

ACCIDENT PRONE SPOT LOCATOR

Abhijeet Gorai, Ramanand Samdekar, Ayushi Jain, Damini Gotmare,
Krutika Yeole, Priti Pathak

*Computer Science and Engineering, S. B. Jain Institute of Technology Management & Research,
Nagpur, Maharashtra, India*

Abstract:-An accident black spot is a hazardous or high risk location where a number of accidents repeatedly occur. The identification, analysis and treatment of road accident black spots are widely regarded as one of the most effective approaches to road accidents. Frequent occurrences of accidents in the black spots can be attributed to varying factors. As a major share of the accidents occur in such black spots, measures should be taken to reduce the number of accidents in these spots to improve the overall road safety. Road Accident is a specific instance of traumatic events that constitute major loss. Data mining tools and techniques are used to predict the likelihood of accident and accident prone locations. Growing number of road accidents needs to be controlled by identifying the accident prone locations on road stretches. The present study aims to find the major accident spots in the study stretch and to identify various parameters and road factors causing accidents.

Keywords:-Accident, Spot, Location, Alert

I. INTRODUCTION

Road accidents are very common now days. This can be reduced to some extent by providing the information of road head. There is a need to have an effective road accident spot detection system. A system that provide alert about the accident location. This application will provide a specific path from source to destination and provide an alert while reaching close to the accident spot. Our application AS pointer: Accident Prone Spot Locator will give information about road where to put sign boards and alert. When a vehicle enters an area comprising of the accident prone location a notification is made that is vehicle has entered the area comprising of one of the accident prone location. When we are 1 km or 500 m close to the accident location the application will give a voice alert. We are also using speed governor device. This device is used to limit the speed of vehicle. We will set limit of speed if the speed extent the vehicle will give an alert that the speed has extended. The application will provide all the information about the accidentspot and we will also provide a graph which shows the rate of accident that happened on that spot. The objective of this application is to minimize the accident response time when an accident occur and the time emergency responders reach the accident scene in reducing human deaths due to road accident. The issue of road accidents is an increasing problem in developing countries. This could be due to increasing road traffic/vehicle occupancy. This has been increasing over years. Regulating traffic on roads is an important task. There by reducing accidents in accident pronezones. The accident was drastically increased over a decade from 4% to 31%. This is an alarming issue. The analysis and identification of such road accident prone zones is essential to reduce the accidents.

II. LITERATURE SURVEY

1. Research Papers

Detection of Road Accident Accumulation Zones with a Visual Analytics Approach.

By: Luís Ramos, Luís Silva, Maribel Yasmina Santos , João MouraPires

Nowadays, road accidents are a major public health problem, which increase is forecasted if roadsafetyis nottreatedproperly,dyingabout 1.2millionpeopleeveryyeararoundtheglobe. In 2012, Portugal recorded 573 fatalities in road accidents, on site, revealing the largest decreasing of the European Union for 2011, along with Denmark. Beyond the impact caused by fatalities, it was calculated that the economic and social costs of road accidents weighted about 1.17% of the Portuguese gross domestic product in 2010. Visual Analytics allows the combination of data analysis techniques with interactive visualizations, which facilitates the process of knowledge discovery in sets of large and complex data, while the Geovisual Analytics facilitates the exploration of space-time data through maps with different variables and parameters that are underanalysis.^[4]

A survey on Road Accident Detection and Reporting.

By: Amrutha Madhusan, Lavanya Viswanathan, Vaishnavi Ravindran, Dr. Shanta Rangaswamy.

On road accident is a major issue of concern. Even with all modern developments in the field of vehicle design, road lane design and management, accidents do occur. Timely accident detection and taking immediate action with respect to emergency health care of victims by informing an emergency center such as a hospital or a police station about the accident on time plays a vital role in human safety and road traffic management. Accident detection can be done under various domains. Most of the papers surveyed use application of sensor technology, besides trying to detect accidents automatically using machine learning and computer vision from surveillance systems. Any kind of accident detected is automatically sent as an alert to the required destination. Each of these methods has different percentages of accuracy and their own limitations. This survey paper discusses various approaches to detect the occurrence of traffic accidents on a road supervised under surveillance camera [5].

Real Time

The road from kalmeshwar to Nagpur has various accident spots. To reduce this problem we are developing mobile application which will help people to drive safely from one location to another.

▯ Problems

Hanuman mandir turning spot is the most accident prone spot on the road between kalmeshwar and Nagpur.

