

Smart City Hygiene Management using Android Application

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Abstract: - The center of a town depends on its purification of Air, cleanliness of the roads and highways and overall it's close atmosphere. Moving towards our glorious goal of vision 2020 as a developed and prosperous nation, cleanliness is one of the biggest need. 'Swachh Bharat Abhiyan' being our motto the invention of 'Smart Toilet' and 'Smart Dustbin' are done. Folks living within the town have to be compelled to suffer from numerous causes if the cleanliness is not present. Totally different varieties of Diseases opened up. There are many garbage bins available and also there are many public toilets are being made by the government, but usually when people go out in some new places they don't have ideas about them or their locations. The method's design gathers such information as well as transmits it via a network of wireless type. This paper can be helpful to encourage the clean India project in majority. In future, it can show the emerging part in clean India scheme. In this proposed method, sensing of the dustbin's trash level and public toilets is done by sensors as well as information is transmitted to the official mobile station via GPS module.

Key Words:— *Smart Dustbin, Smart Toilet, Cleanliness, GPS.*

I. INTRODUCTION

Air best is one of the foremost environmental and health concerns in big cities. Air pollutants are attributed to herbal or guy-made sources and might take the shape of solid particles, liquid droplets or gases. Waste pollution will increase at an alarming price all around the world that is the foremost cause of air pollution. In Bangladesh, it's miles established in a speedy speed, in particular within the capital metropolis dhaka. one of the reason behind is that humans are not the usage of the dustbin in a right way and every so often the city organization is not aware enough to smooth the city as an end result unique kinds of fitness diseases like allergies, pneumonia, asthma, and so on attacks. It is also very tough for the human beings to guide a wholesome life the branch of environment in Bangladesh and the Norwegian institute for air research measured the dust awareness in Dhaka metropolis for a period of 24 hours and that they observed that the end result surpassed three instances the criminal restriction.

Everybody uses their private toilets and private dustbin or the service of door to door garbage collection vehicles in their day to day life. The problem is that there is no such system to track the public toilets and garbage bin or garbage collection vehicles. Then there comes a secondary problem that the people have no idea about the location of the nearby garbage bins and public toilets especially when they are standing in an unknown or new area. So they usually end up by throwing the

garbage here and there. This leads to the creation of unhygienic city. This project is very useful to detect the garbage bins and public toilets that are near and far from you.

II. LITERATURE SURVEY

Solid waste monitoring and management using RFID, GIS and GSM. Authors – Maher Arebey, M A Hannan, Hassan Basri and Huda Abdullah. (Dept. of Electrical, Electronic and Systems Engineering, National University of Malaysia, 43600 Bangi, Selangor, Malaysia)

Tracking and localization system using Android mobile phones. Finds persons in case of accident and give a set of necessary Information for rescue. The system sends the GPS coordinates of the person, display the coordinates on a map. Authors –Adela Puscasiu, Alexandra Fanca and Honorium Valean. Automation Department, Technical University of Cluj - Napoca, Cluj - Napoca, Romania.

Smart City Carpooling Mobile Application Based on Intelligent Route Keywords: Carpooling Service, intelligent rout merging, Global Positioning System, urban traffic management, Google map. Prof. S. U. Kadam, Mahesh W. Nimje, Sheetal Kode, Vaibhav Talegaonkar, Anand Sangle. (India) International Journal of Science and Research (IJSR).

Mobile Tracking System Using OpenMTC Platform. Maman Abdurohman, Anton Herutomo, Vera Suryani Unified Communication Laboratory Universitas Telkom Bandung –

Indonesia.

Arduino Based Vehicle Tracking system (using external GPS and GSM modules).

Raspberry pi Based Vehicle Tracking system (using external GPS and GSM modules).

OLA CAB, JUGNOO, BLA BLA, Ibibo, Uber Lifo, GreenCar, Pune Carpool Android Applications.

Kitisak O sathanunkul, KittikornHantrakul, Part Pramokcho(2017) has proposed “Configurable Automatic Smart Urinal Flusher based on MQTT Protocol”, This paper examines one probable way to cut the wastage of clean water used in a public toilet. [1]. The system uses MQTT as an underlying communication protocol. The protocol is used in gathering, governing, powerful and correcting the system. The results in the testing environment show that using a flushing duration for 2.5 seconds is enough to satisfy most users while wasting clean water as less as possible. There are two part are involved here. They are, 1. Automatic Flusher Part (AFP) 2. Server part The AFP detects if there is an object in front of its infrared sensor. When a user stands in front of the urinal, an infrared sensor can detect the user.

