SMART WASTE MANAGEMENT SYSTEM USING IOT

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Abstract— *We studied a report of Indore that many of the garbage vans are not doing their proper duty. The routes of every garbage vans are decided and so the whole city is covered and also an area is used to dump all the waste every day. But it was reported from the houses that 'a lot of days the vans don't come near our house. We hear the song of the van (the swatch bharat song) in our locality but after that they don't come to our house, they take some of the waste from some houses and they go from our locality'. This is not the case of Indore only, when we go home often we see that a lot of days the garbage van does not come, when we ask from them we see that they make excuses that they were not paid or they were not well. We all know that these are government employees and we are aware that how hard working a government employee is, in India. So there needs to be a process so that this SWATCH BHARAT YOJANA can be carried out in a proper way. So IoT is the best possible answer for this in our country which can keep in track of events*

Keywords -
- o **Arduino compiler**
- o **Keil software**
- o **IoT**
- o **Embedded C**
- o **Arduino IDE**

1. INTRODUCTION

In this project we are going to use a Microcontroller AT89s52, Moisture Sensor, IR Sensor, LCD, LED, and some other components. This Project is powered with 5V micro U.S.B charger.

IoT based smart waste clean management system checks the waste level over the dustbin by using sensor systems.

Once it detected immediately this system alert the concern authorized through GSM/GPRS. Manage the waste in different category of trunk by using automation.

In this system we detect the wet and dry waste and separate this kind of waste by automation

This project reduces lot of time and man power. Simple block diagram of the project is present in below
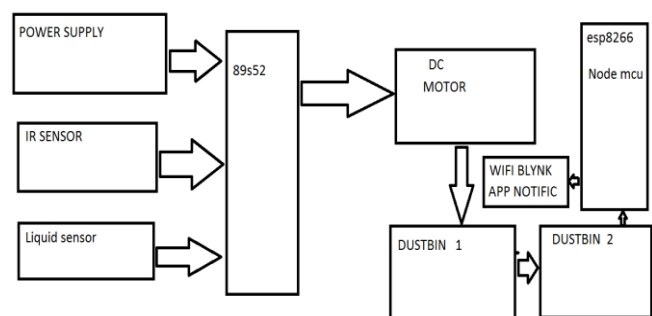

Fig- 1: Block diagram

1.2 EASE OF USE

- IoT is not only proven effective in home automation, smart city, but also admiring in social Maintaining the Integrity of the Specifications

- Nowadays the applications of IoT (Internet of Things) are developing vastly. For example, if somebody forgets to collect garbage, they can be reminded via wireless communication system.

- Collection and decay of waste in the smart (process and method) benefit from the waste are maximized and the actual waste are minimized exprrtly.

2. METHODOLOGY

This system is a basic obstacle distance measurement.

It is built around a ESP8266 microcontroller.

It is connected to an IR sensor, a moisture sensor,

a resistor, and a pair of external terminal.

The whole system is powered by a 5V micro USB charger so that it is easily portable.

Once you have code you can attached all the exterior part.

With the help of breadboard we can make it easy. This will allow you assemble temporary link to text everything out.
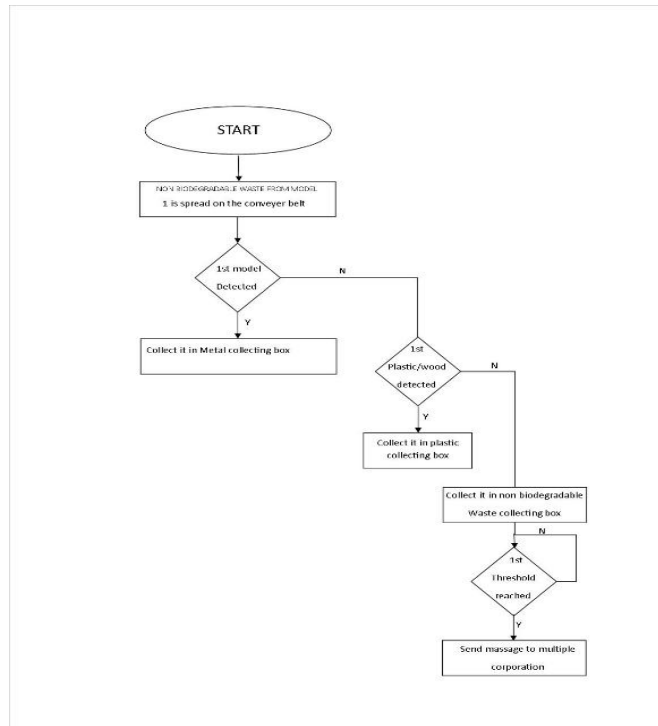
Flow Chart

