

## International Journal of Innovative Research in Science, Engineering and Technology

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# A Modern Methodology Enabling Plastic Disposal and Money Crediting System Promoting Digital India

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**ABSTRACT:** In this world, the most important and trending news is plastic disposal. It is known that technological advancements are increasing at a faster pace. But the utilization of technologies in various sectors is very low. The usage of plastics is increasing in our day-to-day life. Efficient plastic detection is a very difficult process. so no other action is performed. The system also doesn't motivate people to dump plastic garbage. We all come to know about the wastewater management, which is the most wonderful project but the implementation rate of the project is not more than 15%. This project aims to solve this problem by the help of RFID(Radio Frequency and Identification) Technology which is used to detect plastics using an image processing technique. The image processing technique is done using MATLAB, where the MATLAB provides the data to the controller. The User is differentiated using RFID technology. The values are compared and the respected money is credited to the user. The money credited statuses will be displayed on the LCD screen. The implement cost is very efficient in this technology. To create awareness among the people and to eliminate the growth of diseases we are implementing this project and it will also help us to make the city clean and the environment.

**KEYWORDS:** RFID(Radio Frequency and Identification), Image enhancement, Error detection, Driver circuit, LCD Display.

## I. INTRODUCTION

In our daily life all of us were using plastics for keeping some kind of materials. After using the plastics, we all are putting the plastics outside the dustbin. There are many technological advancement in our country, but still many of us not using the technology in proper manner. To create awareness among the people about the proper disposal of plastics, we are crediting some kind of money for them. In this project we are using RFID technology, where the RFID technology consist of RFID reader and RFID tag. The RFID technology is fixed in dustbin mechanism. With the help of RFID technology the values are compared for the plastics put in the dustbin. The money credited message will also be displayed on the LCD(Liquid Crystal Display) display and on the personal computer. This project will promote awareness among the people and it takes the precaution measure to safeguard our earth from ozone layer depletion with protect us from UV(Ultra Violet) rays which causes many diseases such as skin cancer and make the environment clean.

## II. LITERATURE REVIEW

### SANTHOSH KUMAR B R[1]

In recent years collection and segregation of waste is the major challenge faced by all metropolitan cities worldwide, this is due to the rapid increase in population, industrialization and urbanization. The major problems faced due to improper waste management include health hazards to human kind, environmental issues etc. These drawbacks can be

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overcome by proper waste management at domestic level. The main objective of this paper is effective and efficient methods of waste collection and segregation at domestic level based on their nature of composition i.e. metal, plastic and biodegradable, the waste is stored accordingly in their respective segments of the dustbin

## **RICHARD JOSEPH[2]**

Nowadays, waste management is one of the problems on which million of dollars are spent worldwide. the key issue in waste management is waste collection and sorting. Also, one of the issues in the waste management is that the garbage bin at public places gets overflowed in advance before the commencement of the next cleaning process. The Capacity of trucks is calculated and updated each time according to the number of dustbins serviced by the trucks, as soon as it completes a route assigned to it. Furthermore, the user is assisted in material waste classification through our application and also the smart bin knows its content and can report back to the rest of the recycling chain about its contents. Our system, target two crucial problems, cost efficiency in waste sorting and waste collection processes.

## **AYTASOVA A.S[3]**

This article examines international and state standards of quality management. Normative documents are given, classes of hazardous waste are considered. Use and decontamination of production and consumption wastes by types of economic activity in the Russian Federation for 2014-2015, as well as the number of principally new developed advanced production technologies by types of economic activity in the whole of Russia for 2013-2014.

## **SAI ROHIT G [4]**

As urbanization is spreading rapidly, there is an increase in production of waste. Waste management is a crucial issue to be considered at public places where waste is overflowed from the bins and may causedifferent diseases. Whenever any dustbin is filled up, a message is sent to the concerned authority. This will avoid overflow of waste in the bin. Dustbins have automatically close and open feature depending on the presence of an obstacle In our system, the garbage level in the dustbins is detected with the help of Ultrasonic sensor and presence of the obstacle is detected by IR Sensors and communication to the authorized control room by GSM system.

