

Smart Dustbin with IOT Notification

¹Aditi sawarkar, ²Kalyani kshirsagar, ³Bhagyshree yenorkar, ⁴Shila Tembhare,

⁵Komal wankhede

¹Assistant Professor, ^{2,3,4,5}UG Students

^{1,2,3,4,5}Department of Computer Science & Engineering

^{1,2,3,4,5}Govindrao Wanjari College of Engineering and Technology Nagpur, India

Abstract

In India There is a requirement for Smart waste management for the Smart buildings, Colleges, Hospitals and Bus stands. The Smart Dustbin thus thought is an improvement of normal dustbin by elevating it to be smart using sensors and logics using programming. We are inspired from “Swachh Bharat Mission”. Nowadays technologies are getting smarter day-by-day so, as to clean the environment we are designing a smart dustbin by using Arduino. This smart dustbin management system is built on the Node MCU based system having ultrasonic sensors and green and red led on the dustbin. If dustbin is not maintained than these can cause an unhealthy environment and can cause pollute that affect our health.

Our project is a IOT (Internet of thing) base project all data is send to the web server form Node MCU.

Keywords:- Ultrasonic Sensors HC-SR04, Node MCU ESP8266, Microcontroller, Arduino UNO, LED light-emitting diode, Smart Dustbin, IOT Notification.

1. INTRODUCTION

As the world is in a stage of up gradation, there is one stinking problem we have to deal with Garbage In our daily life, we see the pictures of garbage bins being overfull and all the garbage spills out.

Every individual would want everything that looks clean and beautiful, one of which is environmental cleanliness. There are still many individuals who tend to be less aware of the cleanliness of their environment. This is reflected in a large amount of garbage scattered on the streets and in city parks. This situation certainly creates unrest for public facility users. So here comes our IOT project of smart dustbin, we designed and implemented a smart dustbin in a unique way which will be fully automatic. It is an IOT based project that will bring a new and smart way of cleanliness. It is a decent gadget to make your home clean, due to practically all offspring of home consistently make it grimy and spread litter to a great extent by electronics, rappers and various other things.

Since the smart dustbin is additionally intriguing and children make fun with it so it will help to maintain cleanliness in home.

2. METHODOLOGY

Our proposed design is based on a fire alarm and extinguisher in a landfill. Our project warns of a garbage fire in a landfill. We made a small battery powered circuit of Arduino smoke detector and temperature sensor and SIM800L module. Our sensor detects smoke and temperature. When it detects the temperature is over 50 degrees or detects smoke and a signal from the SIM800L module connected to the landfill office, it will display an alarm and turn on the water pump automatically. [2]

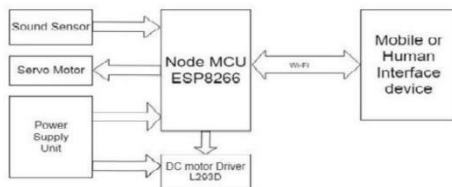


Figure 1.1 Block Diagram

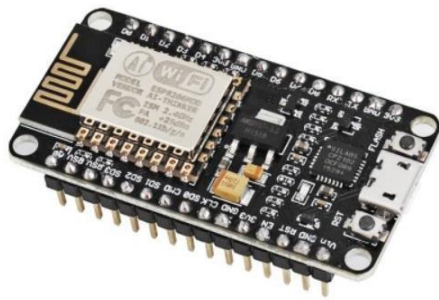


Figure 1.2 Module



Figure 1.3 Module

21 NODE MCU board: -NodeMCU is an open source IoT platform. This is used for making the things work using Wi-Fi. This board includes firmware which runs on ESP8266 Wi-Fi SoC Express Systems and the hardware is based on ESP-12 module. The second ultrasonic sensor is connected to this board and the second part code is dumped into this board. Before dumping the code, in the Arduino IDE the correct board should be selected. This uses many open source projects such as lua-cjson and SPIFF.



