Garbage Monitoring system Using Ardiuno

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Abstract: Rapid population growth has also contributed to an increase in the amount of waste produced on a regular basis. This rise in waste production due to ongoing growth in urbanisation and industrialization has been a major problem for local and national governments. It is still a major issue for municipal authorities to handle the garbage being dumped everywhere as a landfill. In order to ensure a low risk to the atmosphere and human health, conscientious steps must be taken when segregating and distributing waste. Segregation of waste in a proper way brings to light the true economic importance of the waste. The conventional approach used to segregate waste in India is by means of rag pickers, which are time consuming and can have detrimental effects on the health of people who are exposed to such waste. Here we suggest the use of an Auto Waste Segregator (AWS) that is inexpensive and also an easy-to-use solution for segregating household waste. It is designed to divide the waste into two groups. Clean wet waste. The machine uses the Wet sensor for the isolation of wet and dry waste and the Moisture sensor for the detection of dry waste and the LCD monitor to indicate the effect of the separation.

Index Terms – **LCD, Arduino, Ultrasonic Sensor, IR Sensor.**

I. INTRODUCTION

Waste contamination is a significant cause of concern in the world today. The method of management of the amount of waste generated has had a negative effect on the environment. Unplanned open dumping at urban landfill sites is a common method of garbage disposal. Human, plant and animal health are impaired by this process. The unsafe method used to treat waste creates toxic chemicals that contaminate the soil and groundwater. It may give rise to disease vectors that spread dangerous diseases. This further degrades the aesthetic value of the natural ecosystem and destroys the aesthetic value of the natural environment and discourages the use of land resources. In India, rag pickers have an important role to play in the disposal of urban solid waste. Rag pickers and nurses have elevated morbidity due to skin infections, bacterial, gastrointestinal and multisystem allergic disorders, as well as a large occurrence of bites by rodents, dogs and other vermin. Dependence on rag-pickers may be reduced if segregation takes place at the root of urban waste production. The economic value of the waste generated is not known until it is completely recycled. Since then a variety of technological advances have made it possible for the waste to be turned into usable bodies, such as Waste to Energy, where the waste can be used to manufacture synthetic gas (syngas) made up of carbon monoxide and hydrogen. Carbon is then burnt to produce power and steam; diesel waste where gas can be used for the processing of biofuels. When waste is divided into basic sources such as wet and dry waste, it has a larger disposal capacity and is thus filtered and recycled. The wet waste fraction is therefore converted to either compost or methane gas or both. Compost can replace the need for artificial fertilisers, and biogas can be used as an electrical source. Metal waste may be reused or recycled. Although broad industrial waste segregators are present, it is much much easier to extract the waste from the source itself. The drawback of this is that a better consistency of the substance is retained for recycling, which means that 2 more money is recovered from the waste. The exposure of wasting workers at the office is reduced. In addition, separate waste could be sent directly to the processing and processing facility instead of being sent to the sorting plant rather than to the recycling plant. There is currently no effective system for separating dry, wet and metal waste at household level. Yeah, J.S. Bajaj[3] suggested the development of the least costly and most appropriate technology for safe management. The aim of this project is to create a lightweight, low-cost and user-friendly segregation system for urban households to streamline the waste management process.

II. Literature Survey

1.Paper Name:IOT BASED SMART GARBAGE MONITORING SYSTEM USING ZIGBEE
Author:V.ASWIN RAAJU,J.MAPPILLLAI MEERAN,M.SASIDHARAN
Abstract : The future IOT based smart waste management system which checks the waste altitude over the dustbins present in urban areas by using Sensor systems. To check and join together, an android application is developed with desired information which is related to the various level of waste dustbins which is in different locations. The waste bins send notifications with its location details to the drivers for the truck once it is filled up. The higher official will be notified and they can monitor and track the respective employees. This system is powered by a solar panel which is also a means of renewable energy resources. We present a smart garbage collection management solution based on given that intelligence to waste dust bins, using an IoT with the help of ZigBee, with sensors and modules. It can read, collect, and transmit huge amount of data over the adhoc network. Such data, when put into a cloud, can be used to dynamically supervise waste garbage collection mechanism.

2.Paper Name:Voice Controlled Automatic Dustbin with Garbage Level Sensing

Author:Abhishek Ayush, Abhishek Kumar, Aditi Jha, Nilotpal Sarkar.

Abstract : : — Voice Controlled Automatic Dustbin (VCAD) is a robotic dustbin that is controlled by providing specific voice commands by the user.The speech is received by the microphone of the android device and is processed by the voice module. When the instruction is recognized by the robot, then voice module sends a command message to the robot's micro-controller. The micro-controller analyses the message and takes appropriate actions. When garbage is detected by the sensor on the dustbin, it sends a command message to the dustbin's micro-controller. The micro-controller analyses the message and sends the command to the servo motor to opens the lid of the dustbin. The objective of this paper is to design a mobile dustbin which is controlled through a smart-phone that seeks for serving the old age and incapable people.

