

DEVELOPMENT OF A SMART SWATCHBIN WITH AUTO CREDIT POINTS

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Abstract

Waste management is the current facing problem in our country. Our project is about to design a smart bin which measures the quantity of waste. In order to reward people for their responsibility of managing waste and using the bins properly, we offer them with some credit score. Since people are being benefitted with the credit points, they will make sure of not disposing waste here and there. The smart bin measures the waste quantity by using a load cell. Here we collect wet and dry waste separately, this enables the garbage collection process more feasible. Fingerprint sensor is responsible for authenticating an individual who dumps the waste into. The gained credit points can be utilised for making few online payments.

Keywords

Arduino, fingerprint sensor, load cell, credit points

1. INTRODUCTION

In today's world due to rapid urbanisation, waste management is becoming a growing issue in societies. In our opinion, this problem can be blamed to an unintelligent bin to some extent. To overcome that, we have come up with this idea to design a smart dustbin for waste management. This paper entitled Smart Swatchbin with auto credit points plays a vital role in the waste management system. A healthy domain is important to a solid and cheerful environment. Good and hygienic environments are a key need in human habitable environments. In public areas,

dustbins are being flooded just as the waste simply spills out bringing about contamination. This likewise expands a number of infections as number of bugs to breed on it. In this a smart bin is developed to monitor the level of waste. Even though government has launched so many missions and Swatch Bharat is one among them, due to lack of proper awareness in people, they are going in vain. So to avoid even that we have come up with an innovative concept called credit points.

2. LITERATURE SURVEY

The garbage management in cities, villages and towns has to be effectively and efficiently implemented. There exists various proposals and some of them already implemented. But it cannot be considered as an efficient one. So a survey was done among different proposals and this survey paper includes survey among different methods for smart garbage management in cities. Even though our Government has launched SWATCHABHARAT MISSION, it is not being implemented in society up to the mark by the citizens. Government has released annual budget of nearly 120crores for this mission. For creating awareness, lots of money being invested in the name of advertisements, promotions through large digital screens everywhere but still no improvement in the situation. Government has released annual budget of nearly 120crores for this mission. For creating awareness, lots of money being invested in the name of advertisements, but still no improvement in the situation.

3. PROBLEM DEFINITION

The current facing problem of poor hygiene in societies and less awareness which was there in existing systems will be overcome in the proposed model. And also the frequency of garbage collectors is also reduced with this.

4. EXISTING SYSTEM

Unintelligent bins were used due to which more manual power is needed to manage them. When the dustbin overflows, there will be a widespread pollution in the environment. Due to this, bad odour spreads out which causes various diseases to the children. In existing methods, they have used Ultrasonic Sensors for knowing the bin full. An ultrasonic sensor measures distance. It will be attached to the lid indicating the quantity of trash. It has a disadvantage named, the bin full message is sent even though when the bin has some more capacity to hold the waste. Due to which the garbage collectors can be stressed to collect the garbage every now and then, which is not recommended. No proper collection of dry and wet waste in these systems. Most importantly less awareness is created in the people due to which people aren't using the bins to its fullest. More wastage of manual and fuel resources are being observed in this system.

4.1. Disadvantages

- Unintelligent itself a drawback.
- No proper utilisation of bins.
- Collection of waste becomes a hectic thing since no separate collection of dry and wet waste.

5. PROPOSED SYSTEM

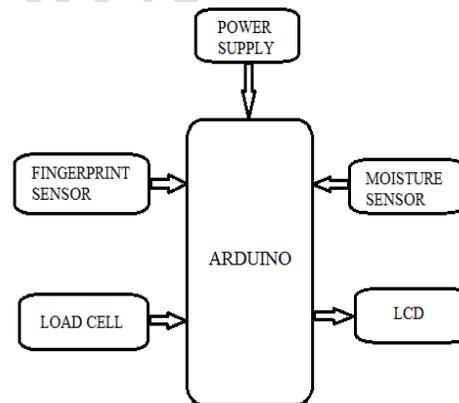
In our proposed method, we have used a load cell, moisture sensor, fingerprint sensor and LCD display unit. We have also introduced a concept called reward points named credit points. A load cell is used to detect the bin full. It actually weighs the waste using the calibrated load cell installed in the bin accordingly sends the signals to the corresponding person. A moisture sensor helps to separate dry and wet waste. Fingerprint sensor used to authenticate a sole person, who is actually throwing waste into bin. This authenticating helps to reward a person with

credit points. This actually encourages a person to use the bins properly instead of throwing here and there. Finally LCD helps the user to know what is all happening around. Like, it suggests the steps like enter your finger for authentication, user valid or invalid messages. This in turn provides help to user which is a boon itself.

Advantages

- It reduces number of waste collections.
- Resulting in less manpower.
- Reduction of number of waste bins needed.
- Improved environment (i.e. no overflow of bins and less unpleasant odours).
- It will reduce fuel Consumption and also reduces traffic congestion.
- Can save a large amount of money too.

6. BLOCK DIAGRAM



Every user before disposing into the bins is being verified using Finger print sensor. If the user is authenticated then he will be allowed to dispose if not he or she can't dispose it. Every system needs power supply to be worked. Load cell is implemented to weigh the bin. When a user wants to dump the waste into the bin, he has to first authenticate himself using finger print sensor and dumps the waste into the bin. According to the weight of the waste he or she dumps, credit points generate accordingly and the user can see, how many he or she has earned with the help of LCD display unit. If the user by mistakenly dumps wet waste into dry container, the amount equal to the weight of dust he disposed into the wrong container will be deducted from his or her

account. If the user by default has zero credit score, then he will gain negative points. The motto here is to collect the dry and wet waste separately and this is where analog moisture sensor comes into limelight. Moisture sensor is placed in the dry container and this conducts when there is a wet environment. Even if ample amount of wet waste is disposed into the dry waste container, the entire motto of collecting the dry and wet waste separately goes into vain. To avoid that, we have implemented moisture sensor into the system.

7. RESULTS



Fig 1. LCD displaying Smart Bin.

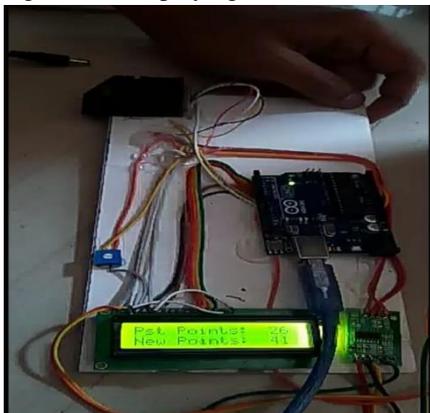


Fig 2. LCD displaying credit points.

- It is displaying the name of the project as SMART BIN.
- It is showing the points that user has gained for his dumping.
- If the user mistakenly dumps wet waste into dry waste, the points proportional to weight of the waste he or she dumped into, will be deducted.
- Such deducted points are also displayed on to this.

8. CONCLUSION

We have implemented garbage management system by using load cell to weigh dustbins whether the dustbin are full or not. By implementing the proposed system we can develop the smart and clean city concept and cost is also reduced. This system will reduce the traffic in the smart city, so that environment will be cleaned. We have also implemented credit points concept, in order to reward the people for fulfilling their responsibility towards a clean society. The credit points can be utilized by the individuals for paying the online bills. Since people are being benefitted by the credit points and they will certainly not dump waste here and there. In this way we are bringing awareness in people. So the ultimate goal of utilising the bins is fulfilled.

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