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Waste Management Using Incident Reporting System

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ABSTRACT: In current scenario, mobile and information technology have become an integral part of our lives. Using cloud, the system will make all the information related to the areas available on the Android Application to the various organization like Police, Municipal Corporation, News Papers, etc. during their investigation which would speed-up the entire process of tracking down the reported problems. A mobile application is made available to the common people in order to update the problems by capturing the image and the location of the area and is sent to the server and the responsible authority is informed. This system encourages people to take action on social issues and solve these problems as soon as possible by responsible authority.

KEYWORDS: Incident reporting, Garbage overflow, Waste management, Potholes.

I.INTRODUCTION

The goal is to work on the problems such as dustbin overflow in public areas, potholes on roads. Now-a-days mobile and information technology have become an integral part of our lives. Using cloud, the system will make all the information related to the reported areas available on the Android Application to the various organizations like Police, Municipal Corporation, News Papers, etc. People can compliant regarding the problems such as garbage overflow in public places, potholes on road, drainage overflow, etc. to responsible organization using android application. By capturing the image and tracking the location of the reported area using GPS, it is sent to the server and informed to responsible authority. Then the respective authority is responsible for allocating the problems to their respective employees and then it is solved by these employees. The notification of the problem solved is sent to the mobile of the user and authorities. The System generates the Negative and Positive ratings to the work solved within mention days.

II. OBJECTIVES

In incident reporting system three modules are designed for common user (android application), organization (web portal) and sensor module implemented on a dustbin. They have set with some specific function. If common user submits any compliant on android application. System send user's compliant to on organizations web portal. According to the compliant, system sets responsibility to particular Dept. and Dept. sets employees to work on that compliant in time limit. If organization completes work in time, system sends message to common user and generates positive or negative rates on their work and the readings of sensor are sent to the server which is then sent to the android application of employee so that he can take action on it.

III. LITERATURE SURVEY

Identifying an incident, Recognize and Respond to the problem are the goals of this paper. The GUI was developed in Extensive Mark-up Language (XML) which is parsed to a graphical representation in Android. To avoid 'blocking' GUI operation, time consuming Operations are run in background services resulting in a very responsive application.

Techniques to analyse the presence and level of electrical hazards have greatly evolved in recent years. Responding to countless emergency situations has given him a passion for safety and perspective on the role of human behaviour in averting these events.

A MIRS is a system which is used for response [1] Management. Typically, a report is initiated by a user and is then transmitted to a server. The server forwards the message to a set of response available teams which can be dispatched to a certain location. These systems comprise of both hardware and software and (depending on their capabilities) can be quite expensive.

A LBS-based disaster management system is discussed in [2] and it relies on wireless and satellite communications, which uses LBS through satellite information or GNSS. Some systems which accomplish this have been proposed and some are commercially available. In South Africa, two of the available systems include one by the Sysman Group [4] which consists of both hardware and software and one provided by Aurecon[3], which is computer based. The clear advantage of the system proposed in this paper is the fact that it runs on a smartphone and is much more flexible in terms of operation as it does not require any extra/dedicated hardware.

By intercepting locational requests by other applications installed on the same smartphone, it is also possible to update the user's current location passively. For the emergency component of the system, the user's current location can be determined actively or passively, or alternatively the user can be prompted to tap his/her location from a map with the map view centred on the user's last known location, P. S. Bangare *et al* have proposed similar system of Campus navigator android application[6]. The Software will be also checked for the quality as per the work by S. L. Bangare *et al* [7] [8] [9].

IV. SYSTEM ARCHITECTURE

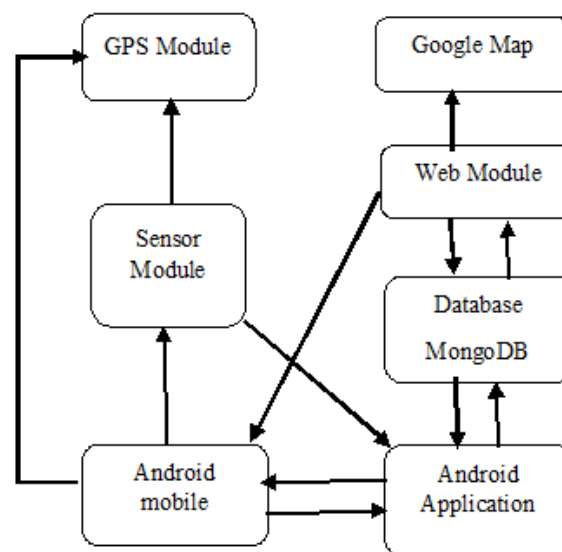


Fig1. System Architecture

A. DESCRIPTION OF ARCHITECTURE

❖ GPS Module:

- Gives the location of user.
- Location is sent to particular authority.

