

Garbage Management for Smart Cities Using Internet of Things

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Abstract - Garbage Management of smart city using “Internet of Things”. In our daily life we produce a lot of waste or garbage as last few years witnessed a tremendous rate of population, and it’s also important to manage that garbage properly generated by peoples. By using Internet of things it will easy to manage all the garbage. I will use some IOT devices for the management of garbage of smart city, smartly. The Devices that will make it complete are “Arduino Uno, Raspberry Pi, ESP8266, MQTT Protocol. It Is will also support the “Swachha Bharat Abiyan” campaign by Prime Minister Of India. The purpose of the mission is to cover all the rural and urban areas of the country to present our country as an ideal country to the world. Waste Management is one of the primary things to solve the problem that the world faces to developing country. The main aim of the work is to develop a smart intelligent garbage alert system to for proper management of garbage.

Keywords- Arduino UNO microcontroller, ESP8266, MQTT Protocol, Raspberry Pi, Ultrasonic Sensor, etc.

I. INTRODUCTION

Garbage may consist of the unwanted material left over from City, Public area, Society, School, College, Home, Office etc. This project is for “Smart City” based on “Internet of Things” to Manage Waste or Garbage Smartly. Therefore for smart lifestyle, cleanliness is necessary, and cleanliness is starts with Garbage Bin. This project will improve the way of garbage management and minimize the waste disposal problem. The Internet of Things (IOT) is a recent communication paradigm that envisions near future, in which the objects of everyday life will be equipped with microcontrollers, transceivers for digital communication, and suitable protocol stacks that will make them able to communicate with one another and with the users, becoming an integral part of the Internet [5]. This project which is based on “IOT Garbage Monitoring System” is a very innovative and smart system that will help to keep the cleanliness of our cities.

II. LITERATURE SURVEY

The system is designed in such a way that it avoids the overflow of the dustbin by sending alerts to The borough with help of a microcontroller linked with a web server using IOT [3].

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 smart garbage bin with weight

sensor, IR sensor and Wi-Fi module for transmission of data [4]. Some of the following garbage Type Packaging waste, Agricultural waste, Inorganic waste, liquid waste etc. In solid waste bin monitoring system garbage bin set the public place then Camera set for garbage bin location. The camera captured image for garbage bin. Radio Frequency Identification (RFID), GPS and GIS send image for work station. The RFID reader and camera are mounted in the truck, when truck comes closer to the bin RFID reader communicated RFID tag. & send all information. The System is use controlling Hut. This Controlling Hut is SMS Technology. The GPS and GPRS mapping server to analyzing data of various location. The control station compiled all the information and stored in the system database. The bin status and waste truck was monitored [5].

III. METHODOLOGY

We are using the Arduino Uno board, ultrasonic sensor, GSM module and MATLAB based GUI [1]. Our project can be implemented for apartment type buildings that may also include industries wherein, the demanded resource for the implementer or the designer is provided. Installation of the process includes tech bins, conveyor belts (one for dry waste & the other for wet waste), IOT module to instruct & Underground bin facility. These tech bins (one for dry & another for wet waste) are kept on the either corner side of the apartment (in each Floor) where the owner opts, but it should be a centralized view to ease the construction process. If the opted place of owner has all the resources given to the implementer then, the installation of project

will be executed. The bins are infixed with level sensor (ultrasonic sensor) to indicate the weight and level of garbage in the bin.

