PROJECT FULL TITLE

A PROJECT REPORT

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Electronics & Telecommunication

Submitted by

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SAVITRIBAI PHULE PUNE UNIVERSITY

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CERTIFICATE

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This is to certify that

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Class: BE(E&TC) have satisfactorily completed Project titled, '**Project Name**' under my supervision as a part of Bachelor of Engineering in **Electronics and Telecommunication (2020-2021)** of Savitribai Phule Pune University.

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Declaration

We declare that this written submission represents our ideas in our own words and where others' ideas or words have been included, we have adequately cited and referenced the original sources. We also declare that We have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea/data/fact/source in our submission. We understand that any violation of the above will be cause for disciplinary action by the Institute and can also evoke penal action from the sources which have thus not been properly cited or from whom proper permission has not been taken when needed.

STUDENT NAME .....

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Date :

Abstract

The new world of system and network model is being done by the increase of various strategies. Moreover smart strategy are rooted in the surroundings to check and collect exact information.IT can also be implemented in the field of waste management system. Trash management involves not only the gathering of the trash in the ground but also the transfer and removal to the suitable locations. This article represents a comprehensive and detailed investigation of waste management models. Exclusively, this paper focuses on the execution of smart procedure as a key enabling technology in contemporary trash management system.

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Chapter 1

Introduction

1.1 Overview of the Monitoring System

IoT or Internet Things refers to the network of connected physical objects that can communicate and exchange data among themselves without the desideratum of any human intervention. It has been formally defined as an "Infrastructure of Information Society" because IoT sanctions us to amass information from all kind of mediums such as humans, animals, conveyances, kitchen appliances. Thus, any object in the physical world which can be provided with an IP address to enable data transmission over a network can be made part of IoT system by embedding them with electronic hardware such as sensors, software and networking gear.

IoT is different than Internet as in a way it transcends Internet connectivity by enabling everyday objects that utilizes embedded circuits to interact and communicate with each other utilizing the current Internet infrastructure Since then the scope of IoT has grown tremendously as currently it consists of more than 12 billion connected devices and according to the experts it will increase to 50 billion by the end of 2020. With the advent of IoT both manufacturers and consumers have benefited. Manufacturers have gained insight into how their products are used and how they perform out in the real world and increase their revenues by providing value added services which

enhances and elongates the lifecycle of their products or services. Consumers on the other hand have the ability to integrate and control more than one devices for a more customized and improved user experience.

In this paper, we are going to propose a system for the immediate cleaning of the dustbins. As dustbin is considered as a basic need to maintain the level of cleanliness in the city, so it is very important to clean all the dustbins as soon as they get filled. We will use ultrasonic sensors for this system. The sensor will be placed on top of bin which will help in sending the information to the office that the level of garbage has reached its maximum level. After this the bin should be emptied as soon as possible. The concept of IoT when used in this field will result in a better environment for the people to live in. No more unsanitary conditions will be formed in the city. With the help of this system minimal number of smart bins can be used around the whole city and the city will still be much cleaner.

There has been an unprecedented growth in the number of devices being connected to the Internet since past few years. All these devices connected to the internet are part of the IoT infrastructure which can communicate with each other. The IoT network consists of embedded electronics, sensors and software that allows these devices to send and receive data among each other. This is why it is beneficial to use such an existing infrastructure for designing the proposed security system. The disadvantages of the existing system are that the employees have to go and check the bins daily whether they are filled or not, it results in high cost. If the bin doesn't get emptied on time then the environment becomes unhygienic and illness could be spread. The proposed system will help in removing all these disadvantages. The real-time information can be gained regarding the level of the dustbin filled on the system itself. It will also help in reducing the cost as the employees will have to go only at that time when the bin is full. This will also help in resource optimization and if the bins will be emptied at time then the environment will remain safe and free from all kinds of diseases. The

cities will become more cleaner and the smells of the garbage will be much less. We are living in an age where tasks and systems are fusing together with the power of IOT to have a more efficient system of working and to execute jobs quickly! With all the power at our finger tips this is what we have come up with.

The Internet of Things (IoT) shall be able to incorporate transparently and seamlessly a large number of different systems, while providing data for millions of people to use and capitalize. Building a general architecture for the IoT is hence a very complex task, mainly because of the extremely large variety of devices, link layer technologies, and services that may be involved in such a system.

One of the main concerns with our environment has been solid waste management which impacts the health and environment of our society. The detection, monitoring and management of wastes is one of the primary problems of the present era. The traditional way of manually monitoring the wastes in waste bins is a cumbersome process and utilizes more human effort, time and cost which can easily be avoided with our present technologies. This is our solution, a method in which waste management is automated. This is our IoT Garbage Monitoring system, an innovative way that will help to keep the cities clean and healthy. Follow on to see how you could make an impact to help clean your community, home or even surroundings, taking us a step closer to a better way of living.

The idea struck us when we observed that the garbage truck use to go around the town to collect solid waste twice a day. Although this system was thorough it was very inefficient. For example let's say street A is a busy street and we see that the garbage fills up really fast whereas maybe street B even after two days the bin isn't even half full. This example is something that actually happens thus it lead us to the "Eureka" moment!