3.Paper Name:Evaluating Students Performance in Placements Activity

Author::Indhu Priya, Dr. P. Devaki,

Description : In an education system, predicting student's performance in placement has become more challenging due to the large volume of data and imprecise data with fuzziness in educational databases. Large volume of data is processed using big data analytics methods. Processing of data with different factors and with different parameters is difficult in traditional system, where big data analytics can help organizations to better understand the information contained within the data. It also helps them to identify the data that is most important for the prediction and future decision making. The aim of evaluating student's performance is to help them to develop individual student's professionalism, to encourage self-improvement, to maintain achievements and also to give them prior idea about their level of skills in placements. It also plays a vital role in increasing placements. In this paper some of the existing methodologies and their drawback for the student analysis have been discussed.

4.Paper Name:AUTOMATION OF SMART WASTE MANAGEMENT USING IoT TO SUPPORT "SWACHH BHARAT ABHIYAN" – A PRACTICAL APPROACH

Author: : Bharadwaj B, M Kumudha, Gowri Chandra N, Chaithra G

Description :—"Swachh Bharat Abhiyaan" is a national campaign initiated by the Government of India, which covers 4,041 cities and towns, to clean the streets, roads and infrastructure of the country. The main motto of the mission is to cover all the rural and urban areas of the country. With proliferation of Internet of Things (IoT) devices such as Smartphone sensors, this paper describes the effective dry and wet dirt collection using Embedded System. The main motto of the application is collection of dry and wet waste separately which is placed in a conveyor belt on which the dry waste collected dust bins are placed left side and wet waste collected bins on right side. The system will get the input through the dust collecting person through switches and sends signal to the Micro controller unit using RF technology and that makes the H-bridge to rotate conveyor belt. When the belt starts rotating clockwise the dust bin's lid is automatically closed, simultaneously the waste is dumped into the underground garbage container placed at the ground floor. Here IoT module is used to control and monitor the waste and the information will be sent to the particular organization and the common man. The mobile app shows the collection of waste and the particular date and arrival time of the vehicle.

5.Paper Name:Application of Convolutional Neural Network Based on Transfer Learning for Garbage Classification

Author:Li Caoa ,Wei Xiang

Abstract:In order to effectively utilize garbage resources, reduce environmental pollution and the burden of people sorting garbage, this paper proposes a method of garbage classification and recognition based on transfer learning, which migrates the existing InceptionV3 model recognition task on the Imagenet dataset to garbage identification. First, increase the data set through data augmentation. Then build a convolutional neural network based on the source model and adjust the neural network parameters based on the training effect. The training results show that the training accuracy is 99.3% and the test accuracy is 93.2%. Finally, the model is applied to the pictures collected in real life for recognition. The recognition results show that the model has good performance and high accuracy, can correctly identify common garbage in life, and has reference significance for intelligent garbage classification, which proves the feasibility of this method.

III. Motivation:

- Bharat Abhiyan:- is a national campaign by the Government of India, covering citiesandtowns,tocleanthestreets,roadsandinfrastructureofthecountry. The aim of choosing this topic is to contribute to this mission by our engineering knowledge for the benefits of our society
- Easy To Monitoring Waste of Garbage.

IV. Objective

• The volume of biodegradable waste to the landlord would be greatly decreased.

• Confidentiality of data Re-use, recycle and reuse of waste Lowers costs.

• Encouraging and ensuring the successful implementation of waste facilities Comprehensive waste management planning

V. Mathematical Model

Input:
S={I1,U1,A1,J1}
Where,
I1: IR Sensor
U1: Ultrasonic Sensor
A1: Aurdino UNO
J1: Jumper Wire

Process:
- The smart, sensor based dustbin will judge the level of waste in it and send the messege directly to the municipal corporation.
- It can sense all the type of waste material either it is in the form of solid or liquid.
- According to the filled level of the dustbin, the vehicles from the municipal
- corporation will choose the shortest path with the help of the "TRANSPORTATION SOFTWARE", which will save their time.

