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Garbage Bin Tracking Using IOT

Mr. A. D. Thorat[1], Ms. Shruti S. Khot[2], Ms. Sakshi M. Patil[3], Ms. Shravani M. Patole[4], Ms. Pradnya M. Tandale [5]
Department of Computer Science and Engineering, AGTI's Dr. Daulatrao Aher College of Engineering, Karad, Maharashtra, India

Abstract: ***Now a day's management of the waste is difficult because of increasing population. People needs to understand about the effects of improper waste management. The garbage bin tracking is the satisfied solution on this problem. The system monitors the garbage bin and informs about the level of garbage which is collected in the garbage bin via mobile application. For this the system uses ultrasonic sensors placed under the lid of the bin to detect the garbage level. After filling the bin at the particular level, the buzzer gets enable and the alert notification sends via mobile application, when the bin is vacant the buzzer gets disabled.***

Keywords: Garbage bin tracking system, IoT components, Garbage level detection, Android App.

I. INTRODUCTION

"Cleanliness is next to godliness" goes the proverb. In recent years the urbanization in area increased rapidly. Because of this, lots of garbage is produced. A real time IOT based garbage bin tracking helps colleges, houses and every private and public area's to optimize their waste collection and maintain clean environment. Garbage bins that are overflowing and neglected is not disposed on time, it causes many diseases to spread. It is harmful for health. That's why proper and timely control of waste is essential. The garbage bin tracking is the satisfied solution on this situation. The System informs each and every essential information regarding the bin. An automated waste management system is proposed as an alternative strategy to overcome this deficiency Collected Waste in a particular time manner would not only prevent overflows' but also keeps the garbage free environment.

II. LITERATU REREVIEW

The proposed paper by Pranja Alva[1] a Smart waste collecting system and waste management system are based on IoT is proposed in this study to help the local government. This aids in the resolution of issues related to trash management and IoT-based waste collection for the smart city.

The developed solution is extremely efficient in collecting waste, monitor the amount of waste deposited, and to indicate the odor and toxic smell produced by the waste and to normalize the environment. The system's main benefit is that it collects waste on time, avoiding bin overflow, which would aid in waste collection.

Sunny Kanade [2] The system is implemented using two ultrasonic sensors which is being controlled by node MCU .One of the ultrasonic sensors detects the level of the waste in the bin and other detects the person approaching the bin to dispose the waste. This detection helps in automatic opening and closing of the lid. Servo motor is connected to the lid which serves the action of closing and opening of the lid. In this system, level of waste in the bin will be sent to concerned authorities. The IoT data is stored and monitored using app. The proposed system is reliable, cost effective and can be easily implemented.

Ritaf Zabin [3] Checking system utilizing Arduino or Raspberry pi board and an open IoT stage is presented in this report. The proposed framework includes an Arduino microcontroller, ultrasonic sensor, Wi-Fi module and a heap battery. Information from the ultrasonic sensor and burden cell is obtained by using the Arduino microcontroller. By utilizing an ultrasonic sensor, the profundity of the trash in the compartment is resolved and the heaviness of the waste receptacle from the heap cell is also estimated. For indicating the information, the LCD screen is utilized. The Wi-Fi module sends to the web the information portrayed previously.

Satish kumar N[4]

This paper proposes an IoT based efficient waste collection system with smart bins. It does real- time monitoring of the waste bins and determines which bins are to emptied in every cycle of waste collection. The system also presents an enhanced navigation system that shows the best route to collect wastes from the selected bins. Four waste bins are assumed in the city of Mount Pleasant, Michigan at random location. The proposed system decreases the travel distance by 30.76% on an average in the assumed scenario, compared to the traditional waste collection system. Thus it reduces the fuel cost and human labor making the system optimized and efficient by enabling real-time monitoring and enhanced navigation.

