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DUMPSTER MONITORING SYSTEM USING ARDUINO

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Abstract— Today, one of the most challenging issue is that cities and towns are facing a problem of poor cleanliness of garbage can causing harmful diseases in cities and towns. This happens due to mismanagement of garbage collection. This mismanagement leads to creation of unhealthy environment in our surrounding areas. Due to this several diseases will arise and also degrades the beauty of our environment. That's our main intention to develop this project. In this system the level of garbage can be known by using ultra sonic sensor and this information is passed to the authorized agency for garbage collection. For passing the information we can use GSM module. In order to send the location we can use GPRS which tells us about the area location with the help of latitude and longitude coordinates. These coordinates are displayed on LCD screen in the control room and the organizer inform the driver to collect the garbage in a particular area. This system can really help the environment to keep safe, smart and clean.

Key words: Arduino uno, GSM module, GPRS, Garbage collector.

1. INTRODUCTION

In the ongoing decades, Urbanization has expanded immensely. At a similar stage there is an expansion in waste creation. Squander the board has been a critical issue to be considered. This paper is an approach to accomplish this great purpose. In Shrewd Urban communities amount of waste is increasing because of the development organizations and industries in urban areas. territories and the most concerning issue to experts is Accumulation of wastage from various areas for example Houses, Open Spots and Ventures. Because of the absence of legitimate data a measure of 85% of the all out metropolitan strong waste(MSW) spending plan is spent on waste gathering and transportation to handle this issue we need an insight to screen waste and gives the total data to specialists by this they can undoubtedly take care of the waste administration issue with efficient way.

The Fundamental point of this paper is to build up a knowledge container which can screen squander through sensors and gives the data in natty gritty which are associated with web. At first every one of the sensors from various area are associated through Web in each area sensors will gauge and compute the waste and data will be sent to the server. At Server it will Process the data and sent it to the worry Specialists to make fundamental move.

Today primary issue for contamination is Waste Flood. It makes unhygienic condition for the general population and makes awful stench around the surroundings this leads in spreading some dangerous ailments and human ailment. To stay away from every single such circumstance we are going to execute an undertaking called IOT Based waste administration utilizing savvy dustbin. Usage is finished with the assistance of Arduino idea. Our Planned calculation will screen every one of the receptacles situated in various area and will give the status of containers. In the event that any of the canisters is full, at that point subtleties will be sent to the worry experts any client can likewise get the subtleties of notice.

2. LITERATURE SURVEY

The quantity of waste generated and their potential impacts depend on multifarious factors, including the level of industrial development, the way in which wastes are managed, the existing state of the local environment and the capacity of the receiving media Since smart cities are becoming centre of attraction for the advancement of developing countries and without the removal or solution to the garbage problem these cities will be not that attractive. Therefore, large number of projects and research is going on in the area of smart dustbins for smart cities and to implement such projects typically use micro controller based systems [1]. The ultrasonic sensors are used to measure the quantity of waste present in the dustbin [2]. In existing system there are less number of dustbins with huge waste. It has to be organized manually in existing system it is difficult and causing mismanagement. So that the garbage cans are burnt with waste and it can't control manually so we need to do this automatically. Result the time to time cleaning of dustbins and reduced pollution in cities. In this project the authors select the garbage can with distance measure sensors which measures the amount of waste of the garbage can and divide the total container into three parts and assign the each part with a different kind of waste. There by the segregation of waste is

also done in dustbin itself. Sensing devices receives the data of the amount of filled level, Then this information is transmitted to the respective organizations and this message is sent using GSM module.

[4] Inserting number of sensors at different level of garbage can is causing waste amount and the sensors may damage because of rough handling by the users so we need to calculate the distance of the waste in garbage can using the ultrasonic sensors is the best way to manage the waste in garbage can. An IOT based smart garbage system is proposed to reduce the amount of food waste.[5]In this paper [6] authors idea is battery based smart garbage bins exchange information with each other using wireless mesh networks, and router and server collect and analyze the information for service provisioning. Here the battery power may be reduced after some time there is no continuous monitoring and energy is also insufficient.

