

Dynamic Web-Based Mobile Application For Traffic Police

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Abstract: *The use of mobile devices, such as smart phones and cellular phones, in field data collection has increased recently due to the emergence of Global Position Systems (GPS) and Wi-Fi Internet access. Timely and handy field data collection is required for disaster management and quick response during emergencies. In this paper, we introduce a dynamic web-based system to collect the field data from personal mobile phones. The main objective of this work is to demonstrate a real-time field data collection method that can be used by Traffic Department. The purpose of this system is to allow the Traffic Police Officer to send the field collected data to the server. The information gathered using field data collection can include current location, IMEI number, phone number, license number and images captured during crime scene. The data at server side can then be used for analysis and decision making. The data captured from android will be shown on Google Maps using Google Maps API v3. This data will be available to corresponding departments of government through the web service.*

Keywords : *Real-Time Field Data Collection, Data Mining, Analysis and Decision making, Dynamic Web-Based Application.*

1. INTRODUCTION

Data collection is one of the important tasks for many spatial information users. Field data collection is one of the first steps for spatial information users, especially for geographers, geologists, biologists, crop scientists, ecologists, etc. Accurate field data collection is also necessary for adequate spatial data analysis and proper decision making[1].

The rapid emergence of data management methods has evolved into the Information Age. Powerful database systems for collecting and managing data are in use in all large and mid-range companies. All such data hold valuable information, which could be used to improve decision making and optimize success[2].

The traditional pen-and-paper based field data collection is a time consuming task. Hence this is not practical to use in real-time disaster information collection, which requires a quick emergency response. However, recent developments in mobile communication, GPS, the Internet and portable computing devices allow us to conduct field data collection in a timely manner. Moreover, under the client-server setting for field data collection, a field user may take advantage of data to access Google Maps via a HTTP interface[3]

Web based traffic system is an android application that reports real time traffic crimes to the server. In existing traffic system, the storage of records of vehicles and civilians breaking traffic rules is not real time. In proposed system, we

will develop a dynamic android application which can be used to take real time data as well as location and transfer it to dynamic web application integrated with Google Map API. So we are reducing the manual work and errors in the system.

Using this system we can keep track of the number of traffic crimes occurring within a particular area and the same information can be used by the traffic police department for decision making and analysis.

1.1 Purpose

In the proposed application, a dynamic code which can change the XML at runtime using the metadata entries is written. This application can serve many domains as it is a dynamic application. The surveyor will be created from the web application by the administrator and accordingly the controls will be displayed on the android application at the client side. User name and password will be assigned to the respective police officers' IMEI number for security purposes. The application also allows transferring images captured during crime scene from android to web application.

Reports will be generated which will show the daily collections of police as well as faulty drivers. The purpose of the project is to develop a dynamic mobile and web based application which can be used in any industry for the survey. This application will also plot the network on Google Maps using the data sent from android.

1.2 Project Scope

We propose the use of location based service to lessen the problems faced by Traffic Police in retrieving accurate information while patrolling high risk area. The police can send the information about the Traffic rule violator to the server. The application is developed by using Eclipse IDE platform and tested using Android OS. The application flow starts by retrieving the location position and information about rule violator which will then be displayed on the web. In this project, we tried to focus on simplifying the flow of traffic related crime information by utilizing the Location Based Service.

2. SYSTEM ARCHITECTURE

This architecture shows the overall description of our system. We need at least one android mobile device and a dedicated server to host the application. Dedicated Server is used to store the data. Dedicated server should have MySQL installed on it to handle the database part. We are using dedicated server for good performance. In android development we are designing the database using SQLite.

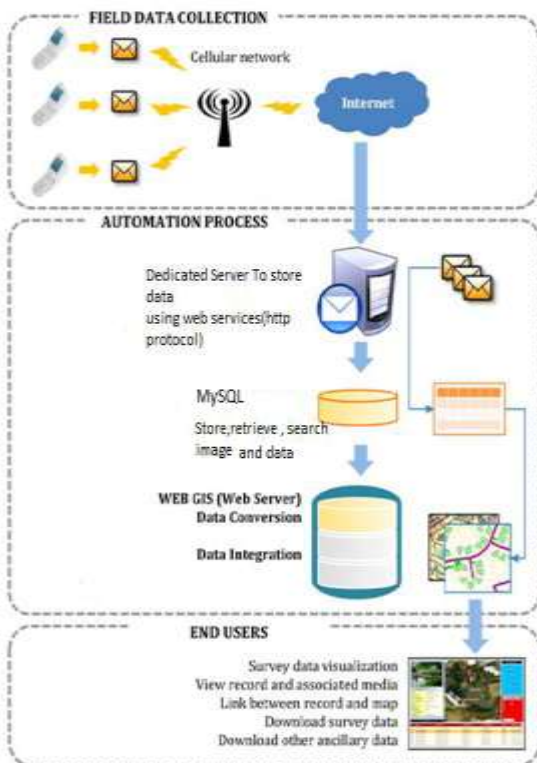


Fig 1. System Architecture

The police officer at the traffic signal sends information about the person not following the traffic rules to the server. The data sent will be encrypted data so that only sender and receiver will understand the data. Here we are using Encryption-Decryption algorithm. Google Maps APIv3 is used to display the crime location acquired using GPS[4].