▯ Solution

We are going to develop a mobile application which will help people to drive safely by providing voice alert facility when the user is close to the accident spot.

Applications Available

- AccidentAlert
- APPRSPOfficer

- Transportation Accident RegistryApp(TARA)
- AccidentInformer

III. TECHNOLOGICAL BASE

This Project can be implemented by using various technologies like-

Frontend

1. Android Studio

Android Studio is the official Integrated Development Environment (IDE) for Android app development, based on IntelliJ IDEA. On top of IntelliJ's powerful code editor and developer tools, Android Studio offers even more features that enhance your productivity when building Android apps, such as:

- A flexible Gradle-based build system.
- A fast and feature-rich emulator.
- A unified environment where you can develop for all Android devices.
- Apply Changes to push code and resource changes to your running app without restarting your app.
- Code templates and GitHub integration to help you build common app features and import sample code.
- Extensive testing tools and frameworks.

2. Java

It is an object-oriented language similar to C++, but with advanced and simplified features. Java is free to access and can run on all platforms. Concurrent where you can execute many statements instead of sequentially executing it. Class-based and an object-oriented programming language. Independent programming language that follows the logic of "Write once, Run anywhere" i.e. the compiled code can run on all platforms which supports java.

Back End

1. My SQL

We are working with MySQL because it is a relational database management system based on SQL – Structured Query Language. The application is used for a wide range of purposes, including data warehousing, e-commerce, and logging applications. The most common use for MySQL however, is for the purpose of a web database. MySQL is written in C and C++. Its SQL parser is written in YACC, but it uses a home-brewed lexical analyser. MySQL works on many system platforms, including AIX, BSD, FreeBSD, HP-UX, Ecom Station, i5/OS, IRIX, Linux, mac OS, Microsoft Windows, Net BSD, Novell NetWare, Open BSD, Open Solaris, OS/2 Wrap, QNX, Oracle Solaris, Symbian, SunOS, SCO Open Server, SCO UnixWare, Sanos and Tru64. A port of MySQL to Open VMS also exists.

2. Draw.io

Draw.io is a browser based diagramming application. It is available as an online application with optional integration to various cloud storage options. Draw.io is permanently free for personal, academic and charitable use. Draw.io is the most tightly Google Drive integrated diagramming application available. draw.io. (36077) Works with. Draw.io is completely free online diagram editor built around Google Drive(TM) that enables you to create flowcharts, UML, entity relation, network diagrams, mockups and more.

3. Microsoft Windows Operating System

Microsoft Windows is a group of several graphical operating system families, all of which are developed, marketed, and sold by Microsoft. Each family caters to a certain sector of the computing industry. Active Windows families include Windows NT and Windows Embedded; these may encompass subfamilies, e.g. Windows Embedded Compact (Windows CE) or Windows Server. Defunct Windows families include Windows 9x, Windows Mobile and Windows Phone.

