# Smart Methodology for Garbage Cleaning

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*Abstract: Due to the rapid increase in the population, the waste generated by the humans is also increasing day by day. This causes a huge environmental issue and also many hygiene problems which leads to the outcome of many diseases such malaria, dengue, etc. Partially India's garbage generation is about 0.2-0.6 per head per day. As a citizen of India we are responsible for the development of our country. So we as a citizen should find a way to solve the problems generated. To overcome this environmental issue I proposed an idea which is the development of an android application (city cleaner). Here, by entering the username and password login the app, then it displays the city/area map, by viewing the particular location the level of the garbage is displayed. If the specified level is greater than the normal level (i.e.) threshold value, a message is being sent to the saved contacts that are nearer to the location along with the garbage level. By viewing this message the garbage is immediately cleared. By implementing this idea, but average amount of garbage can be cleared and hence India would become a hygiene country.*

**Keywords: Sensors, Threshold value, GSM, ZigBee, and Microcontroller.**

## I. INTRODUCTION:

Every year, the population around the world is increasing drastically. The biggest challenge faced in our country especially in the urban areas is the solid waste management [4].Around the world still 85% of the cities are not having proper waste management system [5]. A city is said to be smart if it contains the following such as smart living, economy, governance especially the environment they are living, for this every individual in the city should be aware of it [9]. The next step should be taken by the municipality who are responsible for the cleanliness of the city [9]. Every year the waste generated by the people is around 0.2-0.6 per head per day. It is being proven that around India there arises the issue of poor disposal and collection of waste when compared to the other countries. This is being increased due the destitute management of the municipality and the government. The Figure 1 which shows the average amount of waste which is being deposited around the country.
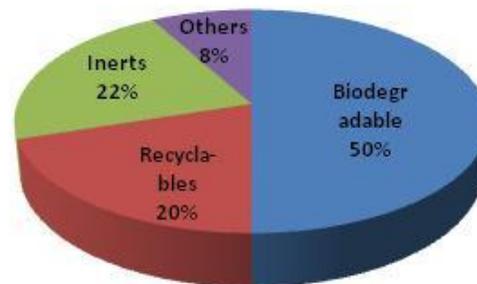


**Figure 1: Pie Chart**

Due to this increase the waste generated around are also increased which leads to the upcoming of many hygienic problems such as the dengue, malaria, typhoid etc. to overcome this problem, I proposed the idea of "smart methodology for garbage cleaning" this is the development of the android application. Here, by entering the username and password login the application it displays the city map or the area map of a street. In it the unique ID's and the level of the bin are viewed, if the level is above the threshold value then immediately a message is being sent to the municipality.

## II. EXISTING AND PROPOSED WORK

A.)Existing Work:

In the existing work proposed[1], the module is being designed by using the GSM technology and top-k query is being used for the transmission of the data from the source to the destination. IOT is used for achieving the efficient dynamic waste collection. Here in this system the overall architecture of the system is too large and IOT is being used for the storage of the data. The process for the waste collection and disposing of it takes huge time and the system is not efficient in the fast transmission of the messages and the clearing of the bin. To overcome this problem I proposed a paper where the system is being designed using android application.

B.)Proposed Work:

The proposed system is worked on by overcoming the disadvantages of the existing system. In the proposed work, the bin containing the waste consists of three sensors for indicating the level of the bin (either medium, high, low). If the value

gained is greater than the threshold value, then immediately the message is being sent to the municipality along with the location and the level of the bin. Receiving the message the municipality immediately clears the bin in the specified location. And also the level of the bins can be cross checked using the LCD display that is being fixed in the system architecture. The messages are being send from the sensors to the microcontrollers using the ZigBee technique and also the system efficiency is being achieved.

## III. HARDWARE SPECIFICATION:

The hardware used in the module is microcontroller, IR sensors, and the ZigBee technique. Here the microcontroller is used for the transaction of the data from the source to the destination.
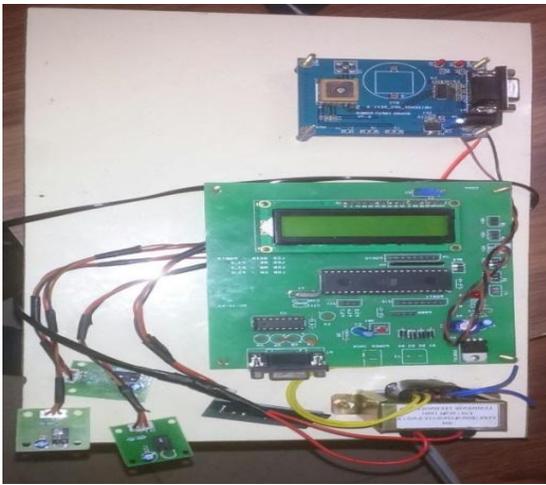


