

SMART DUSTBIN CONTAINER USING IOT NOTIFICATION

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ABSTRACT:- The idea is very simple and is driven by the fact the dustbin require very frequent cleaning which is not always possible. In our city many times we see that the garbage bins or dustbins placed at public places are overflowing. It creates unhygienic conditions for people. It in turn leads to various hazards such as bad odor and ugliness to that place which may be the root cause for spread of various diseases. To avoid all this hazardous scenario and maintain public cleanliness and health this work is mounted on a smart garbage system. The main aim is to accommodate more and get the dustbin cleaned frequently using alert service.

KEYWORD: Ultrasonic sensor, Internet of things, Atmega328 controller, LCD Display, ESP8266, Relay.

I. INTRODUCTION:

The universal truth is that wastage of anything is harmful for the society. The ultimate need to developing nation is the key for "smart city" the influential ecological factor this may include hazardous pollution, effects on human health so Internet of things (IOT) Provides new opportunities for making cities smarter by introducing the smart waste management system, we are taking key step towards becoming a smart city we have few garbage bins placed in cities which is overflowing and it checked by local authorities there are all types of garbage all disposed in bins and it all dumped together. So we designed the new concept of waste management disposal using automatic garbage level detecting from ultrasonic sensor and it will provide real time information about dustbin which is situated city.

The garbage bin is filled these information can be send to the concerned authority person to clean the dustbin for real time information, we use GSM. GSM is now back bone of communication system which is low cost and high performance device and easy to implementation. GSM module gives message signal when the dustbin is 70% filled and the compressor will compress the garbage. The main target of this project is to save time, money, and fuel and also reduces exhaust gas emission.

II. SENSOR CONCEPT

The ESP8266 Wi-Fi Module is a self contained SOC with integrated TCP/IP protocol stack that can give any microcontroller access to your Wi-Fi network. The ESP8266 is capable of either hosting an application or offloading all Wi-Fi networking functions another application processor.

The ESP8266 Wi-Fi module is a low cost component with which manufacturers are making wirelessly networkable microcontroller module. ESP 8266 Wi-Fi module is a system-on-a-chip with capabilities for 2.4GHz range. It employs a 32 bit RISC CPU running at 80 MHz . It is based on the TCP/IP (Transfer control protocol). It is the most important component in the system as it performs the IOT operation. It has 64 kb boot ROM, 64 kb instruction RAM, 96 kb data RAM.

Wi-Fi unit performs IOT operation by sending energy meter data to webpage which can be accessed through IP address. The TX, RX pins are connected to the 7 and 8 pins of the Arduinomicrocontroller.

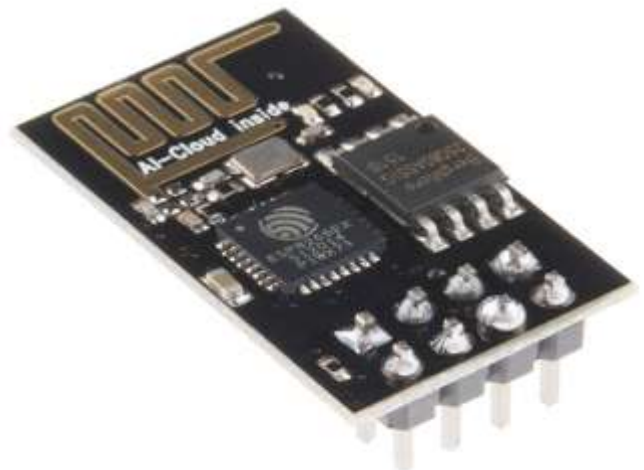


Figure.1. wifi module

III. GARBAGE CONTAINER:

A waste container is container for temporarily storing waste and usually made out metal or plastic. It consist of three types: trash cans, dumpsters, wheelie bin.



Figure.1. Garbage container



Fig 2: HC-SR04 Ultrasonic Sensor

VI. SOFTWARE DETAILS:

Here is some software which is used in proposed system.