IV PROPOSED WORK

1. SYSTEM ARCHITECTURE

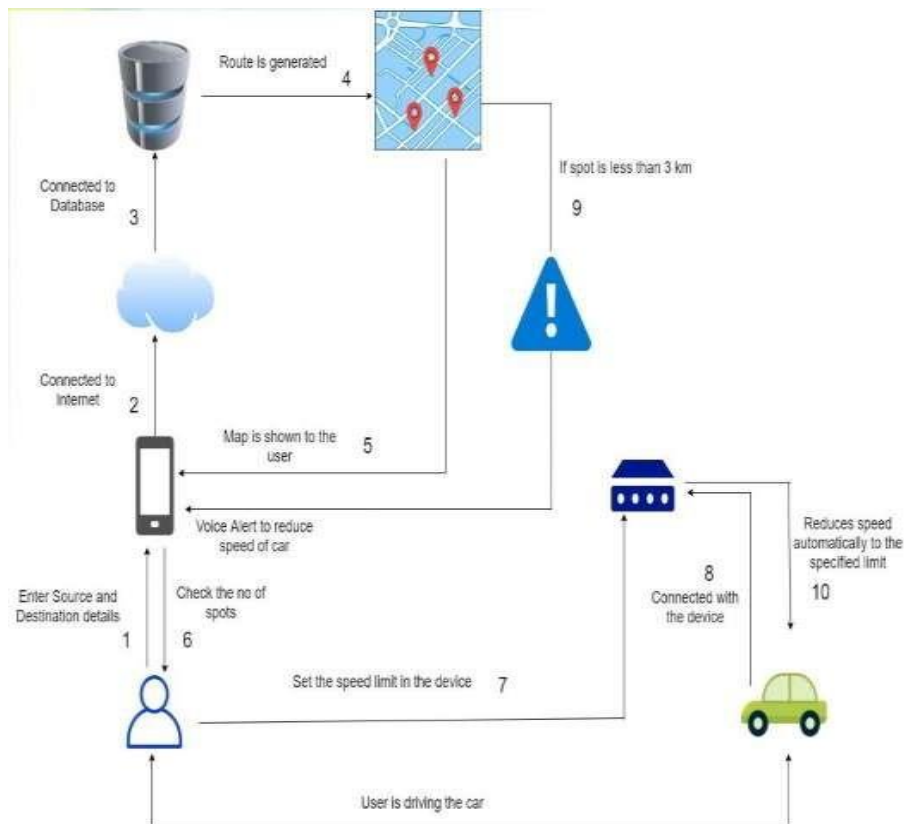


Fig.1. System Architecture

The user will perform registration and login into the application. After login user will be directed to the map page where the user have to enter source and destination. After entering source and destination system will generate a route and show the accident spots on the route.

On reaching close to the spot system will give voice alert to reduce the speed of vehicle. If the user does not reduce the speed of the vehicle the speed governor device will automatically reduce the speed of the vehicle.

SYSTEM FLOWCHART

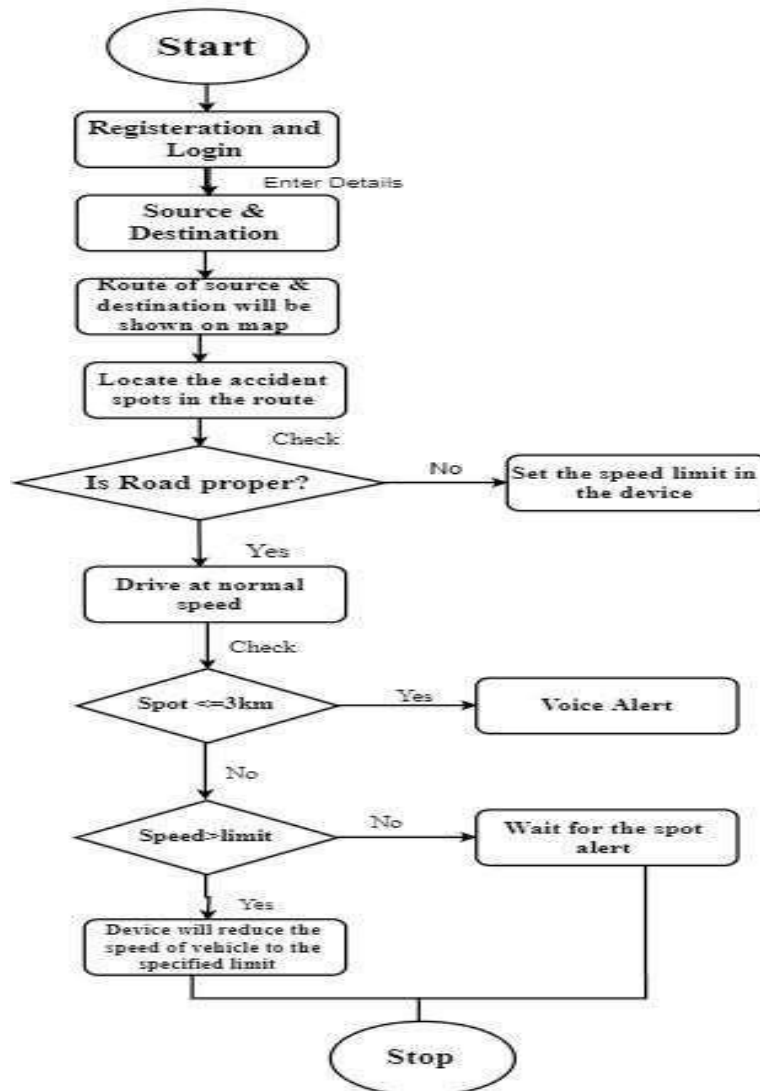


Fig 2. System Flowchart

The user will perform registration and login into the application. Upon successful login user will be directed to map page where the user have to enter source and destination.

The system will generate route according to the source and destination provided by the user and show the accident spots on the route.

