

AN ANALYSIS OF GARBAGE MECHANISM FOR SMART CITIES

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Abstract - To make smart cities, safer and efficient, wireless communications can play an important role. While implementing this proper waste disposal management, it will avoid the spreading of diseases. In this project we propose a smart waste management system for improving the management of waste in cities. This project indicates the level of the garbage and rain proof and eliminates hazardous gas. The dustbins are properly managed and information is seen regularly and the municipality officer makes immediate response by intimating to truck driver. The truck driver will go immediately and collect the waste from the dustbins. Multiple dustbins are connected through the cities. The dustbins are integrated with IR sensor, rain sensor, gas sensor and microcontroller. As a major application field of city enhancement, waste management has become one such issue. The absence of efficient waste management has caused serious environmental problems and cost issues.

Key Words: Waste Management, GSM Modem, PIC microcontroller.

1. INTRODUCTION

In present there was a rapid growth in the population which leads to large quantity of waste disposal in the cities. The overflow of dustbin will create a unpleasant environment and it affect many people by spreading the deadly an disease. To avoid those problems we implement this smart garbage mechanism. In this system, the smart bin is connected with the GSM to indicate the exact information about the dustbin level and to which area it belong. The GSM is a wireless modem that works in a wireless network. It sends and receives the data through a wireless network. It sends message to the corporation office about the level of dustbin after the garbage is filled.

The ultimate need of the hour for a developing nation is the key for "smart city". The influential ecological factor that poses to be a threat to this include: hazardous pollution and its subsequent effects on health of humanity, alarming global warming and depletion of ozone layer etc. Mostly environmental pollution may be owing to the municipal solid leftovers (MSL). A proper maintenance becomes mandatory for an efficient and effective removal of the generated municipal solid left over. It is perceived that often the waste space gets too much occupied due to irregular removal of garbage occupancy in the dustbin. This exposition proposes an e-monitoring system that put forth an embedded system and web based software assimilated with Using the anticipated system, monitoring of the waste collection status

could be monitored effectively. This design designates technique in which the garbage level could be checked at regular intervals which would prevent the undesirable overflow of the bin. In addition to this it also has facilitation and intimates the authority to clean up in case of any overflows.

Most embedded control product must special requirement, cost effectiveness, low power, small-footprint and a high level of system integration.

