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IoT Based Garbage Monitoring System

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ABSTRACT: The main motto of this paper is to monitor the garbage in the dustbin and keep the environment clean. A number of Products are increased after expiry of this product people put it into the dustbin. We always see that the garbage is overflowed across the road. Because of improper maintenance of dustbin many problems will aeries. It creates badly odour around the surrounding and also leads too many diseases. To overcome this, we are going to implement a project named as IOT Based Garbage Monitoring System. Internet can control the things/devices which are connected to the internet is nothing but Internet of Things. In this, we are going to use Raspberry pi model as monitoring device. The ultrasonic sensor and temperature sensor is interfaced with Raspberry pi to detect the garbage level and temperature. This will clean the environment in smart way.

KEYWORDS: Raspberry pi, Ultrasonic Sensor, Temperature Sensor.

I. INTRODUCTION

Nowadays various techniques are developed to build up well management system for garbage collection in proper way. The usage of internet will increase rapidly as a part of our life. IOT is latest trend, which is a one of the best combination used in project. Evolution of cloud computing and IOT is increasing day by day. In this IOT technique the communication takes between machine to man. The devices which are using in our day to day life is interconnected with IOT. The IOT allows object to detect and control remotely with the help of internet. In our system we are using Raspberry Pi, which is interfaced with ultrasonic sensor to detect the level of garbage collected in dustbin. For security purpose we are using temperature sensor to detect the fire in dustbin.

II. LITERATURE REVEIW

In this paper interaction with a wide variety of devices such as, for instance, home appliances, surveillance cameras, monitoring sensors, actuators, displays, vehicles, and so on, the IoT will foster the development of a number of applications that make use of the potentially enormous amount and a variety of data generated by such objects to provide new services to citizens, companies, and public administrations. This paradigm indeed finds application in many different domains, such as home automation, industrial automation, medical aids, mobile healthcare, elderly assistance, intelligent energy management and smart grids, automotive, traffic management, and many others [1]. In this the communication takes between machine to man. All the devices we are using in our day to day life is interconnected with IOT. In our system we are using Raspberry Pi, which is interfaced with ultrasonic sensor and flame sensor. To avoid this smart garbage monitoring and collection this system is developed [2]. In this project humans and vehicles are used to doing that work and here we are using automatic technique to detect garbage level in Garbage and we have a Load cell based weight sensor which will detect the weight of the Garbage can and when the weight crosses the set [3]. In this paper, a model has been proposed for real-time monitoring the garbage level of respective garbage bin sand to detect the level when threshold value is reached using combination of Sensors such as Level Sensor, Humidity Sensor, Load Cell and Raspberry pi. This data will be sent to the control unit and updated timely with the help of Wifi-module, depending on which optimized route have to be for (GCV), reduce the fuel consumption, cost, time and labor. Data will be sending to the respective person [4].