Then user will check if the road is proper or not. The user will set the speed limit of the vehicle accordingly.

2. USE CASE DIAGRAM

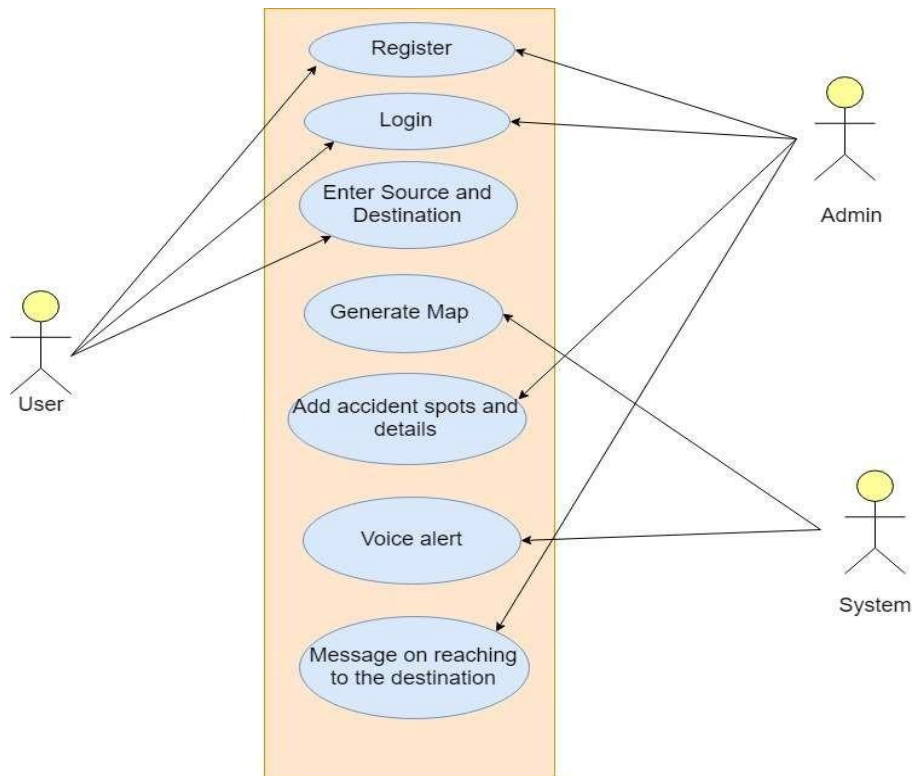


Fig. 3. Use Case Diagram

The application has three modules namely User module, Admin module and System module. In the user module the user will perform login and registration and enter source and destination in the map.

Then the system will generate the map according to the route given and give voice alert on reaching close to the accident spot.