If the user keeps staying in front of the sensor for 3 seconds continuously, it is considered that a user is currently using a urinal. After the urinal has been flushed AFP International Journal of Pure and Applied Mathematics Volume 119 No. 15 2018, 3061-3068 ISSN: 1314-3395 (on-line version) url:<http://www.acadpubl.eu/hub/>

Special Issue <http://www.acadpubl.eu/hub/3061> unit also sends a MQTT message about it usage data to the server part. In server part, it receives the usage data from AFP unit. The usage data will be stored into a database for a future use.

D. Kadge, A. K. Varute, P. G. Patil, P. R. Belukhi (2016) has proposed “Automatic Sewage Disposal System for Train”, Indian railways have 114,500 km of total track over a route of 65000 km and 7500 stations. While travelling by the train everyone expects healthy and hygienic surrounding. Feel uncomfortable due to the waste on the platform and the allied foul smell. [2] Creates bad impression on foreign tourist. sanitation problem causes due to system in which train toilets dispose human waste openly on to tracks. In this system, they are using two mechanisms. They are sewage disposal mechanisms and track changing mechanisms. In the sewage disposal mechanisms, the ultrasonic sensor and position sensor is used. The ultrasonic sensor can detect the depth of the sewage tank and the position sensor detects the proper place to dispose the sewage. After the proper detection of particular place, the solenoid valve on. Then the sewage disposal is done.

III. METHODOLOGY

The Android application will be installed on user’s Android smartphone as well as on the Android devices of different garbage collection vehicles drivers. When user will open that application on his/her android smartphone, he/she will get different facilities options in that application’s main window.

In this paper, the sensors of ultrasonic type senses level of garbage being filled up in the waste - bins. The Arduino is Programed so that when the level reaches a specific mark sensing info is dispatched prompting to empty it. Same is illustrated in Fig.1.

Real-time online monitored garbage condition of collecting status is under effective observation on the cloud server. one of them will be Track Garbage Vehicles and Garbage bins, Also public toilets. When user will click on that option, the application will use Google Maps Services and will open Google Maps in a new window within the application. The map will track and will show the locations of different garbage collection vehicles that are near or far from user. As well as the Android application will plot the locations of different garbage bins and dustbins that are near or far from him or her and this will be done by using SQLite database. In the same way locations of the public toilets will be searched in the nearby place from the user.

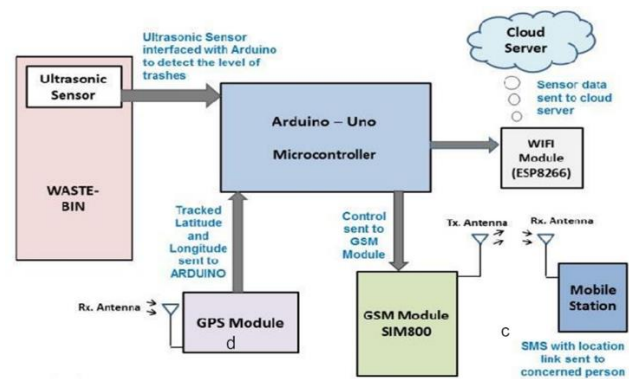


Fig.1. Block diagram of garbage monitoring System

The locations (i.e. geographical coordinates) of different stationary garbage bins and public toilets around the city will saved in the SQLite database. On the other side, the application will also have a window for making complains against different garbage related problems.

A sample of main interface is depicted in Fig. 2. as a sample of the working app showing locations of the nearby public toilets to the user or for whatever location and from wherever

user searches for its location and similarly the nearby dustbins will be shown if the user wishes to throw its garbage into the dustbins.

