

SMART DUSTBIN DEVELOPMENT WITH ALERT SYSTEM

#¹Ashwini Patil, #²Kajal Tapkir, #³Soham Bidave, #⁴Prof.Monika Dangore



¹ashwinipatil7106@gmail.com

²kajaltapkir79@gmail.com

³bidavesoham20@gmail.com

#¹²³⁴Department of Computer Engineering,

Dr.D.Y. Patil School of Engineering, India

ABSTRACT

Nowdays, urbanization has increased massively. Due to this garbage collection has increased. Many times in public places dustbins are overflowed because of poor service and maintenance. In this paper, we have introduced a regular dustbin into Smart Dustbin by using logics and various hardware's like Ultrasonic sensor, Microcontroller, Buzzers and LED's along with the Mobile application. Once regular dustbins are replaced with the Smart Dustbins, waste can managed adroitly, as it avoid excess lumping of litter on roadside.

Keywords: Waste management, Ultrasonic sensor, Smart Dustbin, Trash.

ARTICLE INFO

Article History

Received: 31st May 2019

Received in revised form :

31st May 2019

Accepted: 3rd June 2019

Published online :

4th June 2019

I. INTRODUCTION

Effective waste management is a very hectic task. When there was no scope for IOT, the litter was collected occasionally by trash collectors which were dumped in dump yards. This process was not intervening to internet. The proposed system uses the advanced technology than previous one. We have introduced the Mobile application through which it will give us the dustbin status i.e. either full or empty by detecting the available space in bin by using Ultrasonic sensor also Microcontroller, Alarm and LED's are used to indicate the filled level of bin. This system reduces the effort and it save's time. This technology can manipulate trash containers technically.

II. WORKING MODEL

Fig a. shows the Block diagram of Smart Dustbin. LED's, Buzzer, Ultrasonic sensor are connected to microcontroller ESP82166MOD and Power supply is provided to Microcontroller. Mobile application is middleware for the users, through which users can interact with the Smart dustbin.

Fig. b shows the dustbin structure, regular bin is assembled by using hardware's like Ultrasonic sensor, Buzzer, LED's and Controller. Ultrasonic sensor calculates the distance in bin and gives the information to microcontroller, the level of space in bin is indicated by different LED's. Buzzer starts

beeping, once level of bin is crossed i.e. bin is almost full. Different LED's are used to indicate the status of bin.

Calculation: Available space = total distance – filled distance

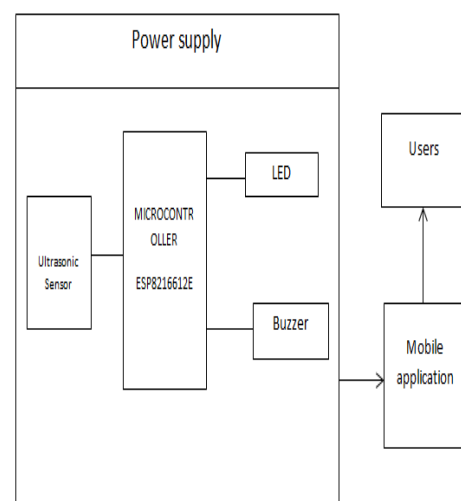
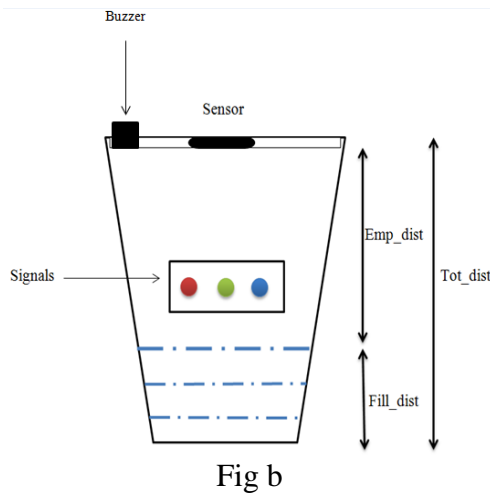


Fig a



III. HARDWARE MODULE

1. Ultrasonic sensor:

These are type of acoustic sensor divided into three broad categories: transmitters, receivers, and transceivers. Transmitters convert electrical signals into ultrasound, receivers convert ultrasound into electrical signals and transceivers can both transmit and receive ultrasound.

2. ESP8216612E Microcontroller:

This is low cost Wi-Fi microchip with full TCP/IP stack and microcontroller capability produced by manufacture ESpressif system. The ESP-12E module is a shielded breakout board that combines ESP82166 with 4MB of flash and a DCD antenna.

3. LED:

A light emitting diode is a semiconductor light source that emits light when current flows through it. Electrons in semiconductors recombine with electron holes releasing energy in form of light.

4. Buzzer:

A buzzer or beeper is an audio signalling device which may be mechanical, electromechanical or piezoelectric. Typical uses of buzzer and beepers include alarm devices, timer and confirmation of uses input such as a mouse click or keystroke.

5. Wire: (Jumper Wire)

Jumper wires are used for making connection between in items on breadboard and other hardware. The term “jumper wires” simply refers to a conducting wire that establishes an electrical connection between 2 point.

IV. SOFTWARE REQUIREMENT

1. Arduino IDE
2. Android studio
3. 000Web Host

V. RESULT

1. Bin is 0 to 40 % full	Green LED is blowing.
2. Bin is 41 to 79 % full	Yellow LED is blowing.
3. Bin is 80 to 100 % full	Red LED is blowing with beeping Buzzer.



Fig: Smart Dustbin

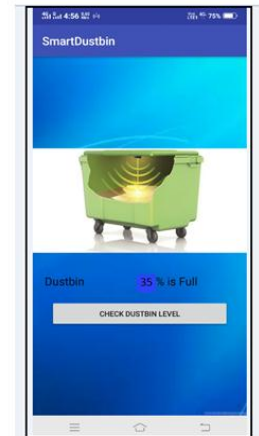


Fig: Status of bin in Mob.app

VI. CONCLUSION AND FUTURE SCOPE

In this paper, architecture and implementation of Smart dustbin has been shown. Using this technique the waste bin is fully optimized. By using various hardwares the status of waste bin is indicated also Information regarding level of trash in bin gets displayed on Mobile application hence it provides intelligent management of service in the city. It is very useful in social work like “Swaccha Bharat Abhiyan”. This will improve the quality of environment and keep the city clean.

For future work, we will try to implement more facilities regarding Smart bin and location of Bin will track by using GPS.

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