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Garbage Monitoring System Using IOT

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Abstract: **-- Our project "Garbage Monitoring System Using IOT" which will help to keep the cities clean and hygienic. The system monitors the garbage bins and inform about the level of garbage in the dustbins. The build up for well management of garbage or solid waste Global System for Mobile Communication are the latest trends and are one of the best combination to be used in the project. To give a brief description of the project ,the sensor are placed in the common garbage bins placed at the public places. When garbage reaches the level of the sensor, then that indication will be given to arduino . The arduino will give indication to the authorized person of garbage collection track as level of garbage. Arduino will give indication by sending SMS using GSM technology.The power supply required for this project is obtain from solar panel. Which gives us free of cost renewable energy and accuracy for tracing the level of garbage at night by using street light whose working is done through solar panel. We are creating android application for a authorized person who receives the status about the dustbin and for security of the kit we use the buzzer.**

***Keywords*— Ultrasonic sensors, GSM Module, Ardunio ATmega 328, Solar cell.**

I. INTRODUCTION

Though the world is in a stage of up gradation, there is yet another problem that has to be dealt with. Garbage! Pictures of garbage bins being overfull and the garbage being spilled out from the bins can be seen all around. This leads to various diseases as large number of insects and mosquitoes breed on it. A big challenge in the urban cities is solid waste management. Hence, smart dustbin is a system which can eradicate this problem or at least reduce it to the minimum level. Our present Prime Minister of India, Sri Narendra Modiji has introduced the concept of implementing 100 smart cities in India. "**Swachh Bharat Abhiyan**" was initiated to ensure a clean environment. Hence our problem statement is to design a System Based on Arduino for collecting the garbage from a particular are the area whose public Garbage Bins are overflowing with prior concern. A big Challenge in the urban cities is Solid waste management. The project gives us one of the most efficient ways to keep our environment clean and green. A combination of both of these technologies is used in the project. There are multiple dustbins are located throughout the city or the Campus (Educational Institutions, Companies, Hospitals etc.). In our project we allocate a unique identification number to each dustbin in the city so that it is easy to identify which garbage bin is full. When the level of garbage reaches the threshold limit the device will transmit the level along with the unique identification number provided. To give a brief description of the project, the sensors are placed in the common garbage bins placed at the public places. When the garbage reaches the level of the sensor, then that indication will be given to Adriano. The controller will give indication to the driver of garbage collection truck as to which garbage bin is completely filled and needs urgent attention. Adriano will give indication by sending SMS using GSM technology. The power supply required for this project is obtain from solar panel. Which gives us free of cost renewable energy and accuracy for tracing the level of garbage at night by using street light whose working is done through solar panel. We are creating android application for a authorized person who receives the status about the dustbin and for security of the kit we use the buzzer.

II. LITERATURE REVIEW

This is not an original idea, for the implementation of smart garbage bin; the idea has existed for many years, After the IoT field finding its grip in our lives. This is, however an original plan for designing a smart garbage bin with Ultrasonic sensor and GSM module for transmission of data.

[1]KanchanMahajan, "Waste Bin Monitoring System Using Integrated Technologies", International Journal Of Innovative Research in Science,Engg & Tecnology, Issue 3,July 2014. this gives the concept of a number of techniques which are purposefully used and are being build up for well management of garbage or solid waste . Global System for Mobile Communication (GSM) are

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the latest trends and are one of the best combination to be used in the project .

[2]M. Al-Maaded, N. K. Madi, Ramazan Kahraman, A. Hodzic, N. G. Ozerkan , They came to a point It is important to understand the societal concerns over the increased rate of resource consumption and waste production and therefore the policy makers have encouraged recycling and reuse strategies to reduce the demand for raw materials and to decrease the quantity of waste going to landfill.

[3]. A State of the Art review on Internet of Things by P. Suresh, Vijay. Daniel, R.H. Aswathy, Dr. V. Parthasarathy. It gave the idea of IoT subject and addition details about IoT. The proper smart environment and various applications.