## **III. PROPOSED SYSTEM**

The drawbacks obtained in the existing system are overcome by this system. The system consists of an image processing technique to detect the plastic and other wastes. Now the MATLAB provides the data to the controller. Now the controller checks the weight of the plastic using Load cell sensor. The values are compared and the respected money is credited to the user. The User is differentiated using the RFID technology. Based on this the money is credited to that user. The statuses are displayed on the LCD screen. Now the dustbin mechanism is operated to dump plastics. The only reason why we are crediting the money instead of any other offer is to encourage the people for their dail needs and money is the only thing which can get anything what you like and instead of using obstacle sensor we are using rfid technology to get accurate results,to give constant range and to get cost cheaper.

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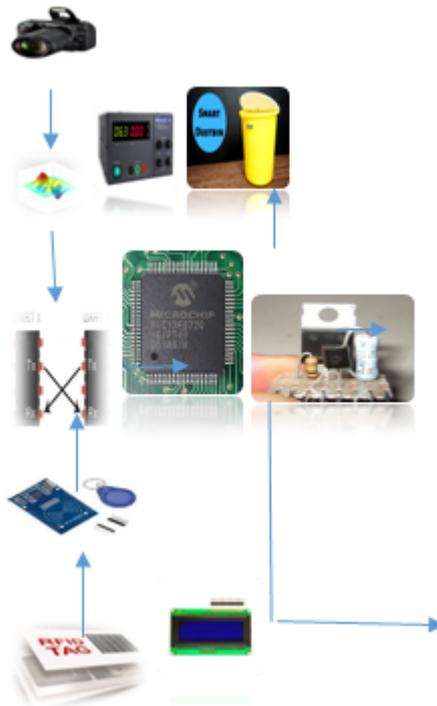
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## IV. PROPOSED SYSTEM ARCHITECTURE DIAGRAM

This picture depicts that first the image is identified by the help of the image processing technique ,in which the plastic bottle and the plastic bag is identified . During the user should show the id card to the display and the plastic bottle and the plastic bag is identified and the respective amount is credited along with the name and it will be automatically dropped on the dustbin mechanism.



## V. MODULES

### IDENTIFY OBJECTS

In this module when we are putting any object in the dustbin mechanism , by using RFID technology it will identify whether the specific object is plastic or not. If the object is plastic it will proceed to further process.if not it will quit the process.

### OBJECT IDENTIFICATION USING DIGITAL IMAGE PROCESSING

In this module the plastic bottle and plastic bag is identified using image processing technique ,where the plastic bottle present in the dustbin mechanism is detected using RFID technology. The RFID technology consist of RFID reader and the RFID tag, the RFID reader is used to send the signal and the RFID tag is used to receive that signal.

### ID CARD IS SCANNED

In this module when the user show the ID Card,it will scan the id card with the help of RFID technology which is fixed in the dustbin mechanism . The ID card of user consists of the name and the account number. The RFID technology

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will scan only the particular user ID Card ,who is dropping the plastic bottle and plastic bag in the dustbin mechanism. If the object that drop in the dustbin is not plastic bottle and plastic bagit will not scan the id card.

## AMOUNT IS CREDITED

In this module it will identify whether the id is scanned or not, it will scan the card AADHAR CARD .If the id card is scanned then the amount will be credited to the user account.based on the weight of the plastic. if the id card is not scanned then the amount will not be credited to the user.

## MESSAGE WILL BE DISPLAYED ON THE LCD

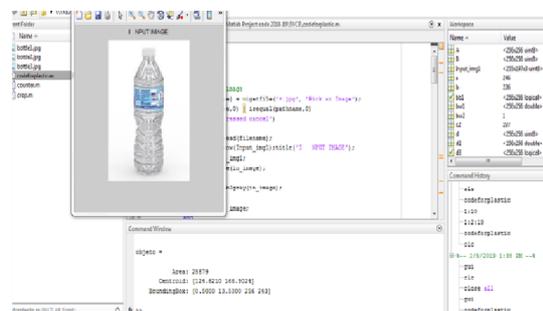
In this module after all the process is completed ,the amount which is credited to the user account will be displayed on the screen along with the account number and also the credited message will be displayed on the LCD display screen.

## VI .RESULTS

### VI.1.INPUT IMAGE

This picture depicts that the input image present is plastic or not .If the input image is plastic it will proceed to further process otherwise it will stop the process. The input image is identified by the help of the image processing technique.

### SIMULATION INPUT



### VI.2.RESIZED IMAGE

The input image present in the dustbin may be crushed sometimes, for bringing the image to original position we are resizing the image. If the image is resized only then we can identify the image by the help of image processing technique.