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III. PROPOSED BLOCK DIAGRAM

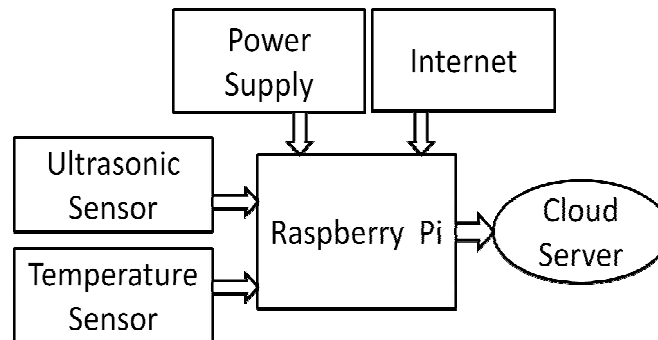


Fig.1:Transmitter side

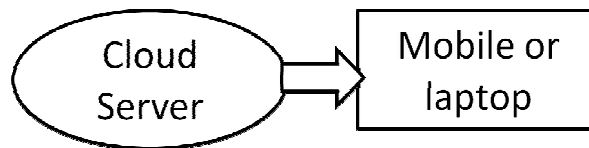


Fig.2:Receiver side

Fig: Block diagram

- **Raspberry pi:**

The Raspberry Pi three Model B is the third generation Raspberry Pi. is a series of small single board computers. The raspberry pi may be operated with any generic USB. It may also be used for USB to MIDI converters and virtually any other devices used as a fantastic tool for IOT based projects. It is low cost device and that would improve programming skill at the pre-university level. Accessible by all devices due to plug and play nature of the board. Additionally it adds wireless LAN and Bluetooth connectivity making it the ideal solution for powerful connected design. In our project we are using Raspberry Pi three Model B because of more processing power and 10x faster. The Raspberry Pi may be operated with any USB connected mouse and keyboard. Raspberry Pi three have one GB of RAM, four USB ports and one Ethernet port. It promotes Python as a main programming language, with support for many other.

- **Ultrasonic Sensor :**

The HC-SR04 Ultrasonic sensor is a four pin module. Its range from 2cm to 400cm or 1" to 13" feet. This sensor used for measuring distance or sensing objects are required. This sensor uses sonar to determine distance to an object. The module has two openings named as transmitter and receiver. The ultrasonic transmitter transmits an ultrasonic wave of high frequency sound this travels in air and when it gets objected by any material it gets reflected back towards the sensor. This reflected waves is detected by receiver on the sensor. That return signal is then processed by the control circuit to calculate the time difference between the signal being transmitted and received.

- **Temperature Sensor:** The LM35 is commonly used as temperature sensor that can be used to measure temperature with an electrical o/p comparative to the temperature. It can measure temperature more correctly as compared with a Thermistor. The LM35 has an output voltage that is proportional to the temperature in Celsius.



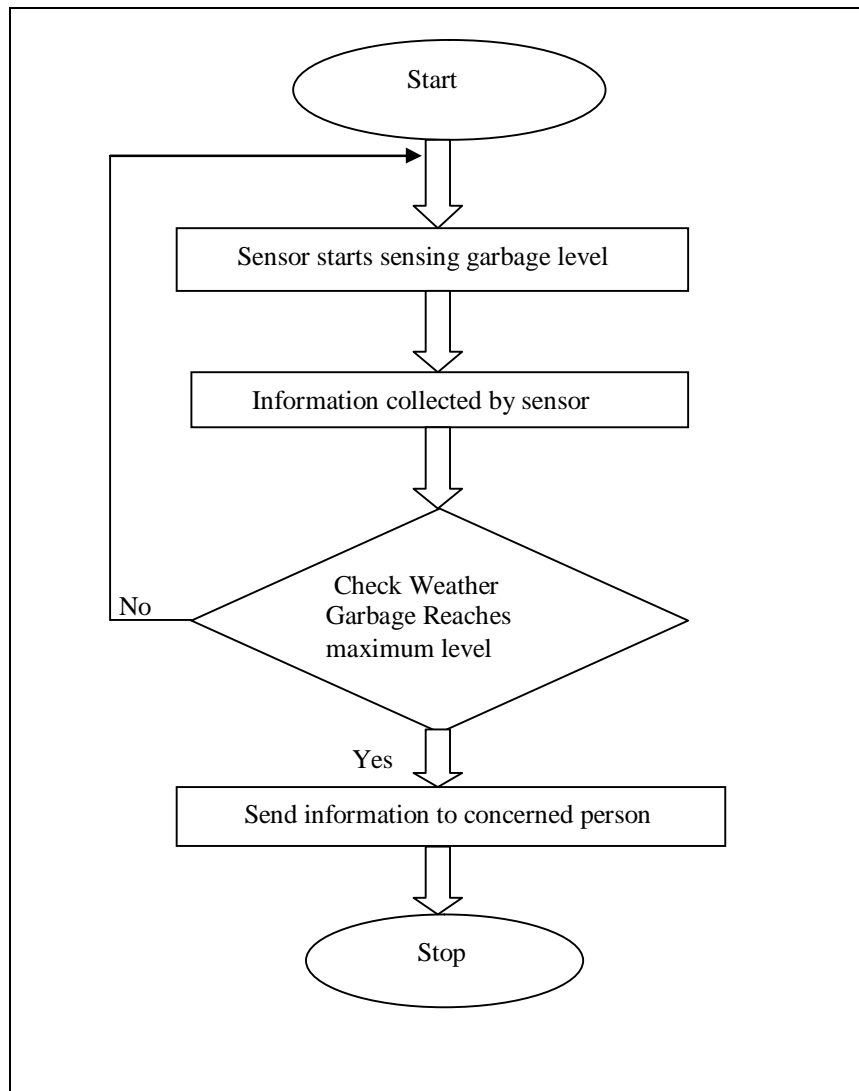
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IV. FLOWCHART