V. IMPLEMENTATION

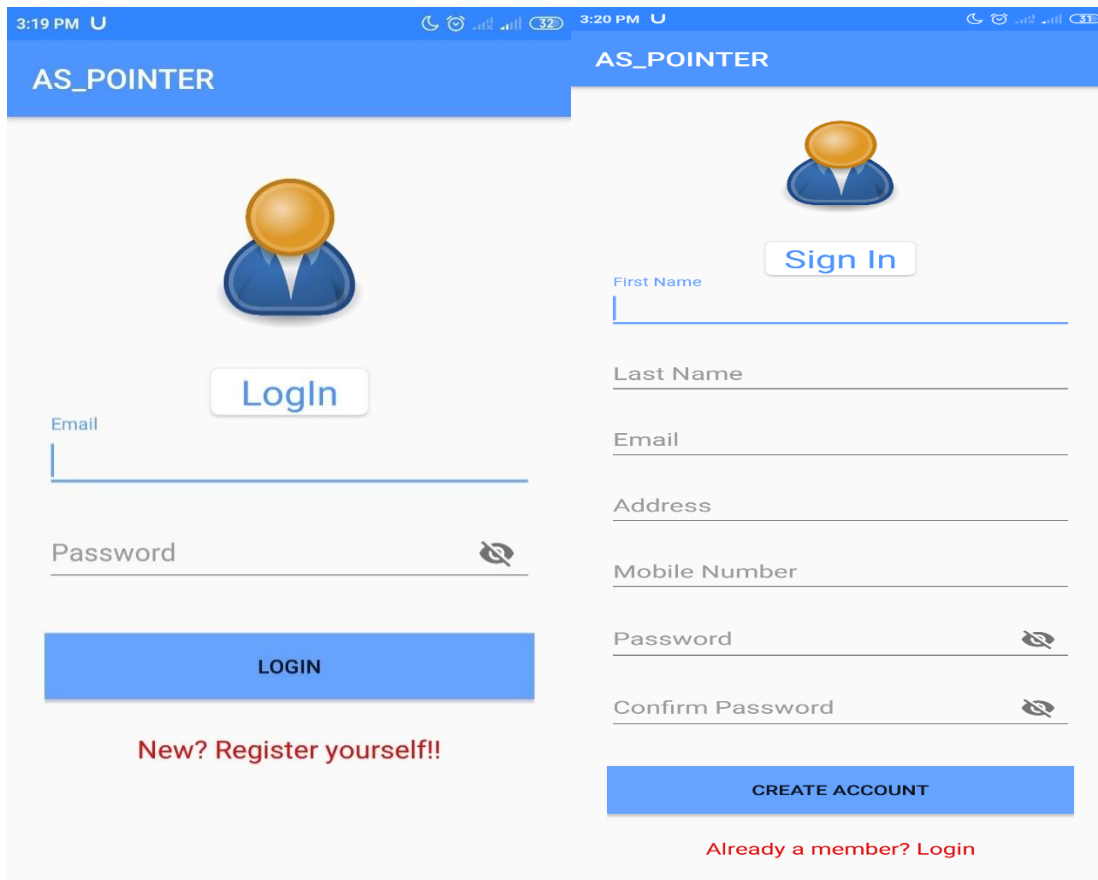


Fig.4 Screenshot of login and Registration

This is the login screen of the application. Where the user have to login for the further process of accessing functionalities. If the user is not registered yet then the user can first registered by clicking on Create account.

This is the registration screen. Where the user first have to register themselves here for accessing the further functionalities of the application. And if already the member then the user can directly login and access the application.



Fig.5 Screenshot of About Us and Contact Us

This screen will show the complete detailed information about the fields “Contact Us” and “About Us”.

