

Automation In Garbage Monitoring System By Using GSM Technology

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Abstract- In the present scenario, it is observed that garbage bins being overfull and all the garbage spills out resulting in pollution and generation of unhygienic condition in the cities. To avoid this, the proposed system consists of Garbage Monitoring System by Using GSM Technology. The concept of GSM with microcontroller which help for continuous monitoring of garbage so as to keep the environment clean and safe. Proposed system can be used in night time also. It also helps to reduce power consumption and requirement of manpower.

Key words: Arduino Uno, GSM, Ultrasonic sensor, LDR, Servo motor.

1. INTRODUCTION

Garbage may consists of the unwanted material left over from manufacturing process like industrial, commercial, mining or agricultural and household activities and their disposal is very essential. In the present day scenario, many times we see the garbage bins or dust bin placed in the cities are overflow due to increase in the waste every day. It creates unhygienic condition for the people. we know that according to “Swachha Bharat Mission” of India which help to make every villages and cities to be clean.

To avoid such situation and to support this mission there is a need of such work. The concept of GSM with microcontroller help for continuous monitoring of garbage so as to keep the environment clean and safe. Proposed system can be used in night time also. This system monitor the garbage bins and informs about the level of garbage collected in the garbage bin via a message. It also helps to reduce power consumption and requirement of manpower.

2. LITRATURE SURVEY

For implementation of this work, the literature survey are carried out as follows:

Kanchan mahajan and prof.J.S.Chitode proposed about zigbee and global system for mobile communication which are the latest trends and are one of the best combinations to be used in the garbage monitoring system But, the range of communication of the zigbee is almost 50 meters[1].

Prof.R.M.Sahu and Akshay Godase proposed the technique in which a camera will be placed bin at every garbage collection point along with load cell sensor at bottom of the garbage [2].

Twinkle sinha et.al. proposed the method in which efficiency of the street lighting system is increased by zigbee and sensors Less energy consumption by the system is done by the zigbee and sensors. The range of communication of the zigbee is almost 50 meters so it is not convenient to use.

[3].

3. SYSTEM ARCHITECUTURE

3.1 Circuit Diagram

In this proposed technique, system architecture includes the following component or device.

Arduino Uno, GSM module, ultrasonic sensor, servo motor, LDR, LED as shown in following figure 1.

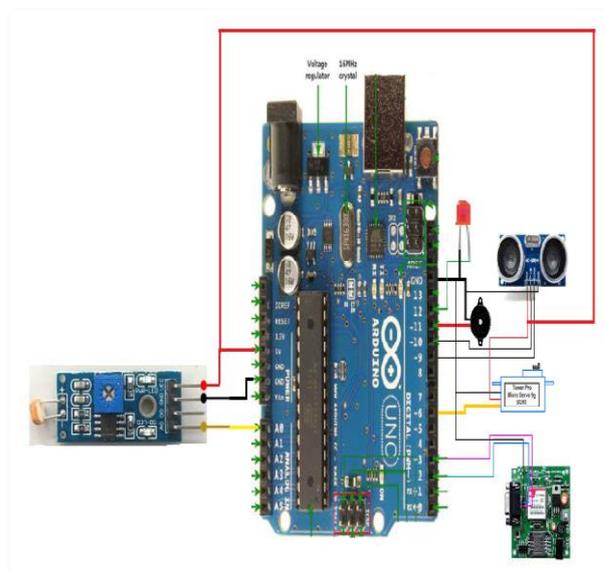


Fig.1: Circuit Diagram

4. METHODOLOGY

The working operation of proposed system is given in flow chart as shown in figure 2.

The proposed system consists of Arduino Uno Atmega 328 (microcontroller) for controlling the operation of garbage system. The GSM module used as a transmitter to

send the signal to the municipal corporation. The ultrasonic sensor is used to check the filling status of dustbin and the servo motor give the information about opening & closing of the flapper door. Using LDR this operation can be performed in night time also. Buzzer give the continue status to the public of the garbage bin. Initially, the garbage bin is remain empty the flapper become open so this message will be send to the municipal corporation.

When the system is running at night time at that time the related light become on, When the garbage bin going to fill up so this message also given to the municipal corporation.

when garbage bin become full so automatically flapper become closed and at the same time this message send to truck driver or municipal corporation for its further cleaning. When the bins become fill it give the warning message to public user to avoid the miss use of the dustbin. In this way this system definitely helps for cleanness of the society by reducing the human intervention.

5 RESULT AND DISCUSSION

When garbage bin is empty sensor detect the level of dustbin is empty then the GSM module of the system send a message to municipal corporation has a “Dustbin is empty” and flapper remains open up-till the dustbin is full which is shown in figure 3.