Fig-2: Flow Chart

SOFTWARE TOOL

Software Specification –

Arduino Compiler

Keil software

Language –

Embedded C

ESP8266 NODE MCU WIFI

The ESP8266 Wi-Fi module is used to give any microcontroller access to your Wi-Fi network The ESP 8266 Wi-Fi module consume the power up to 3.3 volt direct current The RAM used by ESP 8266 is 32KB instruction and 32 instruction cache RAM

ESP 8266 can also be used in place of arduino in many cares so it is used widely and it is of very low cost

Fig-3: ESP8266 Node MCU

AT 89S52 MICROCONTROLLER

The AT89S52 mode in such way that support two software selectable power saving mode and its also provide static logic for an operate. The AT89S52 is an 8 bit microcontroller with 8000 bytes in it with the help of flash memory.

It is similar to the 8051 but manufacturer is ATMEL

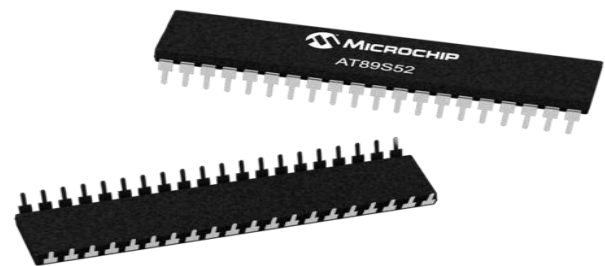AT 89S52 can be operated at 33 MHz maximum operation frequency with oscillator

Fig -4: AT89S52 Microcontroller

MOISTURE SENSOR

The purpose of Moisture Sensor is used to detect whether the substances are wet or dry. This sensor uses two probes to pass current through the substances, and then read the resistances to get the moisture level. The control board can get the moisture content or threshold value in the substance via analog or digital pins. The power supply is 3.3v or 5v. The ranges for values of dry(0-300), humid (300-700), and for water (700950). It is easy to use and more compatible
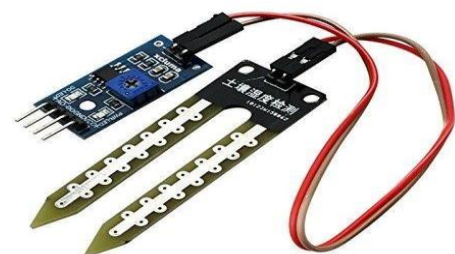

Fig -5: Moisture Sensor

ULTRASONIC SENSOR

It is a device that can measure the distance to an object by using sound wave. General purpose interface is attached to us (Ultrasonic Module) of the given system. It has a prime component, an analog unit for execution an analog signal processing, is connected to another computer system. The ultrasonic waves generated by the oscillating body are radiated by funnel shaped resonator into the air and to effectively concentrate ultrasonic waves from air on the center of the oscillator. The ultrasonic sensor is shown on fig. the sensor is divided into two parts first is use to transformer the ultrasonic wave (like speaker) and while other is used to receive the ultrasonic waves (like times microphone)
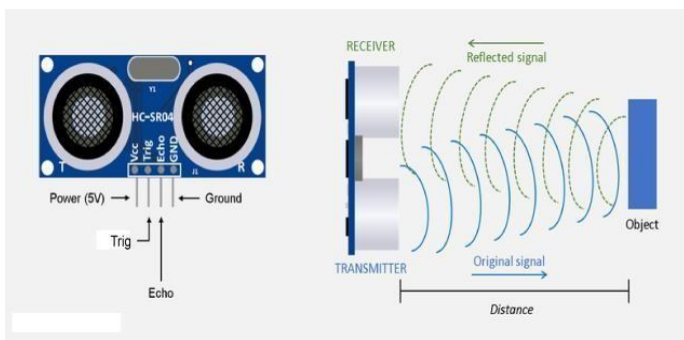

