

Smart Dustbin

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Abstract— The scenario of cleanliness with respect to garbage management is degrading tremendously. Proper garbage management techniques are very crucial to stop the garbage menace which has spread everywhere especially in cities. With this condition of garbage crisis there is a need of applying a method that improves the garbage problems. Therefore, we are developing a framework to detect garbage level using IoT based on sensors and web applications. There will be an automatic bin in this project, for the storage of garbage this auto-bin will automatically open when anyone approaches to it for throwing garbage, and then closes automatically. It will display the level of the garbage to easily identify about its state. If the level of the garbage in the auto-bin reaches to its maximum limit, that is, if the dustbin is full, then it will notify the user whoever is monitoring that auto-bin. The auto-bin will contain a GPRS system, which can send and receive messages. Using this system, the auto-bin will send a text message to the registered user notifying that the dustbin is full and there is a need to empty it. Along with it, there is a web application for the auto-bin. This web application will continuously display the contents of the auto-bin, about its current levels. By referring this web application, anyone can get to know about the status of the auto-bin, from anywhere and at any time. IoT Garbage Monitoring System is a very innovative system which will help to keep the cities clean.

Keywords: smart dustbin

I. INTRODUCTION

Provide an IOT based solution to garbage collection. Planning for enabling collection of garbage generation data. This checks the waste level over the dustbin by using Sensor. Once it detected immediately this system alert to concern authorized through GSM/GPRS. Web application developed for the desired information. Most of urban cities and town in India are not well designed to facilitate the proper garbage disposing and collection mechanism. Also, the cities are existing infrastructure which is not expanding at the same pace that of urbanization. As the government of India has launched smart city project to utilize the IT enabled solution so there is an implicit need to make the city cleaner. Our proposed system solves three related problems:

- 1) Greater access to the garbage disposing points(public dustbin).
- 2) Efficient in terms of time and fuel cost.
- 3) Provide a data collection facility on how much a city generates garbage and accordingly plan disposing process.

This is ensured the greenish in the environment and support for Swachh Bharat for cleanness.

II. LITERATURE REVIEW

The literature studied some different papers to get information about the existing work done which has been done on the waste management.

A. RFID-based Real-time Smart Waste Management System

The Smart waste management system which is uses RFID (Radio Frequency Identification) for specifying unique identity to the dustbin. RFID is a modern and faster mobile technology that uniquely and accurately identifies a RFID tag (waste tag) attached to, or embedded in, a waste bin (e.g., garbage). In each dustbin has been assigned with a unique RFID, using that specific RFID the municipal area or the person who has been in charged for collecting the waste can detect the amount of waste generated and facilitated smart waste management system. The administrator can easily able to search for a particular dustbin. An RFID waste tag can take away from the dustbin which is totally password protected and ensures data security.

B. Main Components of RFID and sensor-based waste management system In Efficient Waste Collection System

The system proposed to calculate and find out the shortest path for collecting the waste so that more waste can be collected with the less consumption of fuel. Some waste in the dustbin generates harmful gases and such waste should be disposed earlier, as overflowing of such waste in dustbin can cause a great nuisance and a risk to human health and environment. A solution for this problem is also proposed in this system; by using gas sensor the gas present in the dustbin can be measured due to which priority analysis for cleaning the dustbin can be done. Ultrasonic sensors are use as level indicators which indicate the garbage.

III. SYSTEM IMPLEMENTATION

A. Automatic Opening:

This auto-bin will automatically open when anyone approaches to it for throwing garbage, and then closes automatically. Opening of the auto-bin is embedded with ultrasonic sensors, which are used to sense the distance of any obstacle coming in front of it. These sensors will sense any person approaching towards the dustbin within its range.

B. Level Indicator:

The auto-bin will consist of a level indicator, which will display the levels of the garbage in the auto-bin. The auto-bin will contain a GPRS system, through which the levels of the garbage are displayed on the LCD screen. If the level reaches up to 80% then it will display in the mobile where in

the user was already registered. GPRS system can send and receive messages.

C. Web Application:

The auto-bin will consist of a web application, which will continuously display the contents of the auto-bin, about its current levels, at what time it was emptied last time, and also the entire history that at what date and time it was full and emptied previously.

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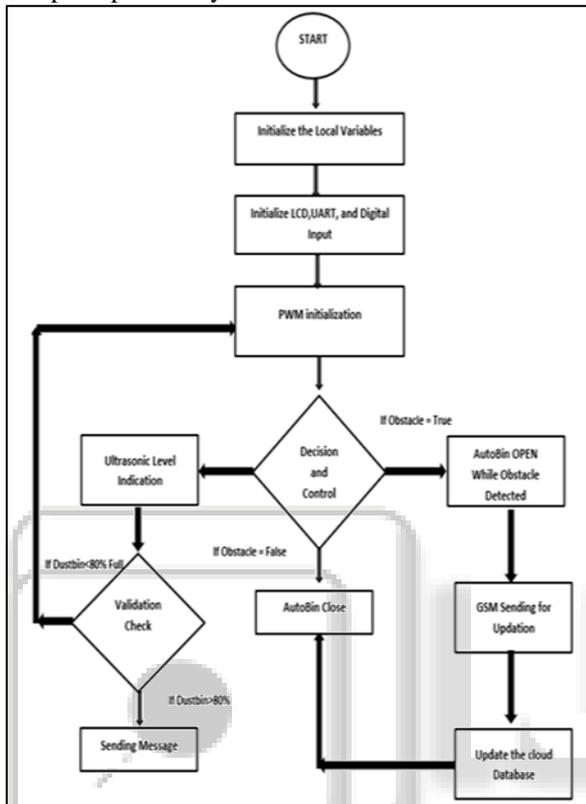


Fig. 1: Data flow diagram of system implementation.

IV. CONCLUSION

An embedded based intelligent alert system is devised for the proper monitoring and maintenance of the garbage. This system averts the irregular cleaning of the dustbins by sending alerts to the concerned individual at regular intervals. It further improves the system by additionally endorsing the status of cleaning in real time and measure the performance of the team. Thus this system comes in handy as an admirable solution in environmental maintenance. In addition to this it also aids to diminish the need for high human intervention in garbage maintenance of the municipality and pollution monitoring system.

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