EFFICIENT GARBAGE MANAGEMENT SYSTEM

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Abstract— **with increase in residents, the situation of sanitation with respect to garbage management is degrading tremendously. The overflow of garbage in public areas creates the unhygienic condition in the nearby surrounding. It may inflame several serious diseases amongst the near people. It also degrades the valuation of the area. To avoid this and to enhance the cleaning, 'Efficient garbage management system' is proposed in this paper. In the designed system, the point of garbage in the dustbins is identifying with the help of Sensor systems, and communicates to the kept robot through RF module. Microcontroller is used to interface the sensor system with RF module. This resolve helps to handle the garbage compilation efficiently**

Keywords— **Micro controller, RF module.**

I.INTRODUCTION

Waste managing means compilation, transport, and disposal of garbage, sewage and other waste goods. It is the process of collecting solid wastes and in its extension offers variety of solutions for recycling items that don't belong to trash. It is regarding how garbage can be worn as a valuable resource. It is something that each and every household and business owner in the world needs. The term garbage relate to all kinds of waste that is whether the waste may be generated during the drawing out of raw materials, the processing of raw materials into intermediate and final products, the consumption of final products, or other human activities , including municipal (residential, institutional, commercial, agricultural, and social ,health care, household hazardous waste, sewage sludge). Waste management is intended to reduce adverse effects of waste on health.

II.SYSTEM DESCRIPTION:

We are considering garbage bins as the transmitting section which consists AT89S52 controller to which ultrasonic sensor is interfaced in order to detect the level of garbage inside the container. Initially a particular threshold is fixed so whenever the level of garbage is greater than the threshold level it transmits a message to the robot using RF transmitter. The robot as the received section consists ATMEGA 2560 micro controller and RF receiver is interfaced to it. Whenever it receives a message it starts moving towards the garbage bin. The use of IR sensors makes robot to follow the particular path and collects the garbage from that particular bin.

A.8051MICROCONTROLLER:

The first microprocessor 4004 was invented by Intel Corporation. 8085 an 8086 microprocessors were also invented by Intel. In 1981, Intel introduced an 8-bit microcontroller Called the 8051. It was referred as system on a chip because it had 128 bytes of RAM, 4K byte of on-chip ROM, two timers, one serial port, and 4 ports (8-bit wide), all on a single chip. When it became widely popular, Intel allowed other manufacturers to make and market different types of 8051 with its code compatible with 8051. It means that if you write your program for one type of 8051, it will run on other type too, regardless of the manufacturer. This has led to several versions with different speeds and amounts of on-chip RAM.


B.ULTRASONIC SENSOR:

This is the HC-SR04 ultrasonic ranging sensor. This economical sensor provides 2cm to 400cm of non-contact measurement functionality with a ranging accuracy that can reach up to 3mm. Each HC-SR04 module includes an ultrasonic transmitter, a receiver and VCC (Power), Trig (Trigger), Echo (Receive control circuit) and GND (Ground). Ultrasonic sensors are almost completely insensitive to interfering factors (such as extraneous light, dust, smoke, mist, vapour , lint, oily air, etc.). They are best suited for the detection of transparent and dark objects, reflective surfaces and shiny objects and of bulk materials and liquids. Ultrasonic sensors allow for the reliable detection and measurement of objects, independent of their material, colour, transparency and texture. Ultrasonic sensors are characterized by their ease of use and excellent technical properties.They send pulsed ultrasonic waves of a certain frequency and determine the objects distance from the duration of the ultrasound that it reflects. The output switches if the specified switching point is reached. The measured value is output as a voltage value (0...10 V/4...20 mA) or in digital form (IO-Link)
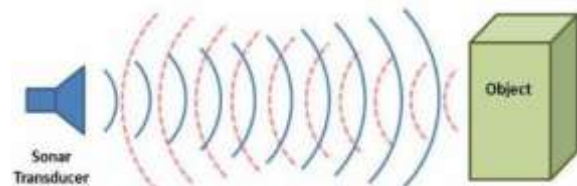
C.RF MODULE:

The RF module, as the name suggest, operate at Radio Frequency. The corresponding frequency range varies between 30 kHz & 300 GHz. In this RF system, the digital

data is represented as variation in the amplitude of carrier wave. This kind of modulation is known as Amplitude Shift Keying (ASK).Transmission through RF is better than IR (infrared) because of many reasons. Firstly, signal during RF can travel throughout larger distance making it suitable for long range.
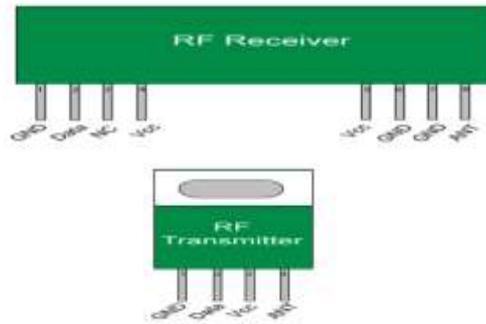

Also, while IR mostly operates in line-of-sight mode, RF signals can travel even when there is an obstruction between transmitter & receiver. Next, RF transmission is more strong and reliable than IR. This RF module comprises of an RF Transmitter and an RF Receiver. The transmitter/receiver (Tx/Rx) pair operates at a frequency of 434MHz. An RF transmitter receives serial data and transmits it wirelessly through RF through its antenna connected at pin4. The transmission occurs at the rate of 1Kbps - 10Kbps.The transmitted data is received by an RF receiver operating at the same frequency as that of the transmitter.