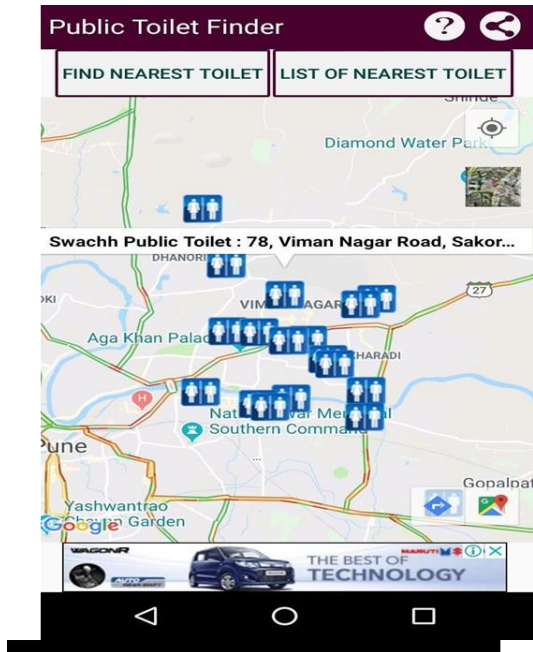


Fig.2. Public Toilet Finder

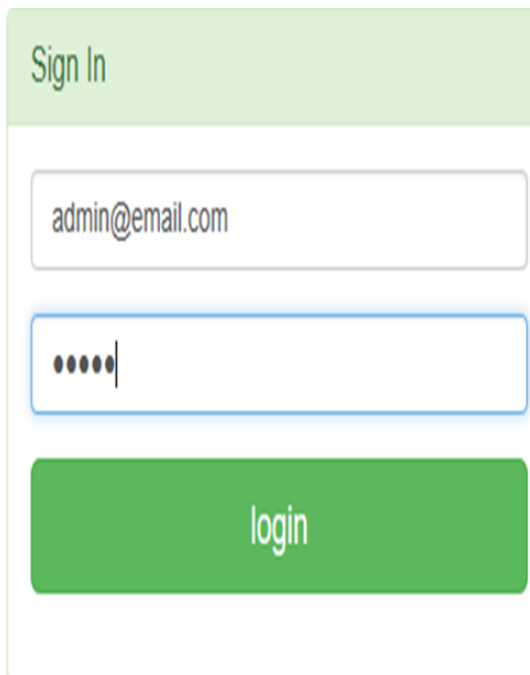


Fig.3. Screenshot of the login page

with latitude and longitude values which can be used to find the location of the device using google maps. This will be useful in our project for easy navigation of the dustbins and toilets that can be used by the user. In this application, the initial page will have two options. One will be for the user registration and the other will be for the user login. The user after registration will be able to see all the dustbins registered and also user can add the location of the new installed dustbins that are not registered in the software. The location parameters will be detected using the GPS module and the location will be found after calculating the position according to the latitude and longitude values received by the GPS module. This will help in cleaning the dustbins as soon as they get filled and in keeping the environment healthy. The feedback form will enable the authorities to assess themselves and to make changes according to the feedbacks of the people who throw the garbage in the dustbin. After filling the form, one can open the stored submission details on the cloud and will be displayed on the app which will be used by the garbage collectors and the authorities. Analysis of the data collected over the time can be done so that the predictability and chances of a particular dustbin getting filled at a particular time can be predicted and according to that analysis, the garbage collectors can schedule their garbage collecting strategies. This project will not only help the residents to experience a healthy environment around them but will also help the management to work efficiently. We have a website which shows the status of the bin. A URL will be provided to the user for accessing the website to view the status of the bin so that he can know every bin is filled to what level. This can help in prioritizing the cleaning of bins according to their filled status. Microcontroller takes the values from ultrasonic sensor and sends it to Firebase. Values from cloud can be retrieved using database which can be later reflected on the website showing status of each bin.

The provision of online monitoring of dustbin status with an alert when dustbins get filled and the navigation route to reach the dustbin location would be extremely helpful for the municipality that locally administer as well as to the user and also helps in locating the toilets in the most needy time when we are not at our home or hotel and are outside where we don't know the location of the nearby places and manage garbage with less human intervention. The method in proposal tries to better the present method in gathering garbage in India and would play a crucial role in "Clean India Mission".

The GPS (Global Positioning System) module provides us

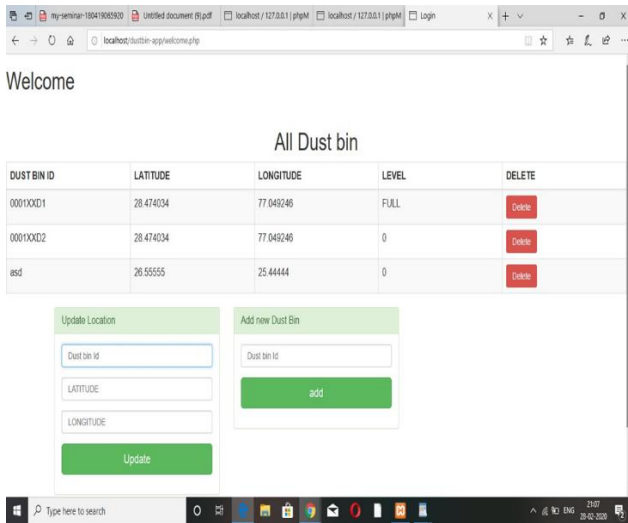


Fig.4. Screenshot of the project

IV. FUTURE ENHANCEMENTS

There is always a scope of improvement by using more efficient and advanced technologies. There can be many different modules which can be implemented with this project. The modules which can be included are of various domains ranging from IoT to ML to AI to Big Data Analytics. Smart dustbin can be improved to a large extent to include automatic segregation of different waste into biodegradable and non-biodegradable wastes so that a major issue hampering the solid waste management system can be resolved. With further improvement mechanism to shoo away animals and birds from feeding and polluting the environment can be done. Thus these measures can reduce Human cost involved and helps in reducing the overall cost of solid waste management aided by solid waste segregation at source itself and also by reducing the spread of pollution to a great extent. Moreover, from a social point of view the persons involved in garbage collection, segregation and disposal will be prevented from being infected and paves the way for their healthy well-being.

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