22 Ultrasonic Sensor (HC-SR04): -

An ultrasonic sensor is an electronic device that measures the distance to a target by emitting ultrasonic waves and converting the reflected sound into an electrical signal. Ultrasonic waves travel faster than audible sounds (i.e. sounds that a human can hear) [8]. Ultrasonic sensors consist of two main components: a transmitter (which emits sound using piezoelectric crystals) and a receiver (which encounters sound after it has travelled to and from the target).

Figure 2.5 Ultrasonic sensors

To calculate the distance between the sensor and the object, the sensor measures the time it takes for the transmitter's transmitter to contact the receiver. The formula for this calculation is $D = \frac{1}{2} T \times C$ (where D is distance, T is time, and C is the speed of sound ~343 meters/second). For example, if a scientist points an ultrasonic sensor at a box and the sound takes 0.025 seconds to bounce, the distance between the ultrasonic sensor and the box would be:

$$D = 0.5 \times 0.025 \times 343 \text{ or about } 4.2875 \text{ meters.}$$

Ultrasonic sensors are mainly used as proximity sensors. They can be found in automatic parking technologies and collision avoidance systems [9]. Ultrasonic sensors are also used in robotic obstacle detection systems and in manufacturing engineering. Compared to infrared (IR) sensors in proximity sensor applications, ultrasonic sensors are not as susceptible to interference from smoke, gases, and other airborne particles (although the physical elements are always affected by variables such as heat) [10]. Ultrasonic sensors are also used as level sensors for detecting, monitoring and controlling liquid levels in closed containers (e.g. tanks in chemical plants). In particular, ultrasound technology has enabled the medical industry to visualize internal organs, identify tumours, and ensure the health of babies in the womb.



Figure 2.6 Ultrasonic sensors

3 APPLICATION

In the event of a sudden and unexpected fire, provide a quick primary extinguishing agent with different types of fires:

- Portable hand lighter under certain conditions or circumstances [11]

extinguishers can be an essential tool for the initial attack of a given fire Scenario

- May be more efficient and better suited to the job than a permanent water source and house

- More practical to use in certain places: industry, schools, shops, specific jobs

4 ADVANTAGES

The advantage of our proposed design is to warn the dustbin operator when the dustbin of the on the ground exceeds 90% , so that the worker on the ground works on the dustbin Our design provides the warning in three ways:

- 1: Let's reproduce the Led of our circuit.
- 2: We publish the notice on the website.
- 3: We show Alert on Android Mobile.

5 CONCLUSIONS

Conclusion of our Paper is to give warning to dustbin Official when dustbin of ground waste is more than 90% full of the device started automatically and device send message officials and office.

6 REFERENCES

1. RCONPROSYS™ Industrial IoT

https://www.contec.com/en/products-services/daq-control/iiot-conprosys/?utm_campaign=&utm_medium=p_pc&utm_source=adwords&utm_term=iot%20technology&hsa_mt=p&hsa_net=adwords&hsa_ad=569445804447&hsa_src=g&hsa_campaign=15567134809&hsa_kw=iot%20technology&hsa_grp=131478759576&hsa_tgt=kwd-299758180755&hsa_ver=3&hsa_acc=3729774898&gad=1&gclid=CjwKCAjwgqejBhBAEiwAuWHioIj7W6P7iJ1eRryBhJtE09Y2X1ogKnKDmaEajz1aktL-dRHulrkKIRoCaiUQAvD_BwE

2 Circular Cities: The Six Dimensions of Circular Waste Management

https://delterra.org/knowledgehub/circular-cities/?gclid=CjwKCAjwgqejBhBAEiwAuWHioF5mNE8Eg1nIYx-zgOl0gdzuE-DhUWrLHCD9Oh5dE4KC9SbYgytGKHoCCm4Q_AvD_BwE

3. Approach to Solid Waste Management