**Figure 2: Sample Hardware**

The Figure 2 represents the sample module for the implementation of the concept. First the level of the bin is being measured using the sensor, and then the values fetched are being sending to the microcontroller using the ZigBee technique. The bin actually contains three sensors in it for measuring the level of the bin; the values are set as high, medium and low. For high the value is (011), medium (010), and low (000). These values of the bin can be displayed in the LCD which is fixed in the kit. This LCD avoids people from receiving wrong values and the value can be checked it in whenever required. If the level of the bin is greater than the threshold value e.g. 75% immediately an a message is sent to the municipality along with the level of the bin and location. By viewing the level and the location the waste is immediately cleared.

## IV. SOFTWARE SPECIFIACTION:
The application is being installed in the smart phone like the other application using in the android phone. To create this application we use the platform android visual-studio (SDK). For the creation of the application.

## V. WORKING PLAN:
The application is login by entering the user ID and password.



**Figure 3: Application Login**

Immediately the city map is displayed where the sensors are located by selecting the particular location the level of the bin are also displayed.
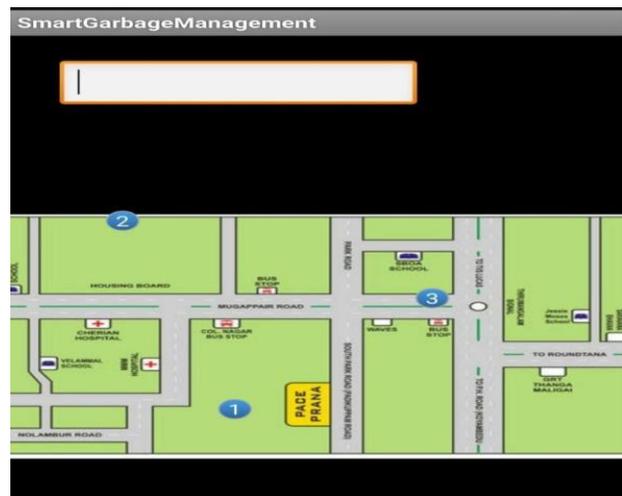


**Figure 4: City Map**

The level of the bin, those data's are stored in the microcontroller which acts as the temporary database for storing the data's of the bin. Now these level of the bin are sent the application using ZigBee technique. If the level of the bin is above the threshold value (the level Higher than the specified level) then an alert message is sent to the municipality along with the location and the level as shown in figure 5. Municipality is the saved contact stored in the application.
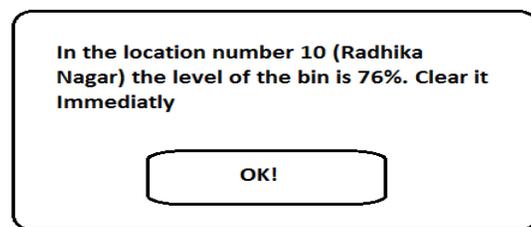


**Figure 5: Alert message to the contact**

After viewing the message the municipality arrives to the current location and clears the waste over there. In the sample module LCD is placed in between to check the level of the bin to avoid the false transmission of messages to the saved contacts this would be more advantageous for the user and it would be much user friendly for the people using it.
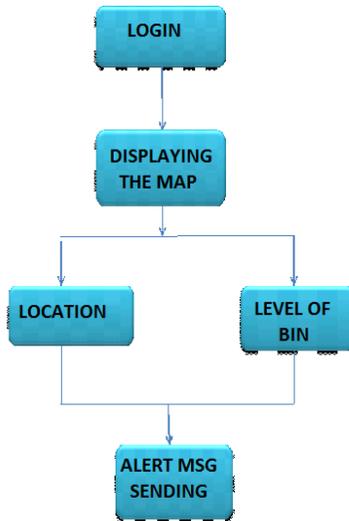


**Figure 6: Working Plan**

## VI. CONCLUSION:

The waste generated around the country is increasing all around, and this problem can be reduced by this android application developed. Since the usage of mobile phones is increasing every year this would be much useful for the people and hence the waste generated can also be reduced. It provides us with more advantages such as cost efficiency, easy to implement, provides more efficiency, reliability, etc. after the collection of the waste, it can be recycled by using some of the common recycling techniques such as aggregates & concrete, biodegradable waste, electronics disassembly, reclamation, down cycling, reuse. The future work for this should be done in much elegant way was the usage of the many devices should be reduced. And implemented in much an easier way and nothing should be done manually and everything should be done mechanically.

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