Fig -6: Ultrasonic Sensor

LCD DISPLAY

A LCD is an electronic display unit which uses liquid crystal to build a visible image. The 16×2 LCD display is a very basic module commonly used in DIYs and circuits. In this LCD each character is displayed in a 5×7 pixel matrix

IR Sensor

It is an electronic device that can emits the light in order to detect some object of the surrounding

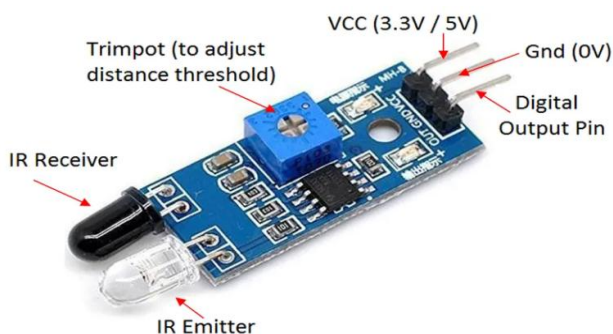IR sensor open and close the dustbin lid automatically

Fig -7: IR Sensor

H bridge is an electronics circuits. Which help us 0r it also provide us the features to apply voltage to load in one direction at a time. It is commonly used in robotics application to control the dc motors. By using H Bridge we can run DC motor in clockwise or anticlockwise direction

The H Bridge is a simple concept that enables the polarity of the supply being applied to a brushed motor to be swapped. In combination with a PWM signal the motor rotation speed and direction can also be controlled.
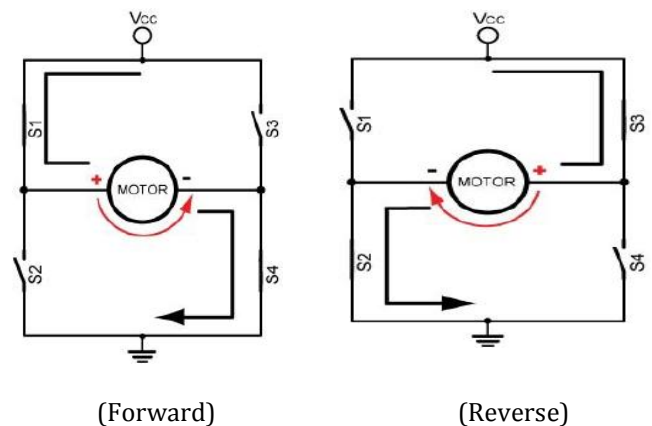

(Forward)   (Reverse)

Fig -4: Motor Driver

PROPOSED WORK

- The proposed waste management system for a green society would include advance features such as automatic open and close of the lid when any one reach near the dustbin, detection of poisonous gas.

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- The proposed model for waste management system for the green society is implement at two levels one is for the every house of the society and level two works at the societal level
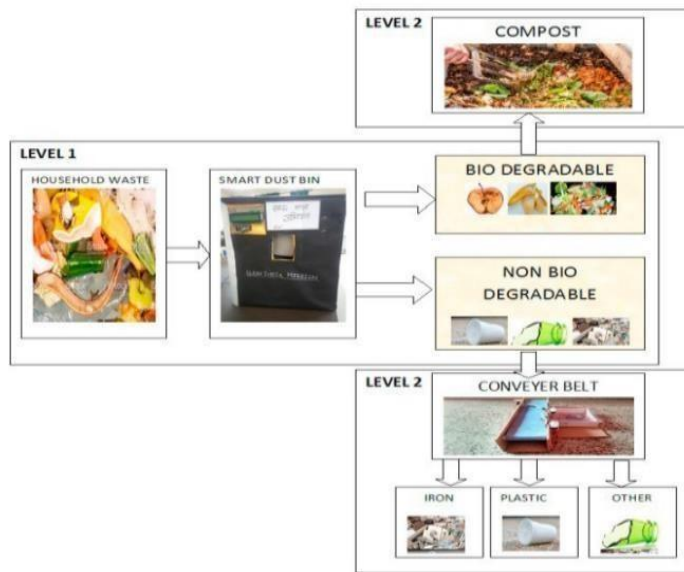
MOTOR DRIVER

Fig -4: Proposed Work

CONCLUSION

This model continuously monitors the level of waste in the biodegradable and non-biodegradable compartment of the dustbin. This model uses Wi-Fi to send alert messages to concern society authority. The model separate ate house hold waste level and reduce the real waste by reuse biodegradable.

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