Abstract

Location Based Garbage Management System for Smart City

The project named as 'Location Based Garbage Management System for Smart City' is a web application project. There has been tremendous increase in solid waste generation in last few years. Solid waste management is a key and challenging issue of environment in the whole world. Hence, there is a need to develop an efficient system which can eliminate this problem or at least reduce it to the minimum level. In today's era, every government across the globe is planning to build smart cities or try to transform existing cities into smart cities. Collection of solid waste is a crucial point for environment and its impact on society should be considered seriously in smart cities infrastructure.

Smart cities integrate multiple mobile or websolutions to build a comfortable human habitation. One of these solutions is to provide an environmentally friendly, efficient and effective garbage management system. The proposed system, where admin manage the garbage app for full online based mointoring and analyze the system. Her admin handle bins, driver, complaints from user and work report from driver. This paper proposes a cost-effective mobile or web based system for the government to utilize available resources to efficiently manage the over whelming amounts of garbage collected each day, while also providing a better solution for the inconvenience of garbage disposal for the citizens.

Users

Administrator: -

- Login
- Create Garbage bin
- Manage garbage bin
- Manage driver
- View Garbage Report
- View complaints from public

General Public: -

- Register
- Login
- Register complaint
- My complaint & status

Driver: -

- Login
- Check daily work updates
- Choose best route
- Update garbage load

Main Functionalities

Administrator: -

- **Login**

The main activities in the application are the admin login page for admin. The other modules are followed by this login page. This module records only admin and password of the admin.

- **Create Garbage bin**

Admin can create a garbage bin for different areas. Which be used of wasted collections from the areas then trucks can contain the garbage bin.

- **Update/Delete garbage bin**

Admin will be update the new garbage bin or modified garbage bin and also deleted the broke garbage bin, not used garbage bin.

- **Manage driver**

Admin can be manage the all drivers and maintain best route drivers.

- **View Garbage Report**

Admin can be view the garbage reports from the all areas and maintain the whole reports.

- **View complaints from public**

Admin can be view the complaints from the public. Then, the admin will retify the complaints.

General Public: -

- **Register**

Public has to register their basic details includes house number to get access with this application service.

- **Login**

Once they have registered they need to login to avail the service at the needy time.

- **Register complaint**

A public can be arising the compliant for garbage container of our locality is overflowing due to non-cleaning for many days. The rotten waste materials emanating bad smell thus making the people of the nearby area to wear a scarf around their nose.

- **My complaint & status**

A public can be view the compliant and check the status for complaints.

Driver: -

- **Login**

The main activities in the application are the driver login page for driver. The other modules are followed by this login page. This module records only driver and password of the driver.

- **Check daily work updates**

A driver will check the daily work updates and then the driver relocate for the garbage collections.

- **Choose best route**

  A driver will choose the best route of corresponding areas. Then driver can choose the shortest root of areas.

- **Update garbage load**

  A driver will update the garbage load of container. How much will contain from per day. It will update to the admin.

Natural System study

Employees heading for their workstations every morning. For all those people, there are just not enough garbage bins available. On the streets of urban cities, hundreds of people are passing the same location around one minute. The obvious solution to this is for the cleaning staff to staynear garbage bins every day till they fill up to clean them. Thisis not a real solutThere are some notable negative effects when consideringthe garbage bins always being full. One of the main effects is thesurrounding area starting to smell and be very unpleasant. When the garbage bins are full people put their trash on sides of thegarbage bins.

Disadvantage

- Time consuming and less effective
- High costs.
- Unhygienic Environment and look of the city.
- Bad smell spreads and may cause illness to human beings.
- More traffic and Noise.

Designed System study

- The proposed system overview for this system. Solid waste management can be broadly categorized as segregation, collection, and transportation. And also all the house owners register the application based on the area.

- The proposed system, where admin manage the garbage app for full online based mointoring and analyze the system. Her admin handle bins, driver, complaints from user and work report from driver.

- The server will collect the data and store them only a database. This data will be analyzed and displayed on two different dashboards that can be accessed by the workforce and clients.

- Using data analytics, reports will be generated which can be monitored by the admins through the admin dashboard.

- Based on the data collected, garbage trucks can be given routes generated through various algorithms and google maps API to efficiently route through all necessary garbage bins and finally reach the dumping site .

Advantages

- Real time information on the fill level of the dustbin.
- Deployment of dustbin based on the actual needs.
- Cost Reduction and resource optimization.
- Improves Environment quality
- Fewer smells
- Cleaner cities
- Intelligent management of the services in the city.
- Effective usage of dustbins.

Software Requirements: -

Front End: HTML5, CSS3, Bootstrap

Back End: Python , PostgreSQL

Hardware Requirements: -

Processor	:	Intel 3
Installed memory (RAM)	:	8GB
Hard Disk	:	500 GB
Operating System	:	Windows 11 - 64 bit

Main Project

This Waste management is one of the serious challenges of the cities, the system now used in cities, we continue to use an old and outmoded paradigm that no longer serves the entail of municipalities, Still find over spilled waste containers giving off irritating smells causing serious health issues and atmosphere impairment. The Smart Waste Management System will simplify, with the Web applications and mobile phone, the solid and hydric waste inspecting process, and the management system of this presentation's total collection process. The proposed system is a GPS based. The suggested device and implementation will track waste storage and monitor the vehicle's waste driver. This method helps to make the customer aware of accountability behind the job such as the system for solid waste inspection and management, integrating communications technology for truck control systems such as GPS.

Users

Administrator: -

- Login
- Create Garbage bin
- Manage garbage bin
- Manage driver
- View Garbage Report
- View complaints from public
- Employee
- Waste Classification and Segregation
- Google Map
- QR code
- Chat Bot

General Public: -

- Register
- Login
- Register complaint
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Driver: -

- Login
- Check daily work updates
- Choose best route
- Update garbage load

Employee: -

- Login
- Check daily work updates
- Update garbage load
-

- **Waste Classification and Segregation**

Machine learning (ML) is a subfield of artificial intelligence (AI) that uses algorithms to analyze and identify patterns in data. It can be used for waste classification and segregation to automate the process of identifying different types of waste and separating them into distinct categories. This can be done through various ML techniques, such as image recognition and classification, which can help to identify objects in waste images and assign them to appropriate categories.

Machine learning can be used to classify and segregate waste in a number of ways. One approach is to use computer vision techniques, such as image recognition or object detection, to identify different types of waste in images or videos. These algorithms can be trained on large datasets of waste images and can automatically classify new images into different waste categories, such as paper, plastic, glass, and metal.

- **Chat Bot**
  Answering queries based on AI

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