Output:
Q={D , W}
Where,
D: Dry Garbage
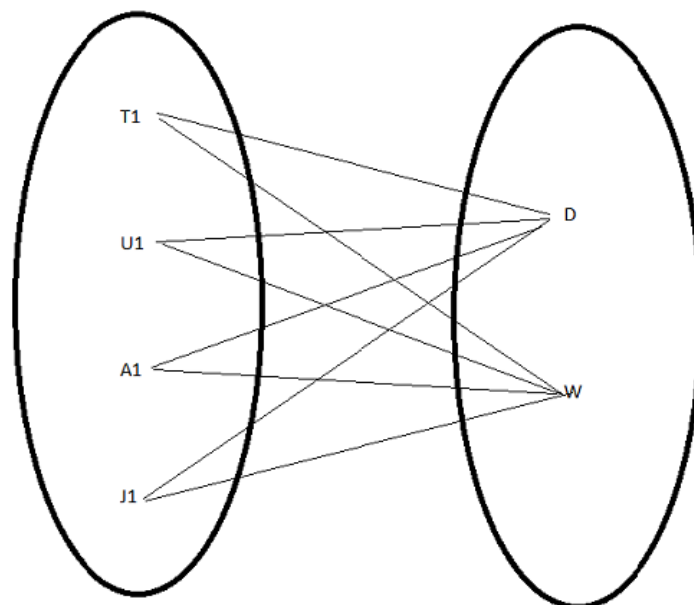W:Wet Garbage
- Garbage Classification w.r.t Wet and Dry
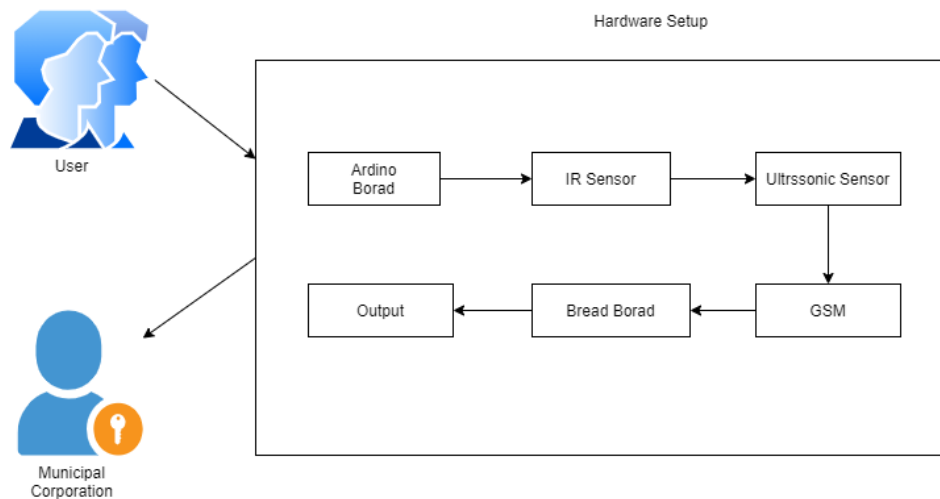
Fig . Venn Diagram

VI. SYSTEM OVERVIEW

Fig: System Architecture

VII. PROBLEM STATEMENT

There are now hundreds of apartments and apartments that have been developed in the rapid urbanisation sector. This is attributed to the high demand for accommodation, which has increased significantly as a result of migration from villages to cities to find jobs. In order to meet the increasing urban population, the government has also developed more residential complexes. There are a variety of problems facing the tenants of the apartments. Each of them is the disposal of solid waste. Unlike private residences, tenants of all apartments use a traditional dustbin, which appears to fill up very easily. This overflow of trash is a sanitary hazard that could exacerbate diseases such as cholera and dengue. Moreover, it is a waste of fuel to drive through a complex or an environment to discover where some of the trash is being loaded and some are not. Even on special days, issues can occur because there's so much garbage that the truck doesn't have enough space. The thought hit us when we saw that the garbage truck used to drive across town to gather solid waste twice a day. While this method was comprehensive, it was rather inefficient to develop and enforce a garbage separation that would be Different Two form of garbage (Dry Wet Garbage) and to warn the consumer.

VIII. Hardware

I.   **Arduino Uno:**

• Arduino Uno is a microcontroller board created by Arduino.cc, a framework focused mostly on open source electronics.

• The latest version of Arduino Uno comes with a USB interface, 6 analogue input pins, and 14 optical I/O ports that are used for this purpose.

• Helps programmers to monitor and detect remote electronic equipment in the physical world;

• It is a microcontroller board built by Arduino.cc and based on Atmega328. Electronic devices are being lightweight, versatile and affordable, capable of performing more functions relative to their ancestors, who happened to cover more area and turned out to be costly for the potential to execute less functions. Experts often aim to implement creativity in automation that needs minimal work and achieves optimum performance. The microcontroller was implemented in the electronics industry with the goal of making it easier for us to do our tasks with remote automation connections in some way. Microcontrollers are commonly used in embedded systems to make them function in line with our needs and specifications.

II. IR Sensor:

- Introduction. Infrared technology addresses a wide variety of wireless applications. ...

- Types of IR Sensors. Infrared sensors can be passive or active. ...

- IR Transmitter. ...

- IR Receiver. ...

- Principle of Working. ...

- Obstacle Sensing Circuit or IR Sensor Circuit. ...

- Distinguishing Between Black and White Colors.

III. Ultrasonic Sensor:

- Our UAV Sensors for Drones as well as our proximity sensors that are used for robots are for obstacle detection.

- Ultrasonic sensors are suitable for close range detection up to ten meters and provide multiple range measurements per...

- Main advantages: Low power consumption – can be powered by battery, inexpensively. It can operate in many environmental...

- Low power consumption – can be powered by battery, inexpensively.

- It can operate in many environmental conditions – ultrasonic sensors

IX. Conclusion:

Implementation of this structure at the local level, such as communities, educational institutions, etc., can minimise the burden on local authorities. The automated waste segregator is a small step in creating an effective and economic waste disposal system with a minimum of human involvement and little risk to human life. The use of a conveyor belt makes the system much more reliable, cost-effective and also easier to mount and run at the domestic level. Segregating all of these wastes at the domestic level would also save time. When installing our system, we faced several issues, such as the sensing range of inductive sensors changing the range of IR sensors and more, but with some adjustments, we managed to make the system as stable as possible but absolutely flawless.

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