2.1 Use-case diagram

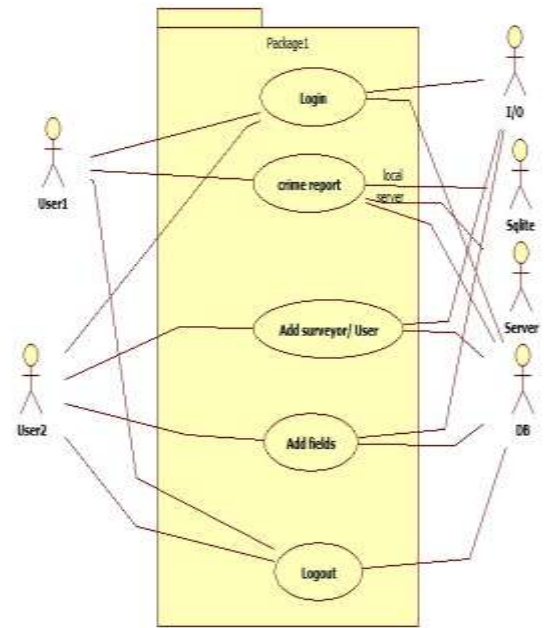


Fig 2. Use- Case Diagram

2.2 Mathematical model

Set Theory Analysis:

- a. Let 'S' be the | Dynamic survey system with location tracker as the final set

$$S = \{C, P, M, U, I, B, A, L, O, D\}$$

- b. Identify the inputs as C, P and M.

$$C = \{C1, C2, C3, \dots, Cn \mid 'C' \text{ given current inputs}\}$$

$$P = \{P1, P2, P3, \dots, Pn \mid 'P' \text{ gives previous inputs}\}$$

$$M = \{M1, M2, M3 \mid 'M' \text{ gives control sync alerts}\}$$

$$U = \{U1, U2, U3, \dots, Un \mid 'U' \text{ as Username}\}$$

$$I = \{I1, I2, I3, \dots, In \mid 'I' \text{ password}\}$$

$$B = \{B1, B2, B3, \dots, Bn \mid 'B' \text{ is entity related information}\}$$

$$A = \{A1, A2, A3, \dots, An \mid 'A' \text{ is IMEI number of mobile}\}$$

$$L = \{L1, L2, \dots, Ln \mid 'L' \text{ is the location of entity}\}$$

- c. Identify the outputs as O

$$S = \{C, P, M, U, I, B, A, L, O, D\}$$

$$O = \{O1, O2, O3, On \mid 'O' \text{ is alert message sent for control updations}\}$$

$$D = \{D1, D2, D3, Dn \mid 'D' \text{ is the survey information shown on map}\}$$

- d. Identify the functions as 'F'

F = {Registration (), Authentication (), delete (), Control Updation(), Map View() }

Registration(U, I) =R' :: takes username(U), Password(I).
 R' = {d|d' contains police information for registration }

Authentication(U,I) = AU' :: Verifies the customer's username and password
 AU' = {d|d' contains valid customer's Username and Password }

Delete(B, A) = D' :: delete the police officer's particular account
 D' = {d|d' account details }

Alarm(L, M)=Q' :: Generate alert messages for control updations.
 Q' = {d|d' generate the messages }