VI.1. WEB BASED SOFTWARE SYSTEM:

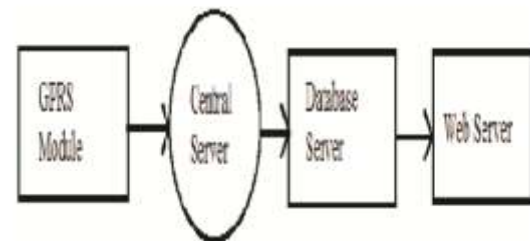


Figure 4. Block diagram of web based system

It comprises of a GPRS module, a central server, database server and a web server, the block diagram of web centered software system. The central theme of this work is to develop on intellectual monitoring system for proper management of MSL. A municipal authority can custom this type of system and monitor the waste collection status in real time based on the recorded information the system also has provisioning in which there are option available for the customers to lodge their complaints in case of discrepancies.

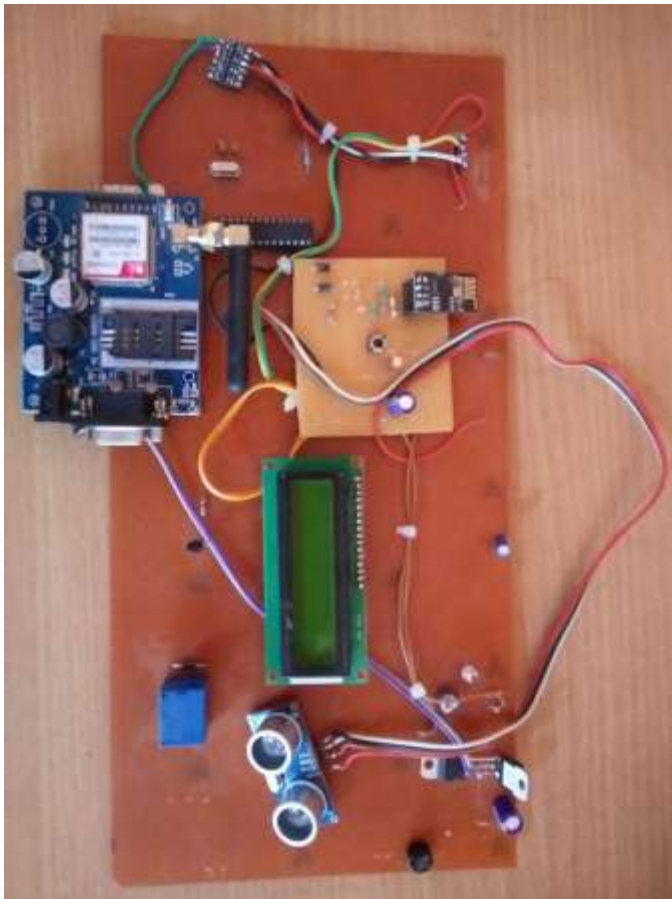
IV. ATmega328 Controller:

The ATmega328 Controller is an open-source controller board based on the microchip ATmega328 controller and developed by Arduino.cc. The board is equipped with sets of digital and analog input/output (I/O) pins that may be interfaced to various expansion boards (shields) and other circuits. The board has 14 Digital pins, 6 Analog pins, and programmable with the Arduino IDE (Integrated Development Environment) via a type B USB cable. It can be powered by a USB cable or by an external 9 volt battery, though it accepts voltages between 7 and 20 volts. It is also similar to the Arduino Nano and Leonardo. The hardware reference design is distributed under a Creative Common Attribution Share-Alike 2.5 license and is available on the Arduino website. The ATmega328 comes preprogrammed with a boot loader that allows uploading new code to it without the use of an external hardware programmer.

V. ULTRASONIC SENSOR:

A special sonic transducer is used for the ultrasonic proximity sensors, which allows for alternate transmission and reception of sound waves. The sonic waves emitting by the transducer are reflected by an object and received back in the transducer. After having emitted the sound waves, the ultrasonic sensor will switch to receive mode. The time elapsed between emitting and receiving is proportional to the distance of the object from the sensor.