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III. PROPOSED WORK

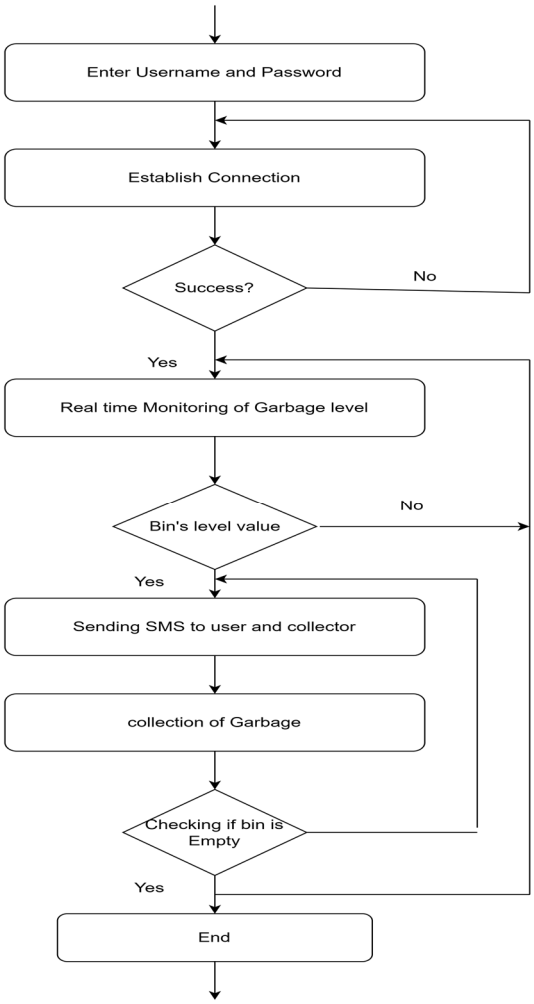

Figure: 1Flowchart

Fig.2 represents the architecture of the garbage bin tracking system. The proposed system deals with the more affordable and accurate tracking the level of garbage from bin.

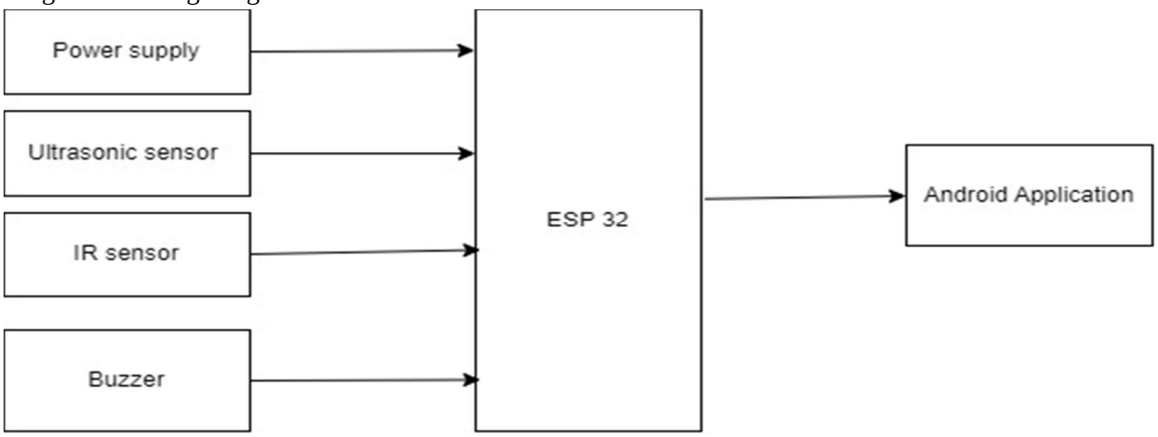

Figure:2 Architecture Diagram

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Here are the components used in such a system:

1) *Ultrasonic Sensor:* Ultrasonic sensor placed over the bins to detect the garbage level and compare it with the garbage bins depth. Ultrasonic sensor is used to find the object while giving information about the bin is full or empty.ultrasonic sensors can measure distance and detect the presence of an object without making physical contact.
2) *ESP 32 Wroom:* In module ESP 32 is used. It is low cost. It is better than Arduino. It provides the advance features for processing, it is suitable for complex application. Esp32 can be used on 3 to 5 voltages. In ESP module Wi-Fi is inbuilt in Arduino the Wi-Fi module can be attach separately that's why it is more convenient.
3) *Buzzer:* The buzzer is attached to the ultrasonic sensor it will enable after filling the garbage bin at a particular level. It will continuously beep until dustbin is empty. The buzzer is used to as an alert. It requires voltage from 1.5v to 5v.
4) *IR sensor:* The IR sensor is used to detect an obstacle. It is an electronic device that emits the light when it sense some objectives
5) *Jumper Wires:* The jumper wire is used as a connecting medium. By placing the jumper wire on the circuit it becomes possible to control the electricity. It carries the signal up to 12 to 13.8v.