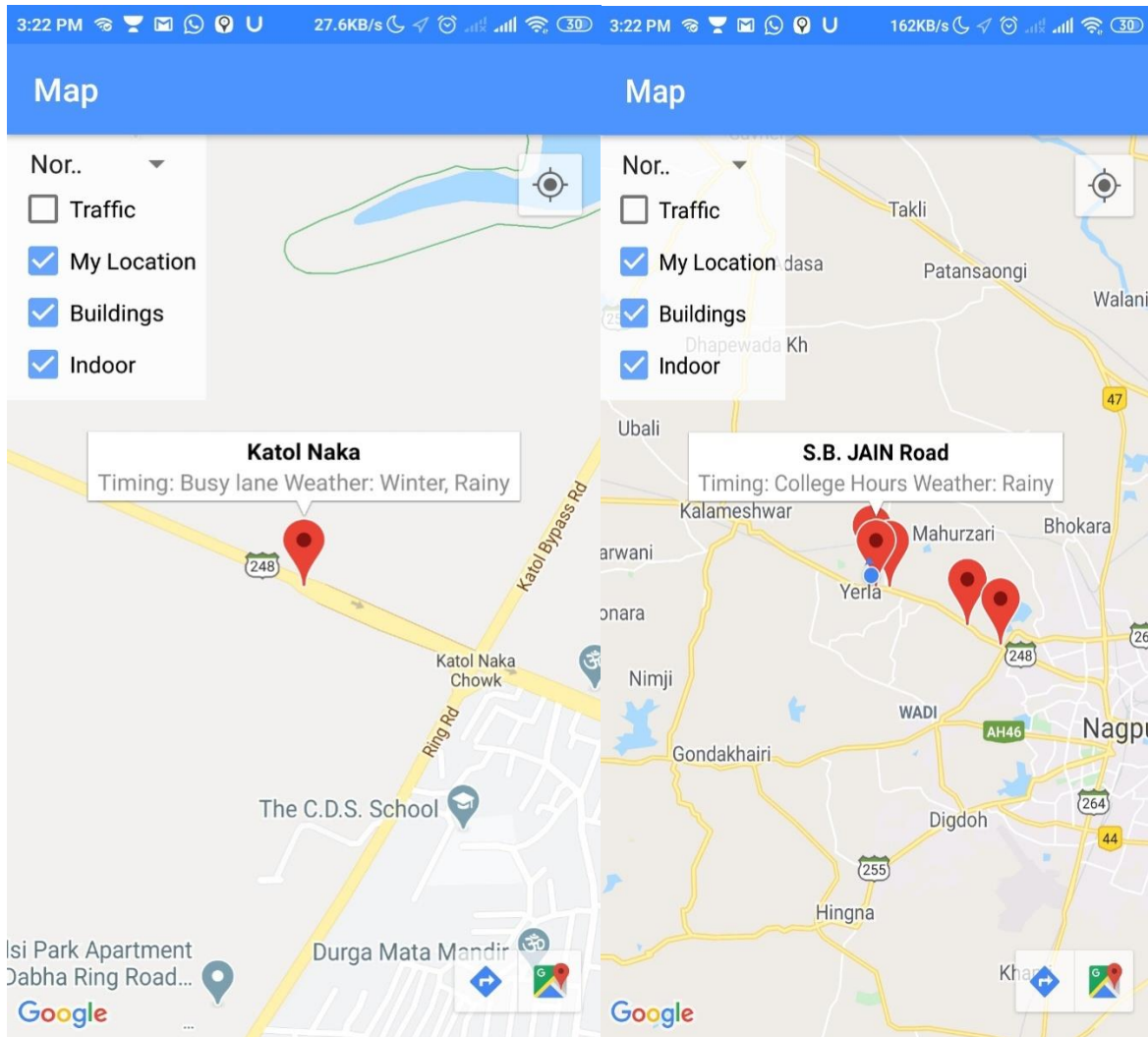


Fig.6 Screenshot of Map

This is the map. Where the user has entered the source and destination accordingly the path will generate and the accident spot will be located on the generated path.