VI.2. System Design:



VI.3.BLOCK DIAGRAM:

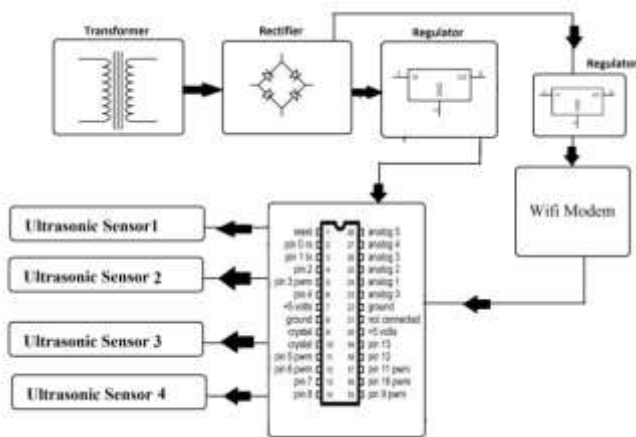


Fig. block diagram

Microcontroller will count that pulses and this system displaying the information about the energy

consumed in terms of units, about the bill and if any theft occurs that will be displayed in the website. Hence every user can check the information anywhere globally. Thing speak web page is used for displaying the information of the system.

VI.4. FLOW CHART

Fig -3.2 shows the system flow chart of proposed system which will indicates the actual flow of proposed system to gain the appropriate result.

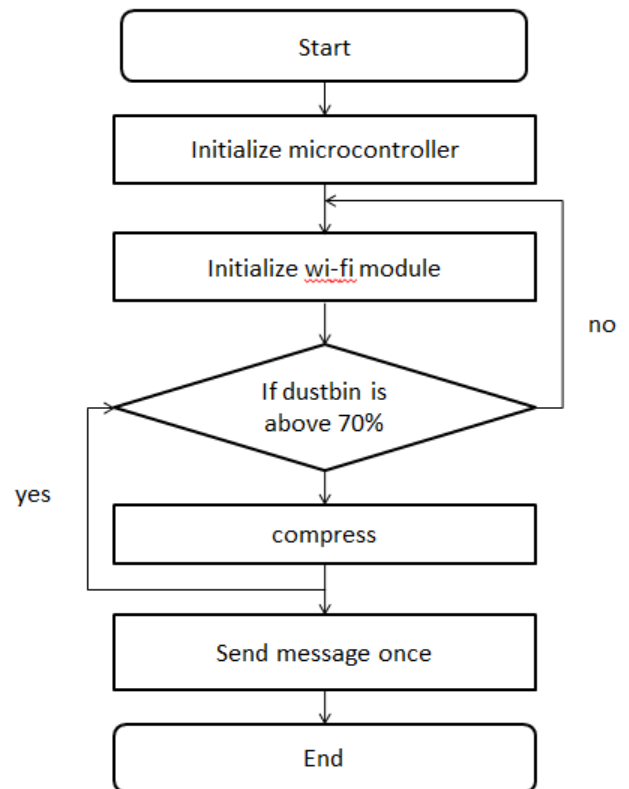


Fig. Flow Chart

VII. APPLICATIONS

- This can be best used by municipal corporation for their betterment of management regarding collection of wastes.
- With the help of proper technology we can guide the trucks to choose the shortest path
- It also favours the “smart city”project and “digital India”

VIII. ADVANTAGES

- Less time and fuel consumption as the trucks go only to the filled containers.
- Decreased noise, traffic flow and air pollution.
- The sensor installed in the container provide real time information on the fill level.

[4] "GSM Global system for mobile communication". 4 G Americas. Retrieved 2014-03-22.

IX. ACKNOWLEDGMENT

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X. CONCLUSION

We have implemented real time waste management system by using smart dustbin container to check the fill level of smart container whether the dustbin are full or not. In this system the information of all smart dustbins can be accessed from anywhere and anytime by the concern person and he/she can take a decision accordingly. By implementing this proposed system the cost reduction, resource optimization, effective usage of smart dustbins can be done.

XI. REFERENCES

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[3]R.Narayanmoorthi, ShubhamThakker: smart and wireless waste management system. System that gives prior information of the filling of bin that alerts the municipality and propose a "Smart Garbage Bin", which will inform the authorized person when the garbage bin is about to fill. NIT spectroscopy is used for separation of biodegradable waste.