GARBAGE MONITERING SYSTEM USING ARUDINO

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ABSTRACT

In this project, we present the smart bin system that identifies fullness of wastage bin The system is design to collect data and to deliver the data through wireless mesh network. The system also employees duty cycle technique reduce power consumption and to maximize operational time. The bin system was tested in an outdoor environment. Through the test bed, we collect data and applied sense- making method to obtain litter bin utilization and litter bin daily seasonality information. With such information , wastage bin providers and cleaning contractors are able to make better decision to increase productivity.

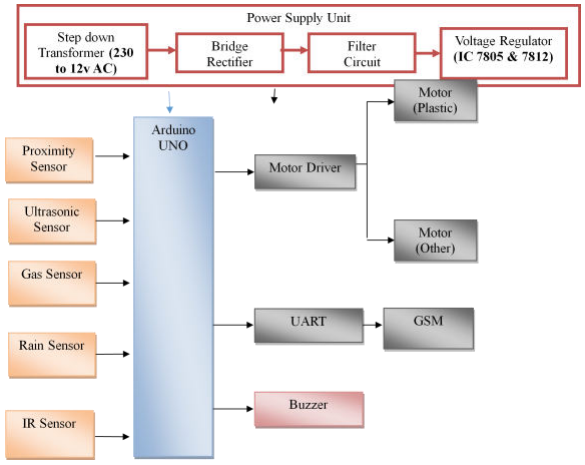
INTRODUCTION

Waste management is effective way of reducing dumped trash. Unfortunately, these practices are not widely implemented in the country. People have been negligent when it comes to proper waste disposal, ignoring labels and throwing recyclables that can still be reused. Most are unaware or choose to ignore the fact the waste segregation and recycling can reduce cost, reduce drain in our resources, and lessen the waste being produced. Typical composition of garbage.

People throw in are 5.8% metals, 3.5% glass, 1.6%plastic, 12.9% papers, 1.8% textiles and 53.7% biodegradable which means only the remaining 20.7% of the wastes should really be going to our landfills. In our country, recycling centers do manual process of sorting wastes leading to a high risk of acquiring sickness. This study aims to automate wastes regation and implement a waste delivery system that would minimize human interference in the waste collecting and segregation process.

Garbage may consists of the unwanted material left over from City, Public area, Society, College ,Homes etc. This project is related to the “Smart City Waste management is effective way of reducing dumped trash. Unfortunately, these practices are not widely implemented in the country. People have been negligent when it comes to In this project, we present the smart bin system that identifies fullness of wastage bin The system is design to collect data and to deliver the data through wireless mesh network.

BLOCK DIGRAM

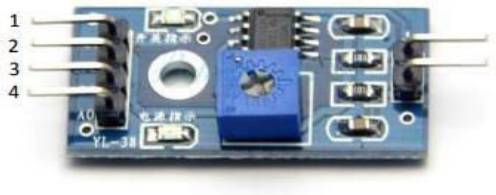


POER SUPPLY

Power supply is a reference to a source of electrical power. A device or system that supplies electrical or other types of energy to an output load or group of loads is called a power supply unit or PSU. The term is most commonly applied to electrical energy supplies, less often to mechanical ones, and rarely to others. A secondary winding, electro-magnetically coupled but electrically isolated from the primary is used to obtain an AC voltage of suitable amplitud

RAIN SENSOR

A rain sensor is one kind of switching device which is used to detect the rainfall. It works like a switch and the working principle of this sensor is, whenever there is rain, Things" (IOT). So for smart lifestyle, cleanliness is needed, and cleanliness is begins with Garbage Bin. This project will helps to eradicate or minimize the garbage disposal problem.



This sensor module permits to gauge moisture through analog output pins & it gives a digital output while moisture threshold surpasses. rain-sensor-module This module is similar to the LM393 IC because it includes the electronic module.

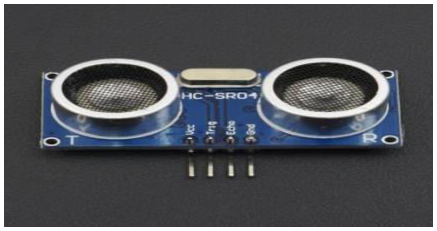
PROXIMITY SENSORS

A proximity sensor is a sensor able to detect the presence of nearby objects without any physical contact. A proximity sensor often emits an electromagnetic field or a beam of electromagnetic radiation (infrared, for instance),and looks for changes in the field or return signal. Thus the proximity of the object is detected by a change in capacitance.

