

SMART GARBAGE MONITORING SYSTEM USING IOT

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Abstract—This is to make smart green environment of garbage monitoring system by measuring the garbage level in real time and to alert where ever the bin is full. A sensor is fixed on the top of the bin which will detect the total level of garbage inside it according to the total size of the bin. When the garbage reaches its maximum level, a notification will be sent. Waste management is automated in this advanced method. Garbage Monitoring System is a very innovative project which will help to keep the cities clean. The ultrasonic sensors are connected with Arduino Uno Microcontroller to send the level of garbage to the server of concerned authority after waste is filled up to particular level. Then authority can take required action by employing a worker to empty out the bins. So through this system, the real-time status of waste is monitored.

Keywords: Smart garbage bins, Alerts, Wi-Fi Module, Arduino Uno Microcontroller, Ultrasonic Sensor.

I.INTRODUCTION

IoT or Internet Things refers to the network connected to physical objects that can communicate and exchange data. Garbage Monitoring System may consists of the unwanted wastes left over from All Public Areas.[1] This is an IoT based Project for smart lifestyle, cleanliness with Garbage Bin. This project garbage management and monitoring system is a big challenge in today's scenario of metropolitan cities. There is a need for well-organized waste collection and disposal system. Even though there are many existing mechanisms available for handling as well as managing waste, the major challenging task is gathering information.[2] This occurs because there is a lack of coordination among government, people and the local authority for shipping and processing waste. This project represents a comprehensive study and detailed investigation of waste management.

II.EXISTING SYSTEM

The Existing System of garbage monitoring system is quite complicated and has many disadvantages.[3] Garbage is collected by corporation, weekly once or 2 days once, the garbage stinks and overflows from the

garbage bin and spread over the roads and pollutes the environment. It is time consuming process and frequent monitoring of the system is required.

Disadvantages

- Soil,Air,Water Contamination
- Bad impact on human health
- Impact on animals life
- Spreading disease
- No recycling opportunities

III.PROPOSED SYSTEM

In order to overcome the difficulties of the existing system the following design is approached. The proposed system is used to notify the worker, if the garbage is full. In the proposed design, sensor have been used i.e., ultrasonic sensor.[4] It is given certain threshold values and if the arduino uno board detects values with the ranges, then the LED's are switched ON, buzzer rings and with the help of a

wifi module, the result is displayed on LCD.

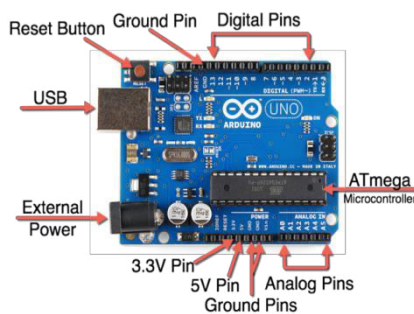
Advantages:

- It saves time and money by using smart waste collection.
- It keeps our surroundings clean and green and free from bad odour of wastes.
- It further reduces man power requirements to handle the garbage collection process.
- Applying smart garbage collection process to the city makes it a "clean city".

IV.COMPONENTS REQUIRED

A.Arduino uno

It is a microcontroller board based on inputs and outputs. It contains everything needed to support the microcontroller; simply connect it to a computer. "Uno" means one in Italian and was chosen to mark the version 1.0



B.Power supply

All devices will have a certain power supply limit and the electronic circuits inside these devices must be able to supply. The quality of the power supply is determined by various characteristics such as load voltage, current, voltage regulation, source regulation, output impedance, ripple rejection, and so on.

Power supply characteristics:

1. Load Regulation
2. Minimum Load Resistance
3. Source/Line Regulation
4. Output Impedance
5. Ripple Rejection

C.Ultrasonic sensor

This include ultrasonic transmitter, receiver and control circuit. An ultrasonic sensor is one which measures the distance of an object.[5] An ultrasonic sensor makes a transducer to send and receive ultrasonic pulses that relay back information about an object's proximity.

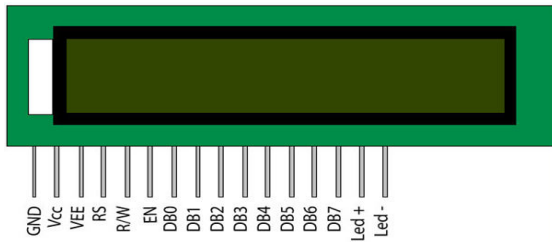


D.Lcd display

A liquid crystal display(LCD) is the definition from the name itself. LCD uses a liquid crystal to produce a visible image, operating voltage is 4.7V to 5.3V.

Features of 16×2 LCD module

- Operating Voltage is 4.7V to 5.3V
- Current consumption is 1mA without backlight
- Alphanumeric LCD display module, meaning can display alphabets and numbers



F. Buzzer

A buzzer is a small efficient component to perform sound features. There are two types are buzzers that are commonly available.[4]The one shown has as a simple buzzer which will make a Continuous Beeeeeeeppp...sound, the other type is called a readymade buzzer which will look bulkier than this and will produce a Beep...Beep...Beep

E. Led lights

An LED-Light Emitting Diode module is, a device containing several LED light bulbs, which is connected to a fixture, containing a battery. LED lighting products produce light more efficiently than incandescent light bulbs.[6]An electrical current passes through a microchip, which produces the tiny light sources we call LEDs and the result is visible light.



G. Wifi module

V. ARDUINO IDE

The Arduino (IDE) is an application where the functions from C and C++ is written. It is used to upload and write programs to Arduino boards. Arduino consists of both physical programmable circuit board (i.e., microcontroller) and some piece of software, or IDE which runs on the computer.

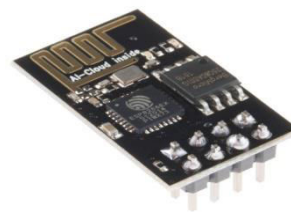
VI. CONCLUSION

At current scenario the garbage bins are cleaned whenever the commencement of cleaning process is given to workers.

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The ESP8266 WiFi Module is a self contained chip with integrated TCP/IP protocol stack that can give any microcontroller access to your WiFi network. This Wifi module has a powerful on-board processing and storage capability which is integrated with the sensors and other application of specific devices to communicate.



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