❖ The Web Portal using Mongo DB:

- User registration and assigning the user roles e.g. police, News Paper, Higher authority.
- Show the complaints related to the user.
- Assign the work to the particular employee.
- Change the status of the complaints.

❖ Database Mongo dB:

- Images location, complaints and the details about the user is stored in database.

❖ Android application:

- User registration.
- User Login.
- Send the report which contains the image, data, audio to the specific Depts.
- Edit the report.
- User can register complaint maximum 3 times per day.

❖ Sensors

- Ultrasonic sensor is used for object detection or level measurement with millimetre precision.
- Proposed application implements real time garbage monitoring system by using smart dustbins to check the fill level of smart dustbins whether the dustbin is full or not.
- The readings of sensor are sent to the server which is then sent to the android application of employee so that he can take action on it.
- GPS sensor is used to trace the location of dustbin where sensors are implemented

V. ALGORITHM USED**A. TRILATERATION ALGORITHM FOR GPS:**

Two dimensional trilateration algorithm is a localization method which uses circle geometry in a plane. Therefore, the algorithm makes through the geometrical formulas of circles. There are at least three reference points and corresponding distance values are required for 2D localization [5]. Orientation points indicate the tags on the wall and distance values are obtained from related RSSI values. Number of required circles is resolute according to resulting possible solutions. When only one distance value of a tag is considered, this resembles to infinite possible solutions around the Tags with same distances.

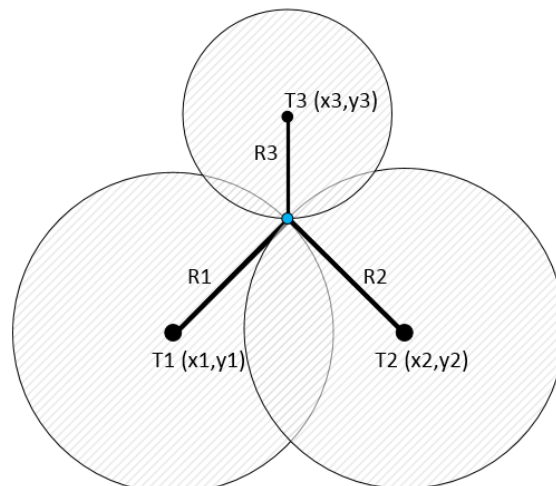


Fig 2: Circle geometry of location

B. PSEUDO-CODE FOR GPS ALGORITHM:

Initialize d_1, d_2, d_3 to distance values
Initialize p_1, q_1 to position of tag 1
Initialize p_2, q_2 to position of tag 2
Initialize p_3, q_3 to position of tag 3



```
Declare a 2D double array K
Set K[0][0] to (2*p2)-(2*p1)
Set K[0][1] to (2*q2)-(2*q1)
Set K[0][2] to (d1)^2-(d2)^2-(p1)^2-(q1)^2+(p2)^2+(q2)^2
Set K[1][0] to (2*p3)-(2*p1)
Set K[1][1] to (2*q3)-(2*q1)
Set k[1][2] to (d1)^2-(d3)^2-(p1)^2-(q1)^2+(p3)^2+(q3)^2
If K[0][0] is 0 and K[1][0] is not 0
    For j=0 to j=2 do
        Temp=K[1][j]
        K[1][j]=K[0][j]
        K[0][j]=Temp
    End for
End if
Else if K[0][0] is 0 and K[1][0] is 0
    Print "First column is 0 and unique solution cannot be obtained"
End if
For j=0 to j=1
    Temp =(k[i][0])/(k[0][0])
    For s=0 to s=2
        K[j][s]=(K[j][s])-temp*(K[0][s])
    End for
End for
q=(K[1][2])/(K[1][1])
p=((K[0][2])-(K[0][1]*q)/(K[0][0])
```

VI.OVERALL DESCRIPTION

A. PRODUCT PERSPECTIVE

The perspective of the proposed system is that the common user sends compliant to system. System sends compliant to particular organization with time limit. Organizations solves compliant reported by user then system generates positive or negative ratings on the basis of work done by allocated employees. System sends message to user when compliant is solved.

B. REQUIREMENTS:

- **Software Requirements:**
 - 1) Eclipse
 - 2) JDK 8
 - 3) Mongo DB
 - 4) Apache Tomcat
 - 5) Arduino
- **Hardware Requirements:**
 - 1) 8 GB RAM
 - 2) 500 GB HDD
 - 3) Sensors
 - i) Ultrasonic sensor
 - ii) Load sensor
 - iii) Smoke sensor
 - iv) GPS sensor



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VII. CONCLUSION

Incident reporting system provides facility to common user to compliant organization about any incident. System takes quick action regarding reported areas and solved problem which is reported by any user. In contrast with other available systems which consist of dedicated hardware and software, this system runs on Android mobile-phones, it's easy to setup sand simple to operate.

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