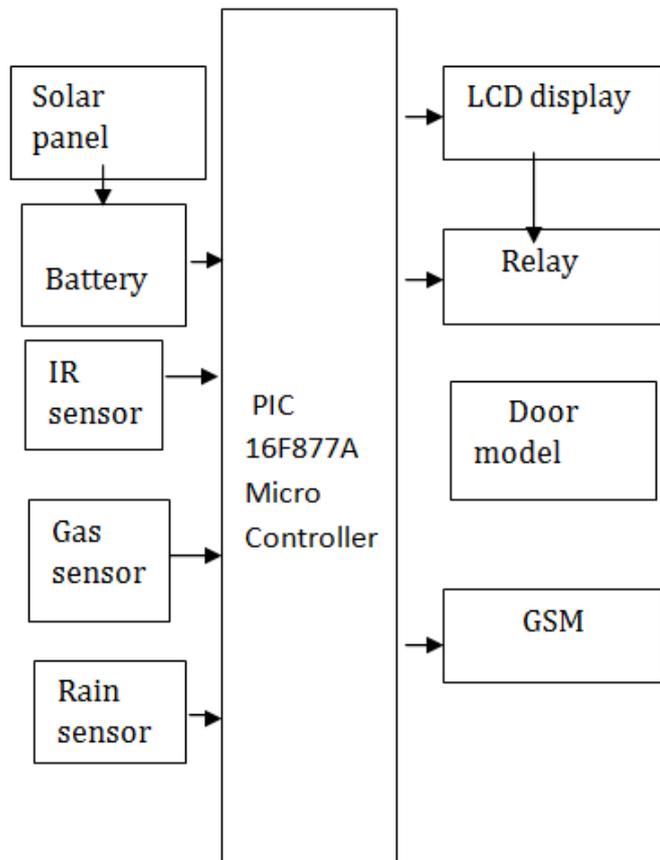
1.1 LITERATURE SURVEY

IOT garbage monitoring system is very innovative systems which help to clean the cities. IOT based method, if the dustbin is fill the message can automatically sends to the corporation offices by wireless server. The GSM module is provided the mobiles service the information sends to respective authorities' person. The Smart garbage monitoring system hardware used microcontroller, GSM module, Wi-Fi modem, ultrasonic sensor. Monitoring the garbage information send to GSM module the waste garbage to collect from corporation vehicles. Wi-Fi modem is processing and storage capability that allows sensor and specific device. (1)The garbage monitoring system is consists of unwanted material from manufacturing process of industrial, commercial. In this project clean country and related to the smart city and based on internet of things. It is used to street light monitoring system. The load cell give the weight reading in voltage format and transducer used to sense and convert electrical signal. The GSM used to send message to the corporation office. LDR detect the presence of light. (2)The waste garbage management system information about the smart way. The IOT can be used to provide platforms for smart garbage management are used. The application of reduce garbage level to monitor the street light. The ambient light sensors detect the street light. The GSM used sending location. (3)This system monitors the garbage bins and informs level of garbage collection in the garbage bins to SMS send the particular person. The garbage management uses GSM, ultrasonic sensor, arduino, LCD. Ultrasonic sensors detect the distance of dustbin. The level of garbage information send message through GSM module. (4)In waste management using automatic garbage level detect from ultrasonic sensor and Provide real time information. The working of GSM module is given message signal when the dustbin is 95% filled. The waste management system uses GSM, atmega328p, LDR, LCD. The GSM modules send the message to the authorized person and collect the garbage from located bins. LCD display the

level of garbage to monitoring system. (5)The dustbin cleaned timely using alert services. The problems of unhealthy environment spread of diseases. The overflow of garbage which results of land pollution spread of diseases, unhygienic conditions for people. The garbage bin filling and send to the information by using GSM. The garbage dustbins is filled these information can be send to the truck driver to clean the dustbin. (6)Sense the dustbin is full or empty in garbage for sending message by GSM and arduino module controls. The process flow of sensing, data transfer and messaging sense to the open automatically. We get display the LCD screen the dustbin is full, drum the garbage and time is connected to the servers and GSM system send to the information about the status of dustbin either if is full or empty. The process is controlled by the ARDUINO. (7)In present day many dustbins are connected through the public places in the waste every day. The method is dispose the waste has been designed with GSM system. The garbage will be thrown from the each floor of the building where if occupied in a smart dustbin. The smart dustbin is sense to garbage is full with help to (IR) sensor. It is automatically sense the garbage level and sends the information to collection truck. (8)The solid waste monitoring and management system by using RFID, GSM and GPS. The ID will be useful to the remove wastages in the smart cities and the will be removed the hospital wastages industrial wastages and the animal despised. To smart cities wastages are will be disposed by using then global system for mobile communication and RFID and then the GPS. It will be provide to the time solid waste collection, tracking and vehicle position we can identified to using GIS monitoring. (9)The solid waste management system is defined from the house hold and non-hazardous solid waste. The geographical information system can be through to the vehicle position and the GIS databases can be also overcome to the disadvantages of the minimum rate and low fuel cost. The GIS databases are commenting to the GSM receiver and then the black box of the removed the waste management in the solid wastes. (10)The smart planning in solid waste management used the web camera. The camera is placed above the garbage can to capture images with connecting to the Wi-Fi connection. Load sensor is used weight readings of the load sensor is transducer is to be sense and concert a voltage format an electrical signals. The microcontroller used to controlling the all the devices the 256kb and 512kb of embedded high speed flash memory and they used interface and identified the location. (11) The smart garbage collection using internet of things. The garbage will be fixed in the platform built upon dynamic federation. It's reduced the food waste management and then wastages are filled in the garbage. It can be removed to using truck and garbage will be filled means. They will be alert to the municipal management using alert system. The solar energy will be received. The energy and it will be reduced to the signal in to the municipal waste management in smart cities. (12) The smart garbage management system proposed by a system using IOT. Through the internet, the level of garbage in the dustbin can be identified easily to the corporation office. The