2.3 Activity diagram

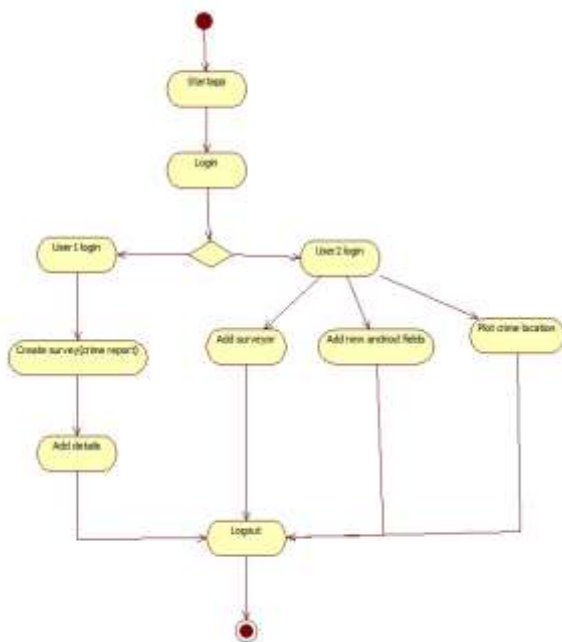


Fig 3. Activity Diagram

2.4 State Transition Diagram

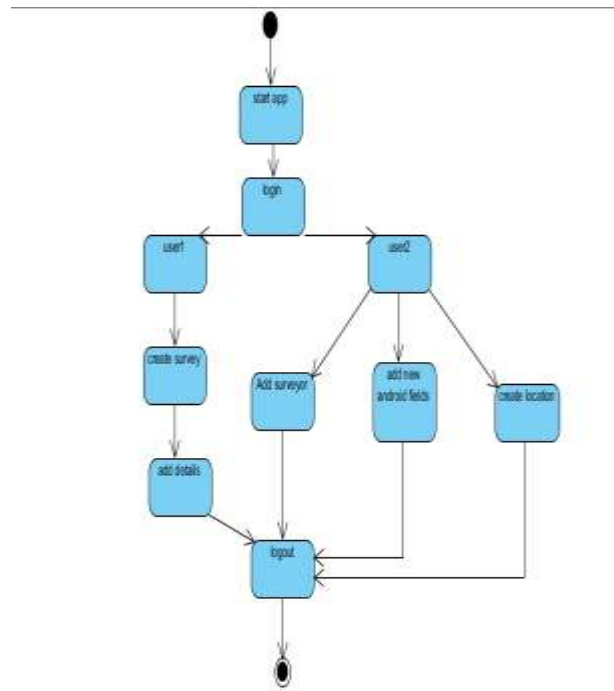


Fig 4. State Transition Diagram

3. LITERATURE SURVEY

In existing traffic system, the storage of records of vehicles and civilians breaking traffic rules is not real time. Manual work also leads to many errors. Most of the work is done on paper. In proposed system, we will develop a dynamic android application which can be used to take real time data as well as location and transfer data to dynamic web application integrated with Google Map API. So we are reducing the manual work and errors in the system.

3.1 User Classes

Users of this system are traffic police officers and higher officials of Police department. The traffic police officers will use the android application to send data regarding the people breaking traffic rules. The web service will be used by the higher officials of Police department for decision making and analysis.

4. TECHNOLOGIES AND FEATURES

- *Operating System:* Windows
- *Programming Environment:* We will be using JDK 7.0 as the development platform for the prototype system.
- *Programming Tool:* Android Development Tool(Eclipse)
- Android 2.2 Supported mobile handset
- *Google Map API v3 integration:* Data captured on android will be shown on Google maps using Google maps API v3.
- *Database:* We are using MySQL as the database. We are using concepts of metadata in this system. The

tables will be generated and managed at the run time in this system.

5. DESIGN AND IMPLEMENTATION CONSTRAINTS

We need at least one android mobile device and a dedicated server to host the application. Dedicated Server is used to store the data regarding people breaking traffic rules. Dedicated server should have MySQL installed on it to handle the database part. In android development database is designed using SQLite. Dedicated server has been used for good performance.

6. ASSUMPTIONS & DEPENDENCIES

The traffic police officer is expected to have android mobile phones and should be able to send and receive data when connected to the internet. Dedicated server should have MySQL installed on it to handle the database part.

1. The android application will be used by traffic police officers to send data and location to the server.
2. The web service will be used the higher police and administrative officers for analysis and decision making.

7. TECHNICAL SPECIFICATIONS

7.1 Advantages

- Central platform to report traffic issues – Saves time as paper work is reduced.
- To mark the area with more number of traffic crimes.
- Use of MySQL makes data storage and retrieval very easy.
- Stop corruption involved in concerned authority.
- Encourage people to follow traffic rules to ensure safety of the masses.
- Makes the traffic system more strict so that people strictly follow the traffic rules.

7.2 Disadvantages

- Internet connectivity is compulsory to transmit the data.
- Android phone is required.

7.3 Applications:

- Can save the paper work overhead of the traffic police officers.
- To survey the areas where more number of traffic police need to be allotted to ensure safe and smooth moving traffic.

- Increase awareness among people and let them have a sense of responsibility.
- Concerned authority will work efficiently.
- This is a dynamic application so it can be used in many industries.
 - Marketing Companies
 - Survey industry
 - Product industry
 - Electrical Industry
- This application is used to see number of crimes plotted on google map which can be called as geolocation data.

8. CONCLUSION

This system will help traffic authorities to mark the area with more number of traffic crimes committed in that area. Thus we look forward to develop an android application for traffic police officers and a web application using JSP and servlet with MySQL as backend for higher authorities. The higher authorities can use this system for analysis and take decisions. This system will therefore reduce the manual work and errors in the current traffic system.

9. ACKNOWLEDGEMENT

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10. REFERENCES

1. S. Mourão and K. Okadata, "Mobile Phone as a Tool for Data Collection in Field Research," World Academy of Science, Engineering and Technology, Vol. 70, 2010, pp.222-226.
2. A survey of Data Mining and Knowledge Discovery software tools- Michael Goebel, Le Gruenwald.

3. K2008, pp. Moe, B. Dwolatzky and R. Olst, "Designing a Usable Mobile Application for Field Data Collection," IEEE AFRICON, 1187-1192.

4. Web-Based GIS System for Real-Time Field Data Collection Using a Personal Mobile Phone Ko Ko Lwin, Yuji Murayama Graduate School of Life and Environmental Sciences, University of Tsukuba, Tsukuba, Japan Received June 18, 2013; revised July 25, 2013.

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