

Smart Waste Bin Using GSM Technology

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Abstract : *Nowadays, in many areas we see that dustbins in Public places are not get cleaned time to time. By this unhygienic disease are increasing. To avoid this condition we are designing SMART WASTEBIN for SMART CITIES. In this proposed system there are multiple dustbins are placed in many areas. We are using sensor to detect the level of dustbins so that we can easily able to identify it weather it is full or not. If the dustbin is full then automatic message is generated and that message is then sends to the authority that is responsible for that area with the help of Internet or GSM. This system is also very useful in SWACCHA BHARAT ABHIYAAN which is started by our Prime Minister to keep our India clean and disease free. We can also see the density of the Dustbin through internet on a Dashboard, dashboard provide the authenticate person will easy check the present condition of the dustbin. So then that person can send the collection vehicle to collect the full garbage bins or dustbins. Main motive of this project is to reduce human efforts and cleanliness of our environment.*

1. Introduction

Now a day's proper collection of waste has become a sensational issue. To make SWACCHA BHARAT ABHIYAAN great success all the Indian citizens has to work together, it is quite challenging As the population increases the waste which is accumulated in the public bins are overfills and the waste will not carried to space land in time. It will spread diseases and affects the cleanness of the city. There are many solutions were proposed for the collection of waste concern these are not become successful due too many criteria, control unit has been placed in the dustbin in every public areas. But reality is everywhere the trash bins are overfilling and overflowing so the area is becoming untidy also area will be prone to diseases.

Present method for collecting the waste is not proper there are some drawbacks and it is hectic job IOT involves every aspect to be connected with internet. By connecting the Waste Bin to internet its real time information can be obtained.

To have proper collection of waste, the proposed system suggest to have sensors in waste bin and passing the information about the bin .These dustbins are interfaced with micro controller based system with IR Sensors and RF modules. Where the IR sensor monitor the level of the waste in waste bin and sends the signals to micro controller and further these signal are encoded and analyzed and send through RF Transmitter and it is received and decoded by RF receiver at the Central Server or desired destination through WIFI driver connection is enabled among multiple waste bin. The data has been received, analyzed and processed in which displays the status of the Garbage in the dustbin on the Application.

2. Literature Survey

The first previous author proposed web camera is mounted on the top of the dustbin with the load cell sensor and camera captures the continues images and threshold point is set at particular level. Threshold level compares output images of camera and load sensor this result compare by microcontroller. After observing the images of can it will give exact idea of level of dust in can and load cell sensor give exact weight of can. According to that the notification sends through GSM.

Limitation of this proposed system is that it required high processing power due to web camera and in the night sometimes it will give problem for capturing the images in the darkness. Cost is high due to web camera load sensor will not able differing the level of dustbin and actual load.

The author presents a novel approach garbage collection technique and interaction through a Smart bin which is developed using ARM LPC 2148 with ultra-sonic sensors and pressure sensing resistor. Ultrasonic sensor senses the level of bin and pressure sensing resistor (pSR) it helps to measure the weight, the weight being considered to measure its capacity. PSR are a Polymer Thick Film (PTF) device which exhibits a decrease in resistance with an increase in the force applied to the active surface.

This system provide web interaction to user it provide HTML pages where it shows the current level of dustbin .user is able to see the current status of bin on this web pages .this system provide RFID tag for authenticate control to specify user.

Limitation of this system is user is not able to access web page every time, and sometimes pressure sensing sensor gives wrong output it will not able to differ current level and weight of dustbin.

In this proposed system uses zigbee, GSM technology. Ultrasonic sensor sense the level of can and it will pass the input to ARM controller arm controller process that input and send it to zigbee. Zigbee use to transfer and receive data from long distance. GSM technology helps to send message to user will get alert via message.

3. Proposed Work

The proposed system has an adaptable, modular and configurable design that allows optimizing its operation for multiple scenarios. In more detail, the integrated system is able to glue the “smart” and “cyber-physical” characteristics with a waste-bin containing any type of wastes consists of two main IR sensors: - three IR sensors is mounted on the dustbin at bottom, middle, and top. it will detects the level of dust when it detects the level of dust LED light will automatically glow, output of the sensor will counted in the binary format or Boolean format.ir sensor will consist of emitter and detector and related circuit. It is whole set of (IR LED) IR Sensors work by using a specific light sensor to detect a select light wavelength in the Infra-Red (IR) spectrum. By using an LED which produces light at the same wavelength as what the sensor is looking for, you can look at the intensity of the received light. When an object is close to the sensor, the light from the LED bounces off the object and into the light sensor. This results in a large jump in the intensity, which we already know can be detected using a threshold.

Arduino Mega:

The Arduino Mega is basically a microcontroller board based on the ATmega1280 (datasheet). It has 54 digital input/output pins (of which 14 are used as PWM outputs), 16 analog inputs, 4 UARTs (hardware serial ports), a 16 MHz crystal oscillator, a USB connection, a power jack, an ICSP header, and a reset button. It contains all which is necessary to support the microcontroller; simply connect it to a computer with a USB cable or power it with a AC-to-DC adapter or battery to get started. The Mega is compatible with most

shields which are designed for Arduino Duemilanove or Diecimila.