ultrasonic sensors are used to identify the garbage level. The arduino microcontroller is used the Wi-Fi modem is used for sending data to the system. The buzzer is used to indicate when the garbage level is increased. (13)In implemented by the ultrasonic sensor which is interfaced with arduino UNO to check the level of garbage and it send message to the corporation office. After the process of cleaning, the driver confirms the task of emptying the garbage with the help of RFID .the project is designed with RFID and IOT system. (14) The implemented smart dustbin, to avoid all hazardous scenarios. The garbage is collected using garbage collector machine and according to the garbage level. The money will be credited to the user. It is based on MATLAB simulation with image processing and trailing at day to day basis. The embedded based garbage collector machines with image processing are implemented. (15)In embedded device is used to identify the level of the garbage in the dustbin and unique ID is provided to easily detect the garbage level the identification of garbage level is transferred to the mobile application the whole process is based on the IOT system the garbage level gets filled means it will transmit with the unique ID through the mobile application the information sends to the authorities through the internet and immediate actions taken. (16)The implemented by ultrasonic sensor which is interfaced with arduino UNO to check the level of garbage and it send message to the corporation office. After the process of cleaning, the driver confirms the task of emptying the garbage with the help of RFID. The designed with RFID and IOT system. (17)The garbage level in dustbin with sensor and notify the controlling authority through wireless communication module. This system introduced will considerably reduce the overall operational time required for regularly monitoring the bins. (18)The dustbin use low cost embedded device and it will sense the level of dustbin, and then it is sent to the municipality officer. They are system implemented with time stamp in which real time clock to the concern person regarding at time the dustbin is full and the waste should be collected from the dustbins. (19)The PIC microcontroller and GPRS modem using smart garbage management system. Monitoring garbage tank and street collection tank are uploaded to the web server via GPRS modem. In system specially designed to reduce human effects and to increase garbage tank capacity in overcrowded area. They are system is one of the major applications of internet of things (IOT). (20)

1.2. Block diagram



2. Components

2.1. Micro Controller

Microcontroller PIC16F877A is used in this project. It is one of the PIC micro family microcontrollers which is popular at this moment start from the beginner until all professionals. It is very easy using PIC16F877A and use flash memory technology so that can be write-erase until thousand times. The superiority this RISC microcontroller compared to with other microcontroller 8-bit especially at a speed of and his code compression. It has PIC16F877A have 40 pin by 33 path of I/O.

Features:

A PIC microcontroller is an amazingly powerful fully featured processor with internal RAM, EEROM FLASH memory and peripherals. One of the smallest ones occupies the space of a 555 timer but has a 10bit ADC, 1K of memory, 2 timers; high current I/O ports a comparator.

2.2. GSM Modem

A GSM modem is a wireless modem that works with a GSM wireless network. A wireless modem behaves like a dial-up modem. the main difference between them is that a dial-up

modem send and receive data through a fixed telephone line while a wireless modem sends and receive data through a radio waves. GSM modem requires a SIM CARD from a wireless carrier in order to operate.

2.3. IR Sensor

We have used IR sensor for detect the objects. Infrared transmitter is one type of LED which emits infrared rays generally called as IR transmitter. Similarly IR receiver is used to receive the IR rays transmitted by the IR transmitter .one important point is both IR transmitter and receiver should be placed straight line to each other.

2.4 LCD Display

LCD stands for liquid crystals; this is an output device with a limited viewing angle. The choice of LCD as an output device was because of its cost of use and is better with alphabets when compared with a 7 segment LED display. We have so many kinds of LCD display and our application requires a LCD with 2 lines and 16 characters per line, this data gets from the microcontroller and displays the same. It has 8 data lines, 3control lines, a supply voltage vcc (+5v) and a GND. This makes the whole device user friendly by showing the balance left in the card. This also shows the card that is currently being used.

2.5. Gas Sensor

The gas sensor is the special sensor which is designed for sense the hazardous smell in garbage bin. It has high sensitivity.gas sensor detect the gases like ethanol, methanol and ISO butane.

2.6. Rain Sensor

Rain Sensor it is conductivity based sensor water is a electricity conductor. So it the water drop on sensor means. It passes current and it senses. Then the door will automatically close.

2.7. Kit Breaker

If any damage occurs in kit means it sends the messages to the service provider.

3. CONCLUSION

This project work assures the cleaning of dustbins soon when the garbage level reaches its maximum. It the dustbin is not cleared in specific time, then the record is send to the higher authority who can take contractor. This system also helps to keep cleanliness in the society. Therefore the smart garbage management system makes the garbage collection more efficient.

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