The RF module is often used along with a pair of encoder/decoder. The encoder is used for encoding parallel data for transmission feed while reception is decoded by a decoder. HT12EFHT12D, HT640-HT648, etc. are some commonly used encoder/decoder pair ICs.

D.IR SENSORS:
IR Sensors work by by means of a specific light sensor to sense a select light wavelength in the Infra-Red (IR) spectrum. By using an LED which produce light at the same wavelength as what the sensor is looking for, you can look at the intensity of the received light. When an thing is close to the sensor, the light starting the LED bounces off the thing and into the light sensor.
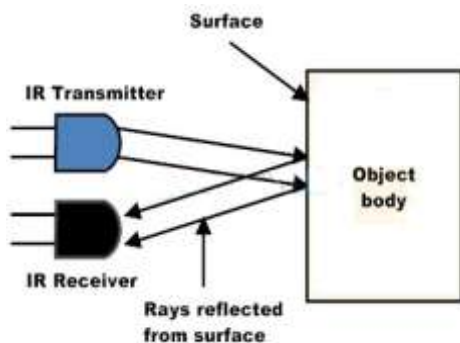

E.MOTOR DRIVERS:
In any electric motor, operation is based on effortless electromagnetism. A current -carrying conductor generate a magnetic field; when this is then placed in an peripheral magnetic field, it will occurrence a force proportional to the current in the conductor, and to the strength of the

external magnetic field. As you are well attentive of from playing with magnets as a teenager, opposed (North and South) polarities attract, while like polarities (North and North, South and South) repel. The internal configuration of a DC motor is designed to harness the magnetic interaction between a current -carrying conductor and an external magnetic field to generate rotational motion.

III. BLOCK DIAGRAM

A. Transmitter section:
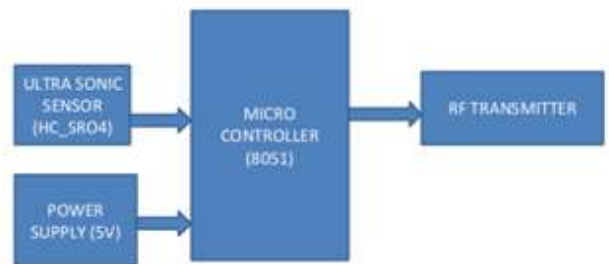
It shows the block diagram of transmitter section. Level detector consists of ultra sonic sensor which is used to detect the level of the garbage in the dustbin. The output of sensor is given to microcontroller. When the dustbin is filled up to the threshold level a message will be transmitted to the receiver using RF transmitter.

B.Receiver section:
Below figure shows the block diagram of receiver section. At receiver, robot is present where all the activities are managed. As soon as the robot receives the message using RF receiver it moves towards the garbage bin and collect garbage from it. Use of IR sensors make robot to follow in a straight line.
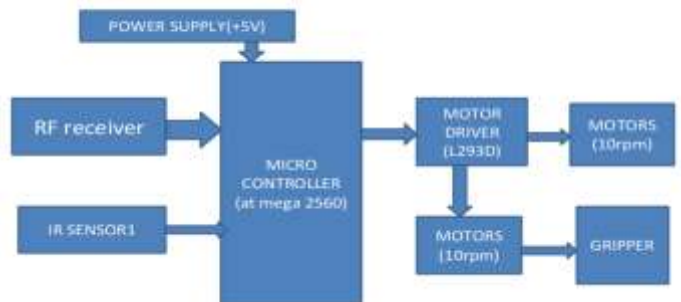
IV.IMPLEMENTATION OF PROJECT
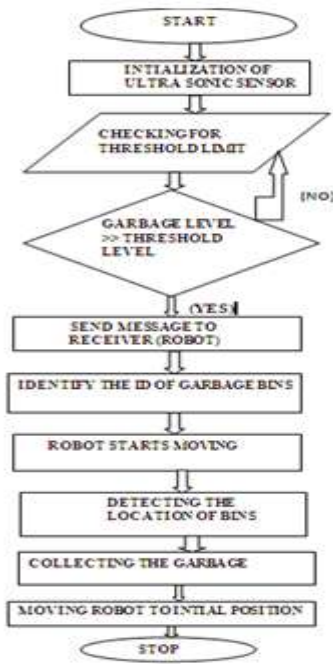
V.CONCLUSION

This paper shows the implementation of efficient garbage management system using ultrasonic sensor, microcontroller and RF module. This system assures the cleaning of dustbins soon when the garbage level reaches its threshold level. This reduce the total number of trips of garbage collection because the robot will move towards the garbage bin only whenever the garbage reaches the threshold level and hence reduce the overall expenditure associated with the garbage collection and also reduces the requirement of man power . It ultimately helps to keep the society clean. Therefore, the efficient garbage management system makes the garbage collection more efficient

VI.ACKNOWLEDGMENT

VII.REFERENCES

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