In this [7] IOT Project, an Ultrasonic Sensor is used for detecting whether the trash can is filled with waste or not. Here Ultrasonic Sensor are kept at the top of dustbin and this sensors will measure the distance of garbage from the top of Trash can and then we can put a threshold value with respect to the size of dustbin. If the threshold value is less than the distance filled, means that the Trash can is full of garbage and we will print the message "dustbin is Full" on the webpage. If the waste filled distance will be more than this threshold value, then we will print the message "dustbin is Empty". Here the threshold value is 5cm. We will use ESP8266 Wi-Fi module for connecting the Arduino to the web server. Here they have used web server to demonstrate the working of smart dustbin.

3. METHODOLOGY

The new project is proposed with Arduino and IOT where the technology stepping towards the automation of the devices in every sectors like health, industries, agriculture, education, home, institutes. In this paper the dustbin is replaced with smart technology. In this project the dustbin is consisting of the sensor technology and vehicle is tracked with the GPS technology and GSM technology is used to send messages. The total model is represented in below fig.1 In the figure the different entities Such as ultrasonic sensors, LCD Display and GSM, GPS are going communicate in following steps. Here the dustbin is connected with a two ultrasonic sensors to detect the positions of the waste in garbage bin.

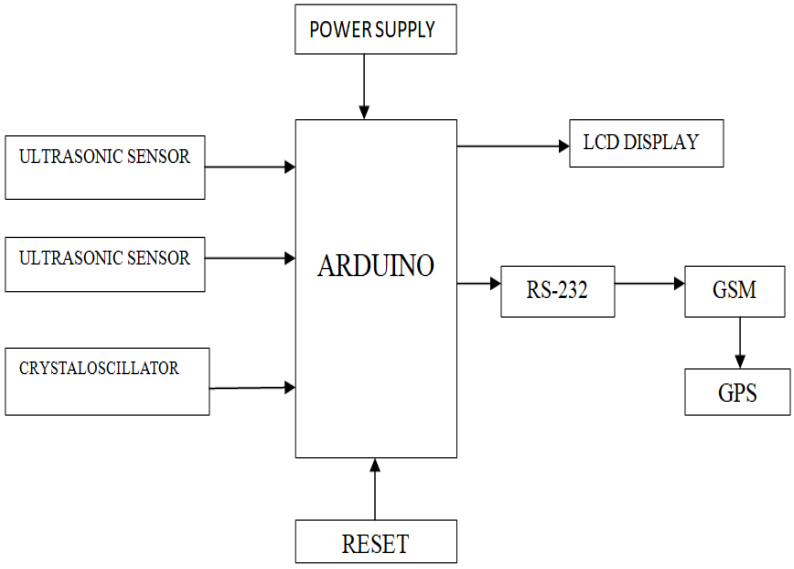

Figure 1 Block Diagram of proposed system

These two ultrasonic sensors are connected at middle and top of the trash can. Depending on the sensors output the amount of waste filled in garbage can is calculated and corresponding messages are generated in arduino. Here GSM module is used to send a message to the truck driver and then he could track the dustbin by using the link sent along with the message. While he clicks on this link then GPS tracker activates and shows the position of the garbage can along with the message like amount of waste filled. So that the truck driver easily reaches the trash can without any delay. The efficiency of the system increases drastically and reduces the diseases caused by the unclean dustbin. In our existing system the dustbin is overflows and creates the unhealthy environment. The final integrated circuit by using all of these components as shown below.

