

# Automatic Sensing Dustbin

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**Abstract:** *The smart cities must be provided with basic infrastructure and technological advancements to provide better comfort for living and the better ambience. Much cleaner and hygienic environment should also be assured as an important aspect of smarter life. As the waste is spread all over the surroundings, all the waste is dumped on the lands and this becomes very big problem and becomes source for many disease-causing bacteria as well as viruses which is why waste management is very important. To overcome all the problems of the environment, we have designed project named as "AUTOMATIC SENSING DUSTBIN" with the help of WIFI which performs the relevant activities involved in waste management. In this system, the dustbin is provided with sensor lid which recognizes your presence nearby and opens the bin for you and close the lid automatically. It also segregates the waste dumped in by sensing the wetness and dryness of the waste and further dumps it into respective bins i.e., wet waste bin and dry waste bin. In this system, dustbin is provided with embedded device which gives the status of the dustbin if it is full or empty and sends the updates to the user via SMS. It is a user-friendly bin and also promotes cleanliness and hygiene in the environment.*

**Keywords:** Waste Management, GSM Module, Tracking Garbage Bins, Real Time Monitoring.

## I. INTRODUCTION

Collection, separation and disposal of waste materials in developing country like India are a major problem. Recycling of waste is one of the important methods adopted to manage the waste effectively. There are no hard and fast rules in our country that force the people to collect and manage the waste. So creating awareness among the people to collect the waste and separate it into degradable and non-degradable waste is a difficult task.

Waste management has been a typical issue to be thought of. During this paper, sensible bin is constructed with ARM microcontroller that is interfaced with UART and IR sensors, this project is based on checking the managing the waste garbage and separating the dry and wet waste/ garbage things using WET sensor which detects the garbage is dry or wet, then servo motor is used for separating the garbage for different trashes by flipping the plate trash. If the garbage is wet it will transfer to separate trash and if the garbage is dry it will separate it to the separate trash and calculate the weight and it will allocate the reward for respective individual through unique RFID given to the individual.

## II. LITERATURE SURVEY

This will prevent garbage from overflowing into the bin.

Dustbins include a feature that automatically closes and opens in response to the presence of an obstacle. "Wise" is the title of the book. The features of "Dustbin for Economic Growth" are as follows: claims that when the system is activated, the dustbins will be cleaned as soon as possible.

The rubbish level has reached its peak. If the trash can isn't full, the record is cleansed at a certain time and then forwarded to a higher level. Authority that has the authority to take necessary action against the contractor who is concerned. This method also aids in the monitoring of the environment.

As a result, falsified reports can help to prevent corruption in the workplace. System of overall management as a result, the total number of people is reduced number of rubbish collection vehicle trips the gap between the trash and the lid. If both of the values are less than the threshold value, the set of courses that have already been programmed will be activated.

Another "Smart E Dustbin" is the title of the publication to which we have referenced. The notion of using the IOT protocol to transport data was proposed. By using wireless mode, you can check the status of your dustbin. The goal of this

initiative is to for this aim, espresso chip has been chosen as the hardware a platform for MCU EP866 nodes Esp8266 is a new product.

Many users use this platform. It operates on the 2.4 GHz frequency band as a result is unrestricted as a result, it is highly popular, and it also has a power down mode that turns the esp8266 down when there is no Wi-Fi in range. "Smart Dual" is the title of another paper.

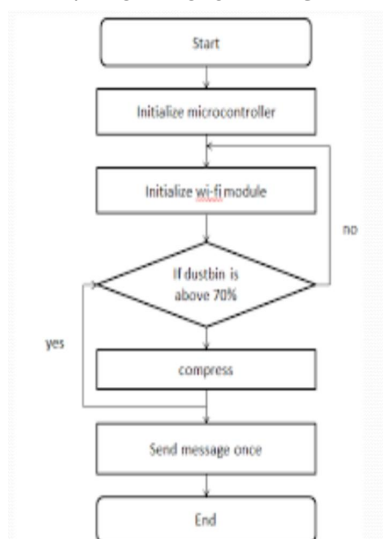
**Waste Management in Smart Cities: A Dustbin Model** Two dustbins are included in the model, which will be placed in public areas primarily. Dustbin A is acceptable, but Dustbin B is not Dustbin A will be used until it is completely full. Only Dustbin B can be used.

When Dustbin A is completely full, it will not open.

Until all of the rubbish in Dustbin A has been emptied.

When the trash can is full, a message is sent to the person in message form. number of rubbish collection vehicle trips. Another paper with title 'smart dustbin' is referred in which smart bin has multiple features and its main feature is garbage segregation. Smart bin will have 4 different compartments for the waste: for plastic waste, for wet waste, for dry waste and lastly for the wastewater from the auto clean feature. Apart from this, it will also have ultrasound sensors for the bin to open when a person approaches the dustbin to throw garbage thus making it hands-free and evidently more hygienic.

### III. ARCHITECTURE DIAGRAM



**Figure 1:** System architecture

### IV. PROPOSED SYSTEM

This is IOT based smart dustbin system. This system is used for efficient waste management. In this system if any person wants to throw any trash in the dustbin, the dustbin lid is opened automatically using servo motor and ultrasonic sensor after trash is thrown in the dustbin, the dustbin lid gets closed automatically within few seconds.

It also determines the garbage level and immediately updates the same data on the workstation any person who is away from the dustbin can monitor the exact garbage level of the dustbin along with that, the dustbin also has LEDs which blink at empty, low, mid and full garbage levels and this data is also displayed on 16\*2-character LCD display. When the garbage level in the dustbin is detected as full an alert message is sent to the authorities with Google map location so that the garbage collector can go to that particular location and flush out the garbage without any Huddle.

In this system if any flammable object has been sensed by fire sensor due to human activities like cigars immediately an alarm will ring so that people can take immediate action. Also during rainfall when the moisture in the dustbin gets above a threshold value as detected by moisture sensor which triggers the growth of bacteria inside the bin, pesticide is automatically gets sprayed into the dustbin to stop the bacteria growth.

## **V. METHODOLOGY**

The steps or modules for the functionality of the smart dustbin are:

1. The intelligent garbage bin works with the help of couple of sensors combined with a microcontroller which work in correlation with each other to get the desired result.
2. Whenever a person stands near dustbin its sensors present at the top of the bin detects the presence of person and opens the lid automatically.
3. When the waste is put inside dustbin the waste is classified as wet to dry
4. When the height of the garbage reaches 85% of the total height, the infrared sensor triggers the microcontroller, which in turn sends a SMS notification to authorities.
5. Also, this will allow efficient pickup of waste by waste pickup vehicle.
6. This will not only save time it would also reduce the fuel consumption of the vehicles used to conduct pickups.
7. All these components are fixed inside the trash can under the closing lid such that they are not damaged by weather or people.

## **VI. CONCLUSION**

In conclusion the waste of our country can be reduced up to maximum extent using this smart dustbin. It has a considerable future scope since waste management is becoming a major issue since India is the top 5th country in developing the waste about 1.8 million tons. So, one must take the proper measures for waste management and having a cleaner and healthier nation. Here in this system when the level of waste is above the threshold indicating the garbage bin is full, a message will be sent to Municipal Corporation by giving the exact information.

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