The sensor can also be used to detect a wide variety of non-metallic and metallic objects and typically operate over a range of 3 to 30 mm. Inductive proximity sensors are contactless sensors used to only detect metal objects. It's based on the law of induction, driving a coil with an oscillator once a metallic object approaches it. It has two versions and comprises of 4 main components: Components. It comprises of 4 main components as seen in the picture; Coil, Oscillator ,Schmitt Trigger, and output switching circuit

ULTRASONIC SENSOR

An ultrasonic sensor is an electronic device that measures the distance of a target object by emitting ultrasonic sound waves, and converts the reflected sound into an electrical signal. Ultrasonic waves travel faster than the speed of audible sound.HC-SR04 Ultrasonic Sensor HC-SR04. As shown above the HC-SR04 Ultrasonic (US) sensor is a 4 pin module, whose pin name sareVcc, Trigger, Echo and Ground respectively.



The sensor works with the simple high school formula that Distance = Speed × Time .The Ultrasonic transmitter transmits an ultrasonic wave, this wave travels in air and when it gets objected by any material it gets reflected back toward the sensor this reflected wave is observed by the Ultrasonic receiver module

IR SENSOR

IR sensor is an electronic device, that emits the light in order to sense some object of the surroundings. Usually in the infrared spectrum, all the objects radiate some form of thermal radiation. These types of radiations are invisible to our eyes, but infrared sensor can detect these radiations. The emitter is simply an IR LED (Light Emitting Diode) and the detector is simply an IR photodiode . Photodiode is sensitive to IR light of the same wavelength which is emitted by the IR LED detection system an infrared source, a transmission medium, optical component, infrared detectors or recivers and signal processing.

The three main types of media used for infrared transmission are vacuum, atmosphere and optical fibers. Optical components are used to focus the infrared radiation or to limit the spectral response.

GAS SENSOR

MQ2 is one of the commonly used gas sensors in MQ sensor series. It is a Metal Oxide Semiconductor (MOS) type Gas Sensor also known as Chemi resistors as the detection is based upon change of resistance of the sensing material when the Gas comes in contact with the material.

Using a simple voltage divider network, concentrations of gas can be detected. Sensing LPG, Smoke, Alcohol, Propane, Hydrogen, Methane and Carbon Monoxide concentrations in the air. If you are planning on creating an indoor air quality monitoring system; breath checker or early fire detection system, MQ2Gas Sensor Module is a great choice. MQ2 Gas sensor works on 5V DC and draws around 800mW. It can detect LPG, Smoke, Alcohol, Propane, Hydrogen, Methane and Carbon Monoxide concentrations anywhere from 200 to 10000ppm

MOTOR DRIVER

Motor Driver circuits are current amplifiers. They act as a bridge between the controller and the motor in a motor drive. Motor drivers are made from discrete components which are integrated inside an IC. The input to the motor driver IC or motor driver circuit is a low current signal.

UART

The Universal Asynchronous Receiver/Transmitter (UART) controller is the key component of the serial communications subsystem of a computer. UART is also common integrated feature in most microcontrollers. The UART takes bytes of data and transmits the individual bits in a sequential fashion. At the destination, a second UART re-assembles the bits into complete bytes.

Serial transmission of digital information (bits) through a single wire or other medium is much more cost effective than parallel transmission through multiple wires. Communication can be “full duplex” (both send and receive at the same time) or “half duplex” (devices take turns transmitting and receiving).

EXISTING SYSTEM

With most existing garbage monitoring system , a city collection service will travel a predefined route on a regular basis and empty trash and recycling receptacles, whether they are full or not. The fixed nature of this system creates the possibility of half-full bins being emptied, unnecessary fuel being spent, and excess use of city resources.

ADVANTAG & APPLICATION

It further reduces manpower requirements to handle the garbage collection process. Applying smart waste management process to the city optimizes management, resources and costs which makes it a "smart city". It keeps our surroundings clean and green and free from bad odour of wastes, emphasizes on healthy environment and keep cities more beautiful.

FINAL OUTPUT

CONCLUSION

In this project, an integrated system, IOT, GSM, ultrasonic sensor is sensor is introduced for efficient and economic garbage collection. The developed system provides improved database for garbage collection time and waste amount at each location. We will avoid over flowing of garbage from the container in residential area which is previously either loaders in traditional trucks. The technologies which are used in the proposed system are good enough to ensure the practical and perfect for solid garbage collection process monitoring and management for green environment.

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