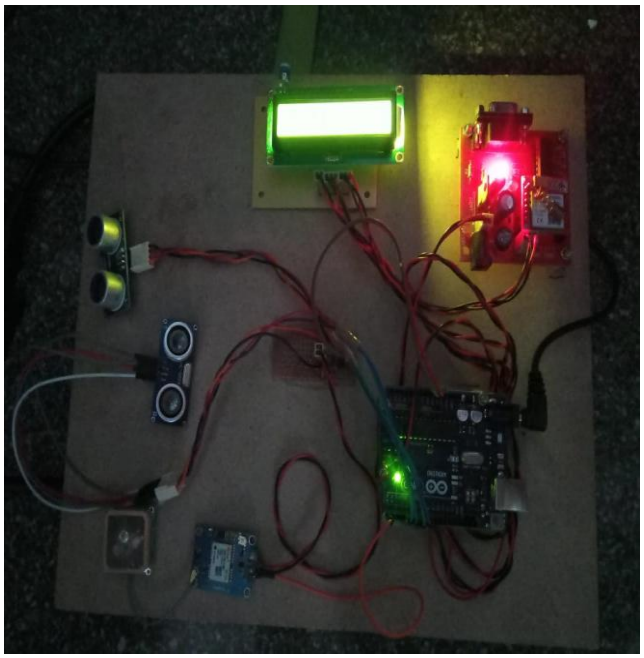

Figure 2: Circuit Diagram of dumpster monitoring system using arduino

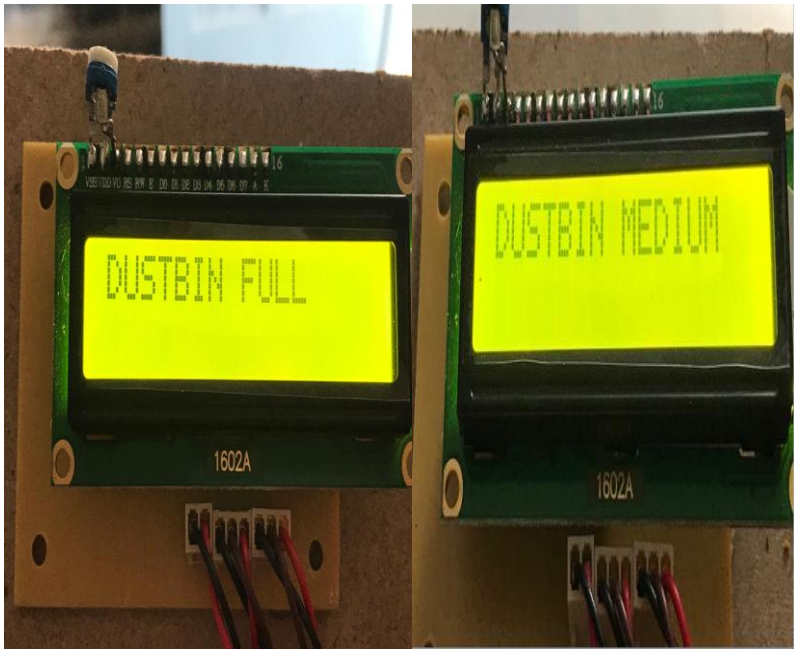

Figure 3: Safe Mode driving display on LCD

4. RESULTS

The following figures depict the result of proposed system

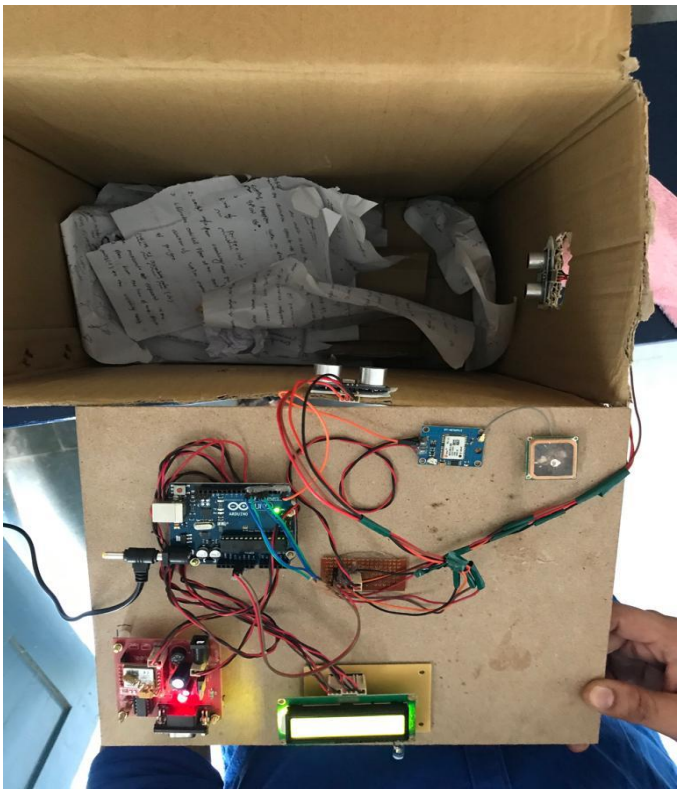

Figure 3 ***: circuit diagram of proposed system.***

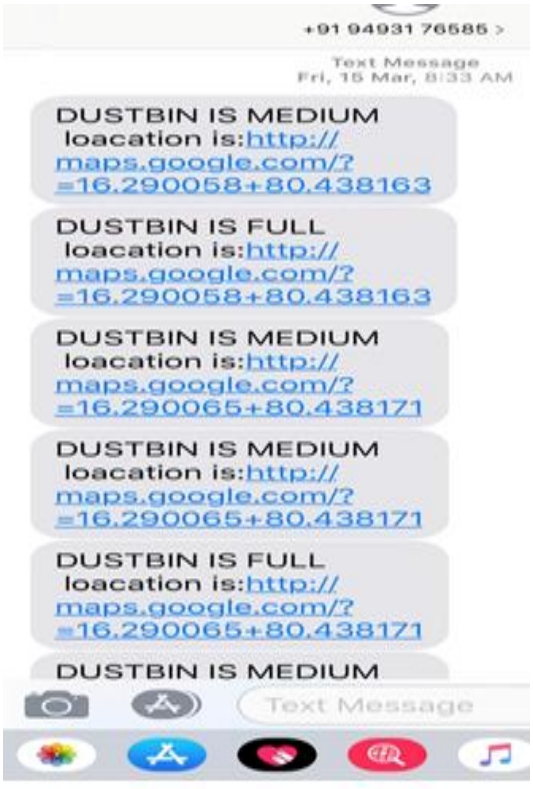

Fig 5:- when dustbin is filled then message is received by the driver

Fig 6 :- GPS trcaking of the garbage can.

5. CONCLUSION:

Dumpster monitoring system is used to clean the city and surroundings of the dustbin. This paper solves the problem of mismanagement of waste and decreases the man-power. Here proposed dumpster monitoring system operates automatically to help this GSM and sensor based circuitry.

Dumpster Monitoring System contains a ultrasonic sensors Ardiuno and GSM. When dustbin is filled with ½ level waste then Ardiuno detects as it's medium and sends SMS as "Dustbin is medium". While the dustbin is filled with ¾ level waste and it's detect as dustbin is full and send SMS as "dustbin is full". So this process helps to monitor the dustbin automatically therefore man-power decreases and efficiency of work increases. This project helps to clean the city and reduces human diseases. Here in this project the dustbin location is also send to the wan driver along with SMS to make the process more efficient. While dustbin is full then the SMS is send to the wan driver and municipal organizations according to the area allotted the garbage can is cleaned and transports for the further process.

6. FUTURE SCOPE:

The Dumpster Monitoring System helps to reduce the pollution many times. It has been noticed that garbage is overflowing outside the dustbin. This may be harmful to animals and pollute the surroundings. This scenario may be avoided in further advancements of the technology. To enhance this project there is an efficient method to manage the total waste dustbin and trashcan itself. In existing system the waste is segregated at organizations with large circuitry and with large space. In present systems there is no garbage can monitoring method also. We can put two kinds of projects in dustbin itself. Here there are three kinds waste plastic waste and metallic waste and bio gradable waste, here this three wastes are segregated depends on their type of material and the three different waste occupies three different parts of garbage can. Then if garbage can is full it sends SMS to the organizations and the wan driver collects the waste. Here the manpower reduces drastically and the clean the city automatically.

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