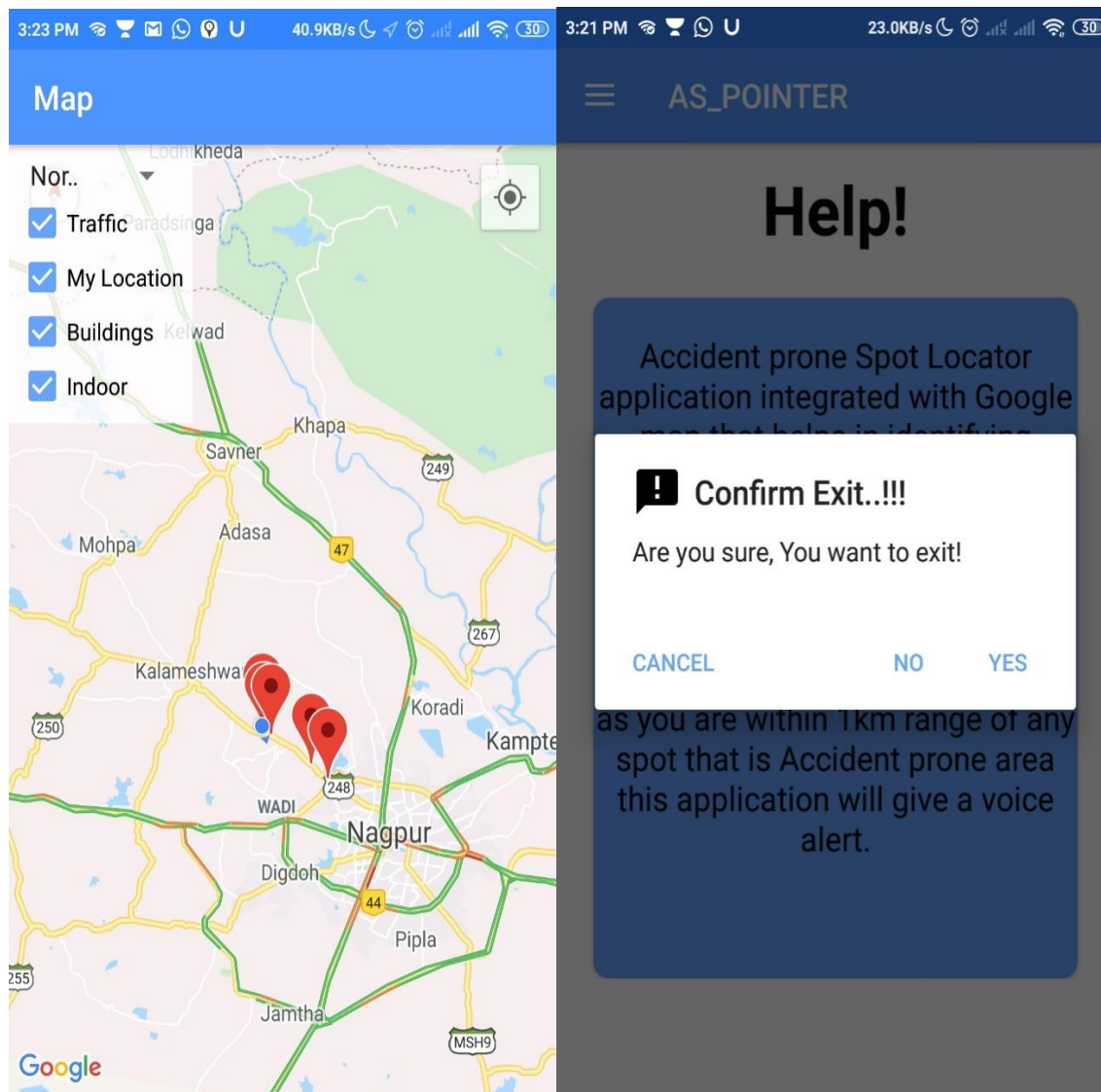


Fig.7 Screenshot of Map and Logout Screen

Map is used for locating the accident spot by using different parameters.

Logout field shows the alert box.

VI. CONCLUSION

This application will show the accident spots on the map and will give alert as soon as the person reaches nearby to the spot. This study is the result of spatial analysis of road accident occurred in the region. With the help of GPS technology analysis is done and accident spots are marked with red ellipsoids. It is easy to detect accident prone sites with previous data and GPS technologies, also it gives voice alert when were ach close to the accident spot.

For designing and implementing the Accident Prone Spot Locator, we have used fundamental and specialized engineering knowledge for investigating and designing the complex system. We have analyzed and identified the problems by doing real time survey. All the work in this project is done in an and a responsible way so the people will find it safe to use. This project gave us the opportunity for individual and efficient teamwork. It can comprehend, make effective appearance as well as give and take clear instructions.

This solution has been developed in order to contribute towards society. So, that service provider can provide better services to user and also can increases the satisfaction ratio of their customers.

REFERENCES

Papers:

- [1]. International Journal of Innovative Technology and Exploring Engineering (IJITEE) ISSN: 2278-3075, Volume-8 Issue-4S2 March, 2019.
- [2]. International Journal of Innovative Research in Science, Engineering and Technology (A High Impact Factor, Monthly, Peer Reviewed Journal) Vol. 7, Issue 4, April 2018.
- [3]. Ajinkya Patankar, Prof S.G Walunj VJER-Vishwakarma Journal of Engineering Research “Blackspot Warning System Identification and Analysis”, Volume1 Issue 4, December2017.
- [4]. Luis Ramosa, Luis Silva “Detection of road accident accumulation zones with a visual analytics approach”, HCist 2015 October 7-9, 2015.
- [5]. Amrutha Madhusan, Lavanya Vishwanathan, Vaishnavi Ravindran, and Dr. Shanta Rangaswamy “Road Accident Detection and Reporting”
- [6]. Ferit Yakar “Identification of accident-prone road sections by using relative frequency methods.”
- [7]. Gagandeep Kaur, Harpreet Kaur “Black Spot and Accidental Attributes Identification on State Highways and Ordinary District Roads Using Data Mining Techniques”, Volume 8, No. 5, May – June 2017.
- [8]. 2017 International Conference on Computer Communication and Informatics (ICCCI -2017), Jan. 05 – 07, 2017, Coimbatore, INDIA.
- [9]. Bankar Sanket Anil; Kale Aniket Vilas, “Intelligent System for vehicular accident detection and notification”, 3-5 April 2014 Publisher: IEEE.
- [10]. F. Yakar: “Identification of Accident-Prone Road Sections” by Using Relative Frequency Method.
- [11]. Shah Dhruvit, Shah Pranay “Road Accident Analysis and Identify the black spot location on state highway-5(Halol-Godhra Section).

Application References:

[1]<https://www.play.google.com/store/app/details?id=com.jaigish.accidentalert2018>

[2]<https://play.google.com/store/apps/details?id=com.iitm.tara>

[3]<https://play.google.com/store/apps/details?id=com.inative.officers>.

[4]<https://play.google.com/store/apps/details?id=com.jaigish.accidentalert2018>.