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V. RESULTS



With the help of ultrasonic sensor and temperature sensor detect the level of garbage collected in dustbin and check whether dustbin is full or not. If dustbin is full send message to respective municipality via laptop.

VI. CONCLUSION

Implementing our project in real-time we can reduce the various problem faced by human being created due to improper management of garbage in dustbin. With the help of different sensors we can detect the level of garbage in dustbin. The module will give information about garbage level to the concerned person via laptop.

REFERENCES

- [1] A Andrea zanella, Nicola Bui ,Angelo Castellani, Lorenzo Vangelisea, Michele Zorzi. "Internet Of Things For Smart Cities." IEEE Internet of things journal, vol.1, No.1, February 2014.
- [2] As Prof. S.A. Mahajan, Akshay Kokane, Apoorva Shewale, Mrunaya Shinde ,Shivani Ingale, "Smart Waste Management System using IoT". International Journal of Advanced Engineering Research and Science (IJAERS) [Vol-4, Issue-4, Apr- 2017].
- [3] B. Vinothkumar, K. Sivarajani, .Sugunadevi, V. Vijayakumar "IOT based Garbage Management System" International Journal of Science and Research (IJSR) ISSN (Online): 2319-7064 Index Copernicus Value (2015): 78.96 | Impact Factor (2015): 6.391 Volume 6 Issue 3, March 2017.
- [4] Ms. Ankita Khedekar, Ms. Monika Khobragade, Ms. Neha Sawarkar, Ms. Nikita Mahadule, Ms. Snehal Khasbage, Ms. Sonika Kolhatkar, Prof. Tikesh Harinkhede "Garbage Management Of Smart City Using IoT" International Journal of Research In Science & Engineering e- ISSN: 2394-8299 Volume: 3 Issue: 2 March-April 2017.
- [5] P. Sukholthaman, K. Shirahada, *Proceedings of PICMET '14 Conference: Portia International Center for Management of Engineering and Technology; Infrastructure and Service Integration*, (2014)
- [6] C. K.M. Lee, T. Wu, "International Conference on Industrial Engineering and Engineering Management", 798 (2014).
- [7] Kanchan Mahajan, "Waste Bin Monitoring System Using Integrated Technologies", International Journal of Innovative Research in Science, Engineering and Technology, Issue 3, Issue 7, July 2014 .
- [8] Vikrant Bhor, "Smart Garbage management System", International Journal of Engineering Research & Technology (IJERT), Vol. 4 Issue 03, March-2015 2000.
- [9] Narayan Sharma, "Smart Bin Implemented for Smart City", International Journal of Scientific & Engineering Research, Volume 6, Issue 9, September-2015
- [10] Adil Bashir , "concept Design and implementation of the Automatic waste management system", International Journal on recent and novation trends in computing and communication ISSN 232-869 volume: issue: 7.
- [11] John A. Stankovic, "Internet of Things", Life Fellow Research directions for the IEEE.
- [12] Islam, M.S. Arebey, M. ; Hannan, M.A. ; Basri, H, "Overview for solid waste bin monitoring and collection system" , Innovation Management and Technology Research (ICIMTR), 2012 International Conference , Malacca, 258 – 262