There is no limitations of scope for these system it can be used in various scetors like

1. Government sectors
2. IT filed
3. Commercial sectors.
4. Schools
5. Colleges
6. Banks , police stations , bus stops and many other public places.

➢ Thus these system is currently performing the entire desired functionality as per the requirements. There are chances to fail the system if it is taken for regression testing.

Acknowledgement:

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