IV. CONCLUSION

The main objective is to maintain the level of cleanliness in the surrounding and form an environment which is better for living. By using this, the system can constantly check the level of the garbage in the dustbins which are placed in various places. If a particular dustbin has reached the maximum level then the worker can be informed and they can immediately take certain act to empty it as soon as possible. The worker can check the status of these bins anytime on their mobile phones.

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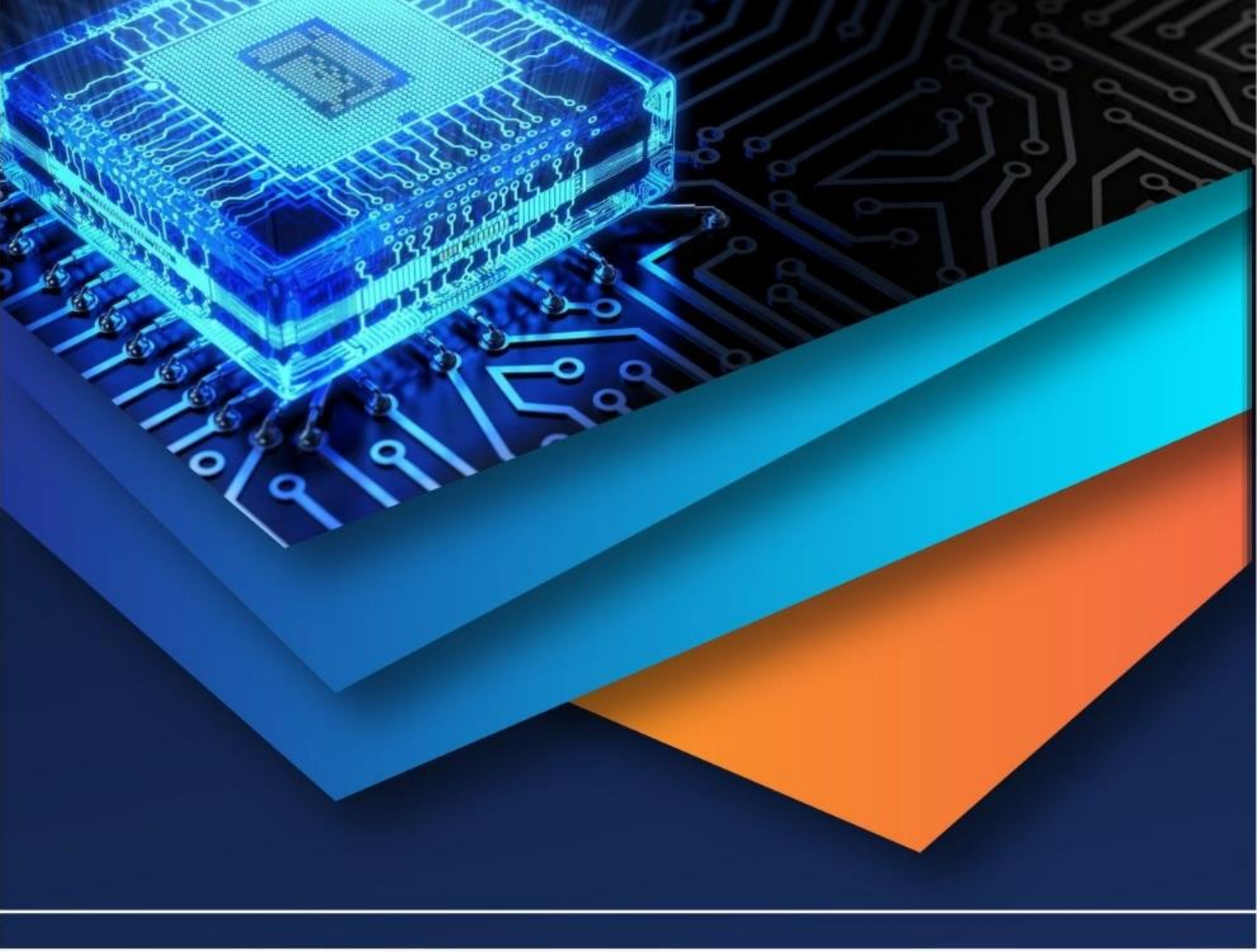

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