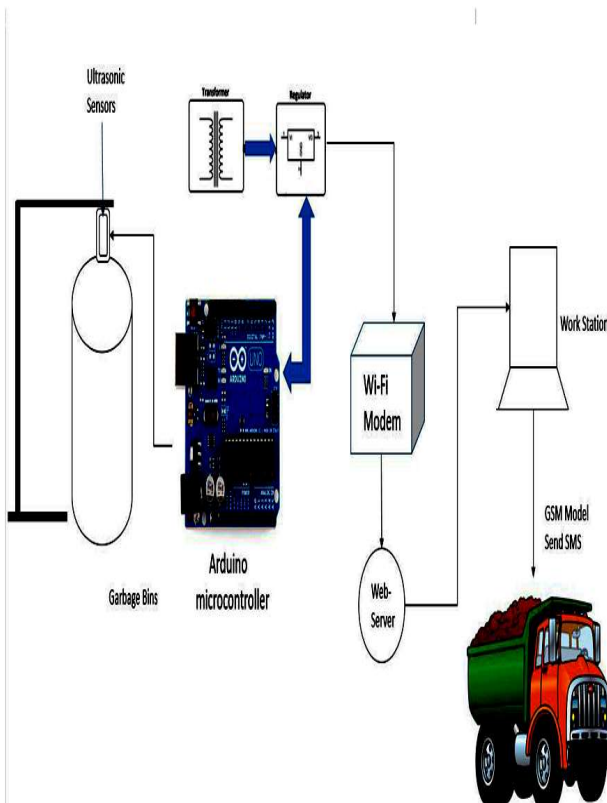


Fig1: System Architecture Diagram.

These bins have lids which will close automatically if it is 80% garbage in all bins in which automatic rotation of the conveyor belt is performed. If in partial cases, then the manual operation is done by switching the switches (one for backward & the other for forward) in each floor. When the operated bin reaches the ground floor, then the waste is dumped in the underground bin. When the conveyor belt rotates for one cycle the information or the database of the dustbin is made enabled to people to look in into the application called “Things view” (an android application) & for the municipal corporation of the city, via the mobile communication network, the signals are sent to a web-based software application which is viewed by waste management company [2].

Considering the need of modern technology the smart garbage bin can expensive but considering the amount of dustbin needed in India, expensive garbage bin would not be a prior experiment that is why we have decide to use based sensors to reduce its cost and also make it efficient in applications[4].

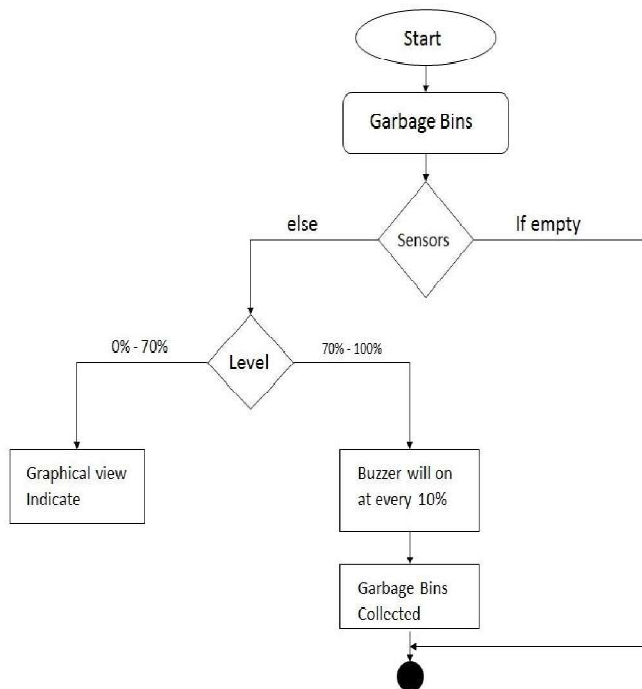


Fig.2 Flowchart of proposed work.

This implementation of Smart Garbage collection bin using IOT, IR sensor, microcontroller and GUI. This system assures the cleaning of dustbins soon when the garbage level reaches its maximum. If the dustbin is not cleaned in specific time, then the record is sent to the higher authority who can take appropriate action against the concerned contractor [6].

IV.CONCLUSION

Internet of Things for garbage management of smart city is improving the way living. It is helpful for cleanliness and for supports our national campaign Started by government of India. With the Help of IOT Devices that are – Arduino UNO, Raspberry pi, Sensors etc.

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