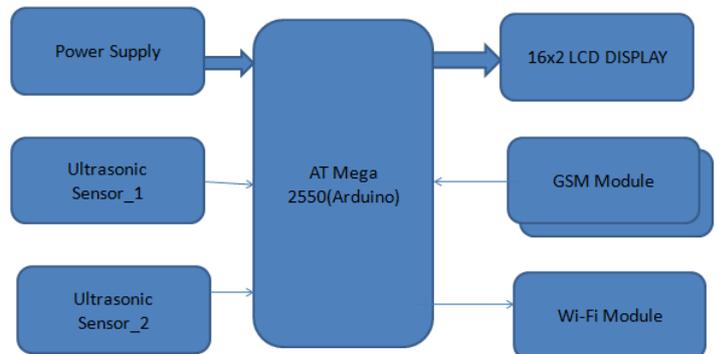


Fig. – Process of Proposed System

GSM module:

Global System for mobile this module will use for sending messages to user. GSM modem duly interfaced to the MC through the level shifter IC Max232. The SIM card which is mounted GSM modem upon receiving digit command by SMS from any cell phone send that data to the MC through serial communication. Once the program is executed, the GSM modem receives command ‘STOP’ to develop an output at the MC, the contact point of which are used to disable the ignition switch. The command so sent by the user is basically based on an intimation received by him through the GSM modem.

Ultrasonic Sensors:

An Ultrasonic sensor is a device that can basically measure the distance to an object by using sound waves. The basic technique used for measuring the distance by sending out a sound wave at a specific frequency and listening for that sound wave to bounce back. By recording the elapsed time between the sound wave being generated and the sound wave bouncing back, then it becomes possible to calculate the distance between the sonar sensor and the object.

Software application:-This is for user interface user will interact with system through application .This application provides current status of dustbin. This application fetches real time content of dustbin. And display on the application .this application is built in android .where various services are provided for user.

Wi-Fi drivers:-This driver provides interface between software and hardware device. It provides access for application through internet.

using this system we are reducing human efforts and keep our environment clean. Also contributing something in Swaccha Bharat Abhiyaan for cleanliness of our country.

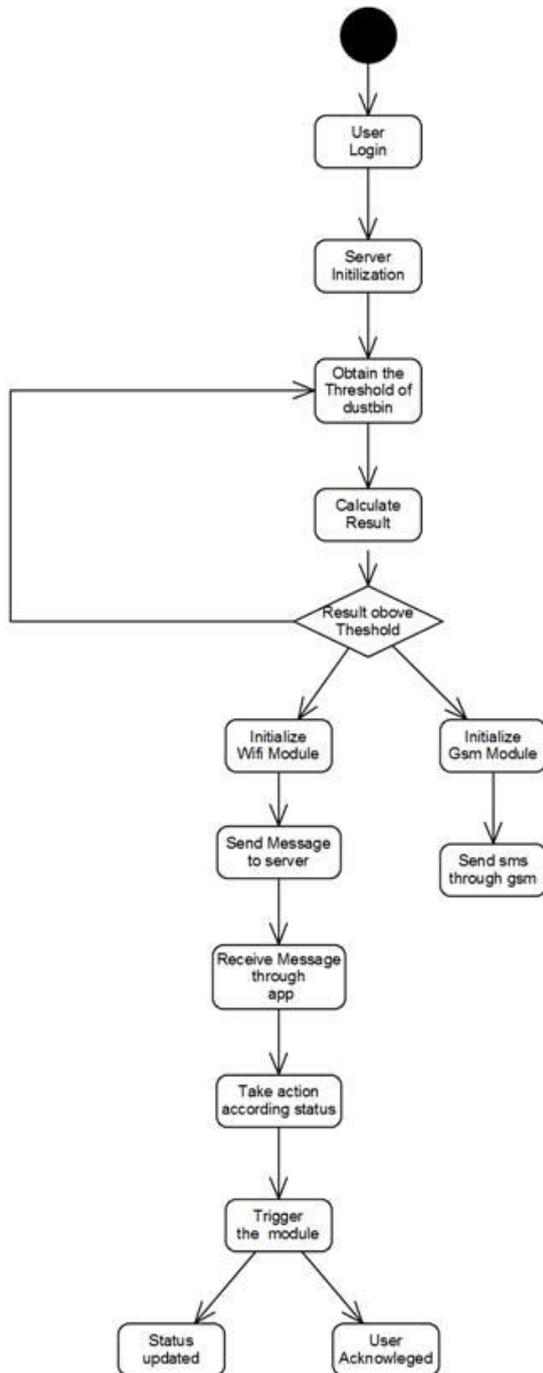


Fig.: System flow

4. Conclusion

We have implemented smart waste management system using smart dustbin where user get notification at anytime and anywhere through GSM technology and mobile application. So it will be helpful to clean dustbin on time. By

5. References

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