What our system does is it gives a real time indicator of the garbage level in a trashcan at any given time. Using that data we can then optimize waste collected is either dry or liquid using sensor. It allows trash collectors to plan their daily/weekly pick up schedule. An Ultrasonic Sensor is used for detecting whether the trash can is filled with garbage or not. Here Ultrasonic Sensor is installed at the top of Trash Can and will measure the distance of garbage from the top of Trash can and we can set a threshold value according to the size of trash can. If the distance will be less than this threshold value, means that the Trash can is full of garbage and we will print the message "value of moisture sensor" on the message and if the value is less than 300 the motar will rotate towards the dry side and when it is greater than 300 it will rotate towards the liquid side.

The mixing waste management is a big challenge in the any country. The smart garbage collection system is used of the smart home and smart city. The system is used of the separate garbage such as dry garbage is separate container and the wet garbage is separate container with the help of a motor mechanism and the IR sensor though. The garbage is place of motor mechanism then the IR sensor detects and the moisture sensor is the find out the garbage is wet or dry. Suppose the garbage is wet then the motor mechanism is rotated to left side and if the garbage is dry then motor mechanism is rotated of right side and the garbage is collected in the container. When the garbage container is full then it will display to the nearest municipal office that the container is full and send the code or address. And the municipal office will inform of the garbage collector driver via sms through GSM module .The total process is wireless through and IOT based through.

An efficient waste management is a pre requisition for maintain a safe and green environment as there are increasing all kinds of waste disposal. There are many technologies are used for waste collection as well as for well managed recycling. The Information gathering is big and cumbersome. The concurrent effects of a fast national

growth rate, of a large and dense residential area and a pressing demand for urban environmental protection create a challenging framework for waste management. The complexity of context and procedures is indeed a primary concern of local municipal authorities due to problems related to the collection, transportation and processing of residential solid waste today the garbage collection is manual which takes a lot of efforts and is time consuming.

In this project humans and vehicles were used to do that work and here we are using automatic technique to detect garbage level in Garbage Can. For that, ID number is given to each can. Also as soon as the Garbage Can is full / over flowing then a SMS is sent to the server from where all the garbage collection vehicles are allotted.

Chapter 2

Literature Survey

2.1 Start sections

2.1.1 Including figures

Write here

Figure 2.1: A boat.

Figure 2.1 shows a boat [3].

Chapter 3

Proposed Methodology

3.1 Start sections

3.1.1 Table creation

Write here [4]

Table 3.1: Cost of fruits in India

Fruit details		Cost calculations		
Fruit	Type	No. of units	cost/unit	cost (Rs.)
Mango	Malgoa	18	50	
	Alfonso	2	300	1,500
Jackfruit	Kolli Hills	10	50	500
Banana	Green	10	20	200
			Total cost (Rs.)	2,200

3.2 Requirement analysis

Explain about the appropriate techniques, resources, and modern engineering tools requirement in your project. (This is mandatory section)

3.3 Impact analysis

Impact of project on society

Impact of your project on society (This is mandatory section)

Impact of project on environment:

Impact of your project on environment (This is mandatory section)

3.4 Professional ethical practices to be followed

Please mention about the professional ethics and responsibilities and norms of engineering practices to be followed. (This is mandatory section)

Chapter 4

Project Implementation

4.1 Start sections

4.1.1 Name of subsection

Write here

4.2 First Section

We will demonstrate the creation of equations with some samples. Let us start with the model of an inverted pendulum:

$$\frac{d}{dt}\begin{bmatrix} x_1 \\ x_2 \\ x_3 \\ x_4 \end{bmatrix} = \begin{bmatrix} 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \\ 0 & -\gamma & 0 & 0 \\ 0 & \alpha & 0 & 0 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \\ x_3 \\ x_4 \end{bmatrix} + \begin{bmatrix} 0 \\ 0 \\ -\delta \\ -\beta \end{bmatrix} \Delta\mu \tag{4.1}$$

Proportional, integral, derivative controller is most popular in industry. It has three tuning parameters: K, τ_i and τ_d. The integral mode includes the term $\int_0^t ()dt$.

$$u(t) = K\left(e(t) + \frac{1}{\tau_i}\int_0^t e(t)dt + \tau_d \frac{de(t)}{dt}\right) \tag{4.2}$$

Let us go through the discrete equivalent of equation 4.2

$$u(n) - u(n-1) = K \left[e(n) - e(n-1) + \frac{T_s}{2\tau_i}\{e(n) + e(n-1)\} + \frac{\tau_d}{T_s}\{e(n) - 2e(n-1) + e(n-2)\} \right] \tag{4.3}$$

Section 4.2 shows how to write equations.

Chapter 5

Results and Discussion

5.1 Start sections

5.1.1 Name of subsection

Write here

Chapter 6

Conclusions and Future Scope

6.1 Start sections

6.1.1 Name of subsection

Write here

References

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