III.PROPOSED SYSTEM

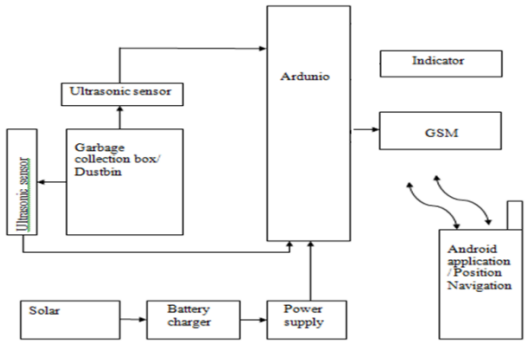
In our project we design a system based on Arduino for collecting the garbage for the particular area whose public garbage bins are overflowing with prior concern. For this we allocate a unique identification number to each dustbin in a city so that it is easy to identify which garbage bin is full. When the level of garbage reaches the threshold limit the device will transmit the level along with the unique identification number provided. To give a brief description of the project, the sensors are placed in the common garbage bins placed at the public places. When the garbage reaches the level of the sensor, then that indication will be given to Adriano. The controller will give indication to the driver of garbage collection truck as to which garbage bin is completely filled and needs urgent attention. Adriano will give indication by sending SMS using GSM technology.

IV. DESIGN

4.1 Components –

The dust bin is built on arduino board platform it is interface with a GSM modem and the ultrasonic sensors are placed at the top of the dustbin.

4.2 Block Diagram Of The System –



4.2.1 Arduino - The Arduino Uno is a microcontroller board based on the ATmega328 . It has 14 digital input/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16 MHz ceramic resonator, a USB connection, a power jack, an ICSP header, and a reset button. It contains everything needed to support the microcontroller; simply connect it to a computer with a USB cable or power it with a AC-to-DC adapter or battery to get started. The Uno differs from all preceding boards in that it does not use the FTDI USB-to-serial driver chip. Instead, it features the Atmega16U2 (Atmega8U2 up to version R2) programmed as a USB-to-serial converter. Revision 2 of the Uno board has a resistor pulling the 8U2 HWB line to ground, making it easier to put into DFU mode.

4.2.2 Ultrasonic Sensors – The ultrasonic sensors has two pins trigger and echo. Trigger pin is work as a transmitter and echo pin is work as receiver. These two pins together are used to calculating the distance of the object by generating sound waves. Trigger transmit the ultrasonic waves and echo receives the reflected waves which is transmitted by the trigger.

4.2.3 GSM Module – GSM Modem-RS232 is built with Dual Band GSM engine- SIM900A, works on frequencies 900/ 1800 MHz The Modem is coming with RS232 interface, which allows you connect PC as well as microcontroller with RS232 Chip(MAX232). The baud rate is configurable from 9600-115200 through AT command. The GSM/GPRS Modem is having internal TCP/IP stack to enable you to connect with internet via

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GPRS. It is suitable for SMS, Voice as well as DATA transfer application in M2M interface. The onboard Regulated Power supply allows you to connect wide range unregulated power supply . Using this modem, you can make audio calls, SMS, Read SMS, attend the incoming calls and internet ect through simple AT commands.

4.2.4 Solar Cell –Solar panel refers to a panel design to absorb the suns rays as a source of energy for generating electricity or heating. A photovoltaic module packaged connect assembly of typically 6x10 photovoltaic solar cells. Photovoltaic modules constitute the photovoltaic array of the photovoltaic system that generate and supplies solar electricity in commercial and residential application. A photovoltaic system typically includes an array of photovoltaic modules, an inverter, a battery pack for storage, interconnection wiring ,and optionally a solar tracking mechanism. We are using solar panel for providing electric energy for our kit.

V. FUTURE WORK –

In this paper, implementation is done for multiples dustbins each with unique ID done by implementing the principles of IOT and android application is created to ensure authorized entries. In future we planning to create a project which will differentiate between dry trash bin and wet trash bin collecting plastic dry waste and biodegradable waste respectively. To implement this method smell sensor can be used. This helps in distinguishing the waste at the source and hence reducing the requirement of man power.

VI.CONCLUSION –

We will implement real time waste management system by using smart dustbins to check the fill level of smart dustbins whether the dustbin are full or not. In this system the information of all smart dustbins can be accessed for many where and anytime by the concern person . By implementing this proposed system the resource optimization, effective usage of smart dustbins can be done. This system indirectly reducing traffic in the city. In major cities the garbage collection vehicle visit the area's everyday twice or thrice depends on the population of the particular area and sometimes these dustbins may not be full. Our System will inform the status of each and every dust bin in real time so that the concerned authority can send the garbage collection vehicle only when the dustbin is full.

REFERENCE –

1. Vikrant Bhor, "Smart Garbage management System International Journal of Engineering Research & Technology (IJERT),Vol. 4 Issue 03, March-20152000.

2.Narayan Sharma,, "Smart Bin Implemented for Smart City",International Journal of Scientific & Engineering Research, Volume 6, Issue 9, September-2015.

3.KanchanMahajan,"Waste Bin Monitoring System UsingIntegrated Technologies", International Journal of Innovative Research in Science, Engineering and Technology, Issue 3,Issue 7, july 2014.