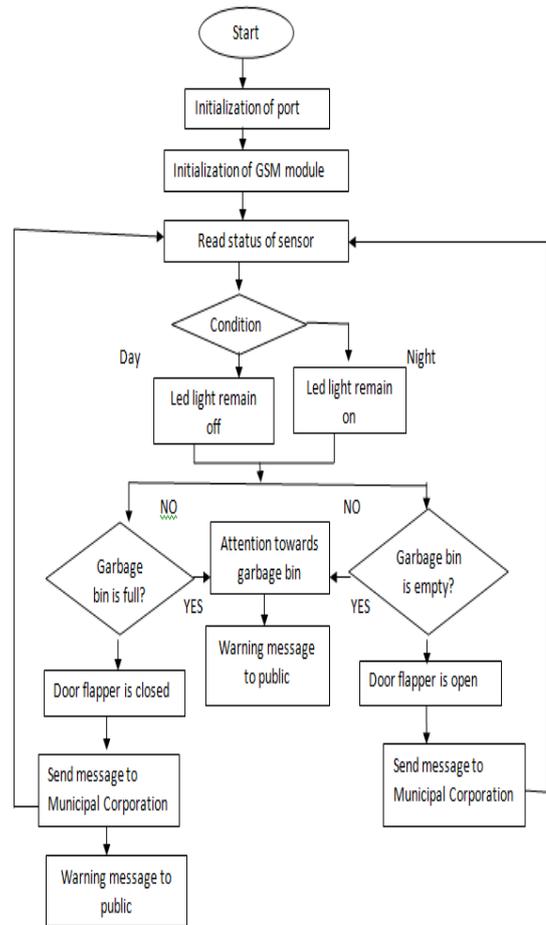
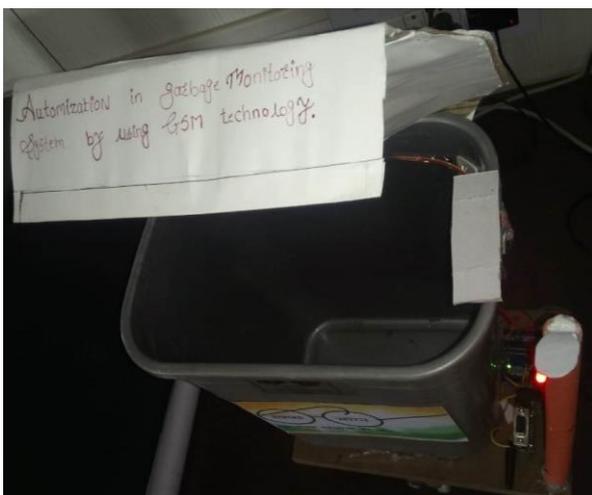
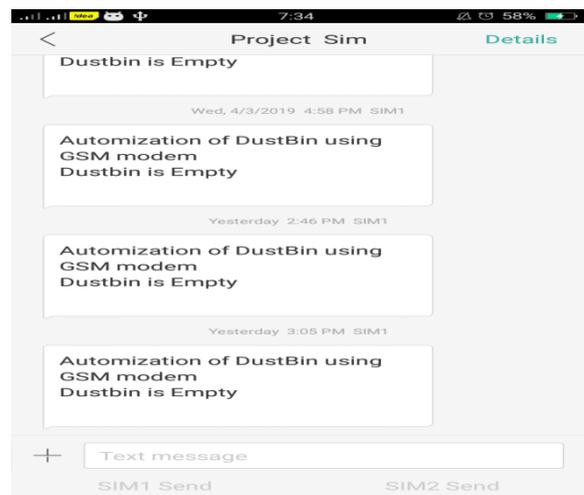


Fig.2: Flow chart of the proposed system

When garbage bin is full the sensor detect the level of dustbin is full then the GSM module of the system send a message to truck driver has a “Dustbin is full” for further action taken to empty that dustbin and automatically flapper become closed shown in figure 4.



(a)



(b)

Fig. 3: (a) when dustbin is empty (b) message received to user when Dustbin is empty

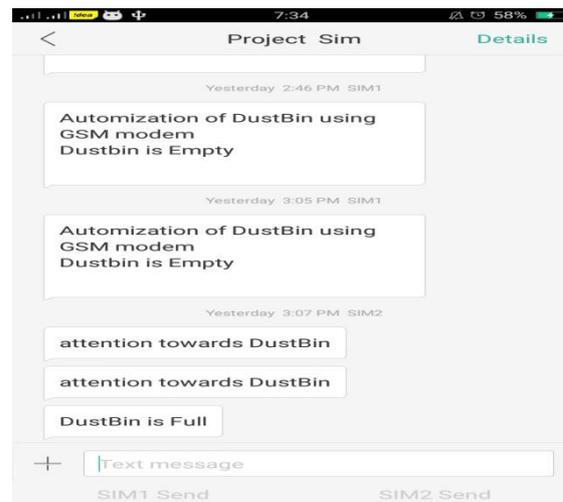
6 ADVANTAGES



(a)

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[1] Kanchan Mahajan, J.S. Chitode, (2014), waste bin



(b)

Fig. 4: (a) when dustbin is full the flapper of dustbin is automatically closed (b) message received to user as Dustbin is full

1. It avoids soil contamination and air contamination.
2. It helps to keep clean and safe environment.
3. Real time information on the fill level of the dustbin.

7 APPLICATIONS

1. This proposed technique can be used for development of "SMART CITY".
2. This is also helpful in the government project of "SWACHHBHARATABHIYAN".
3. It makes our system transparent between Municipal Corporation, works and public.

8 CONCLUSIONS

This system assured the cleaning of garbage bin when the garbage level reaches the maximum level. This system gives the status of garbage bin to the municipal corporation for further action. This system helps to reduce power consumption and requirement of manpower. As per its future scope is concerned:

1. This system can be made more effective by doing full use of GSM as a receiver.
2. This system can be made more efficient using GPS to give the exact location to the user.
3. By using camera it can be monitor the misuse of the dustbin so that the system becomes more smart.

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