Department of Computer Science

University of Gujrat

WASTE CONTROL USING SMART BIN

Submitted By:

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Supervised By:

Dr. Abdul Rehman

DECLARATION

I certify that project title **Waste Control Using Smart Bins** is under my supervision with students of M. Atif Bashir 16201519-009, Daud Butt 16201519-023 and Hamza Khalid 16201519-108. Faculty of Computing & Information Technology, University of Gujrat, Pakistan, worked under my supervision.

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Dated: _____

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Final Year Project Proposal

1.1 Introduction

Main reason behind excessive pollution is absence of a waste management system to manage garbage. People dump garbage in open, empty spaces available in the vicinity. It creates unhygienic condition for the people and creates bad smell around the surroundings, which leads spreading diseases to the people living in such environment. A waste management system works by placing bins in different areas and collecting waste from them after regular intervals. In some areas, bins may overflow due to unavailability or frequency of garbage collection vehicles. To avoid such situations, we are going to implement a project called IOT Based waste management using smart dustbin. In this system, multiple dustbins are located throughout the city or the Campus. These dustbins are provided with a sensor which detects the level of the waste and a GPS device for getting the location and to identify which bin is full. Data is transmitted by using 2G/3G network. When the level of the bin exceeds, the device will transmit the reading along with the unique ID provided. It will inform the status of each bin in real time so that concerned authority can send the garbage collection vehicle only when the bin is full. By implementing this system resource optimization, cost reduction, effective usage of smart bins can be done.

1.2. Project Title:

WASTE CONTROL USING SMART BINS

1.3. Project Overview statement:

One of the essential components of a smart city is a Clean and Green Environment and the crux of it is a Smart, Intelligent, and Connected Waste Management System. Real time waste management system by using smart bins to check the level of bins whether the bins are full or not, through this system the information of all smart bins can be accessed from anywhere and anytime by the concern person. The concerned person with the specific area can have alerts on mobile app. Using prediction based on real time and passed data from the sensors, algorithms create efficient routes. In this way the collection point visited and shortens the path. Driver can easily navigate through the app using goggle maps. Administrator can track the driver in working hours. With performance analysis administrator can generate daily reports as well. It makes the entire collection system smart and controllable by eliminating the overflow problems by reducing time on waste collection, vehicle numbers and fuel consumption. We can reduce the cost and protect the environment.

Project Overview Statement Template

Project Title: WASTE CONTROL USING SMART BINS

Project Manager: Mr. Muhammad Sami Ullah

Project Members:

Name	Registration #	Email Address	Signature
Muhammad Atif Bashir	16201519-009	16201519-009@uog.edu.pk	
Daud Rauf	16201519-023	16201519-023@uog.edu.pk	
Hamza Khalid	16201519-108	16201519-108@uog.edu.pk	

Project Goal:
To smartly manage the waste using less resources

Objectives:

Sr.#	
1	Design a smart bin
2	Collect data from bins on server
3	Providing Shortest route to driver
4	Reducing human time and effort
5	Resulting in healthy and waste ridden environment.

Project Success criteria:

- Complete Android and web App
- Accurately detects the level of waste
- Provide Shortest Route

Assumptions, Risks and Obstacles:

- By using multiple sensors cost of the bin may increase

Type of project: Development

Target End users: Layman

Development Technology: Object Oriented

Platform:

- Web Application
- Mobile Application

Approved By:

Date: 23-Sep-2019

1.4. Project Goals & Objectives:

Smart waste management is the idea from which we can smartly mange the waste and control lots of problems which disturbs the society in pollution and diseases. The waste management has to be done instantly else it leads to irregular management which will have adverse effect on nature. The Smart waste management is compatible mainly with concept of smart cities. The main objectives of our proposed system are as follows:

- Design a smart bin
- Collect data from bins on server
- Providing shortest route to driver
- Reducing human time and effort

- Resulting in healthy and waste ridden environment.

1.5. High-level system components:

- Login/Signup
- Installation of buckets
- Smart Bin Tracking
- Manual Bin Tracking
- Data Analyzer
- Transparent Funding

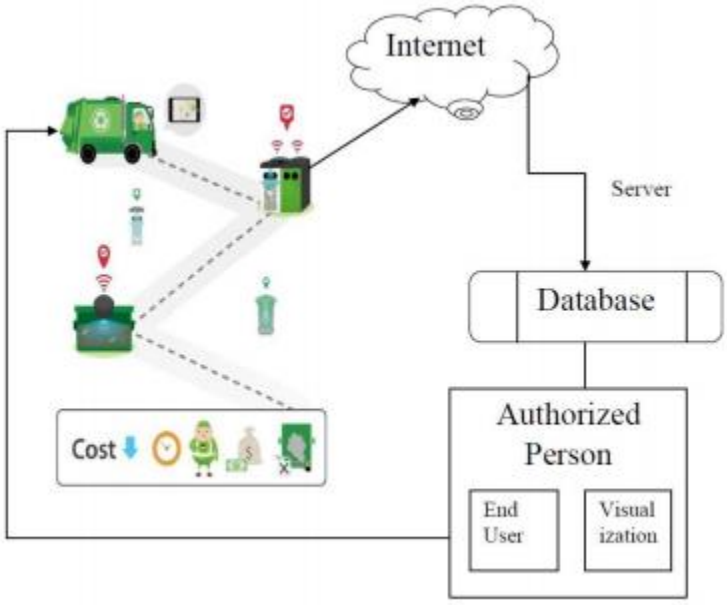
1.6. List of optional functional units:

Cost of the smart bin can be a weak part of this system .So if the society cannot bear the cost of smart bins, we will add an extra module from which a person can intimate voluntarily that which bin is full by sending the location using mobile app. We allow only authentic persons of specified areas to intimate the system to avoid any inconvenience. To fulfill all the goals, team really need funds. Society can fund the existing committee. So we'll add a new module for building trust and transparency from which user can keep an eye on funds, how team keep those donation flowing? Being genuine, authentic and transparent is unrivaled in importance. It can mean full for supporters who truly want to help the cause.

1.7. Exclusions:

The Proposed system is not applicable to online payment module.

1.8. Application Architecture:



1.9. Gantt chart:

Task	Start	End	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
Proposal & idea	03/09/2019	23/09/2019								
SRS	26/09/2019	25/11/2019								
Design	26/11/2019	24/12/2019								
Coding	25/12/2019	24/02/2020								
Testing and Implementation	25/02/2020	24/03/2020								
Maintenance	25/03/2020	24/04/2020								

1.10. Hardware and Software Specification:

Mobile

Android Nougats 6.0 or greater.

Desktop

Intel Pentium IV or higher.

Ram 4 GB or higher.

1.11. Tools and technologies used with reasoning:

Android Studio	For Front-End designing of an Application and limitation
Arduino	For Circuitry on-board including the power supply jack and input-output pins and everything in between. It is simply a ready to use micro-controller based board.
Visio	For UML Diagrams and Documentation
PIC Microcontroller	They can be programmed to be timers or to control a production line and much more.
Node.js	For Front-End designing of an Application and limitation
Flutter	Mobile Application