### VI .3.IMAGE AFTER FILTERING

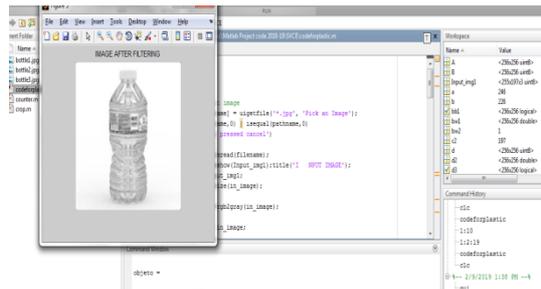
This picture depicts that we are using median filter for filtering the image inorder to proceed further process. The main reason for filtering the image is that if we are filtering the image then only we can easily predict the image.

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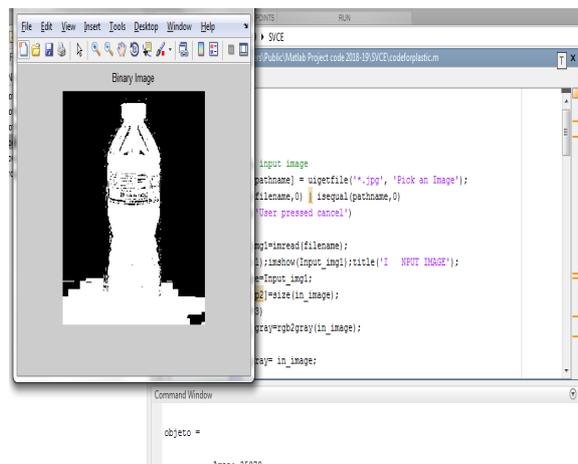
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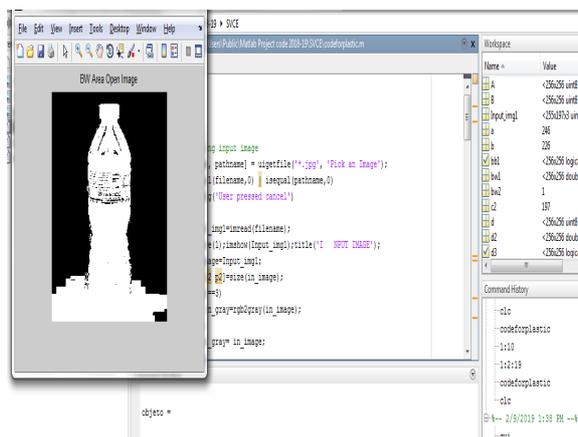
## VI.4. BINARY IMAGE

This picture depicts that for identifying the difference between the zeros and the ones the binary image is used. If we are identifying the image only then only we can identify that whether the image is binary image or not.



## VI.5. BW AREA OPEN IMAGE

In the BW area image the dotted points present in the image will be removed in order to proceed to the further stage of the process. If the dotted image is removed then only can easily identify the image correctly.



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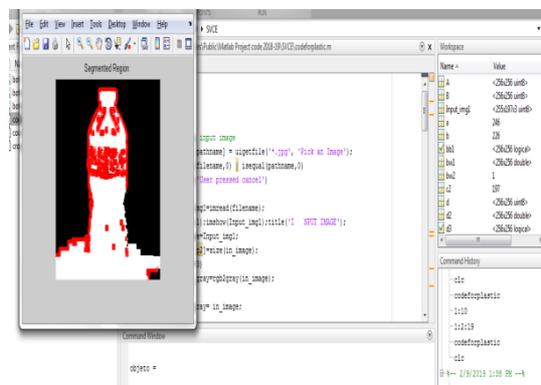
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### VI.6.SEGMENTED REGION

In the segmented region it will found that the given image is found or not. If the image is found it will proceed to further process. After the image is found it will automatically drooped on the dustbin mechanism.



### VII.CONCLUSION

The Money crediting system using RFID technology enable us to collect the wastes in the dustbin and also motivates the people to make the surroundings clean and prevent them from the disease infection. The data are controlled by the help of matlab and it provides the accuracy of the result and also the money credited message on the screen. With the help of that amount people can also buy whatever they want and this technology can also be used in industries.

### VIII.FUTURE WORK

In this module we implement independent component analysis to detect the hue saturation value. In this module we find the state of the image. Feature extraction involves reducing the amount of resources required to describe a large set of data. The features extracted will be then classified. A computer-based image processing algorithm is designed to automatically classify microscopic images of yeast cells in micro fluidic channel environment. The linear, distance-based classification, were the classifiers.

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