



# VIRTUAL SECURITY GUARD USING GPS

**A PROJECT REPORT**

***Submitted by***

**SHEIK SHAMEER S(96010104087)**
**SURESH WILSON W(96010104104)**

***in partial fulfillment of the requirements***
***for the award of the degree***

**BACHELOR OF ENGINEERING**

**IN**

**COMPUTER SCIENCE AND ENGINEERING**

**MEPCO SCHLENK ENGINEERING COLLEGE, SIVAKASI**

## ANNA UNIVERSITY: CHENNAI 600 025

# APRIL 2014

# CHAPTER 1

## 1 INTRODUCTION

### 1.1 GENERAL

Though the world celebrates various social, economic and political achievements, most countries still have a long way to go in resolving key issue's such as health and safety. There are always underlying danger in the society that make the people vulnerable to sudden attacks. The crime rate has tripled year after year. Nowadays murders , burglary and sexual harassment are seen as a every day occurrences. The Indian Express says that every three out of four women would have experienced sexual harassment in their lifetime in India.

Per-capita reported incidents of rape are quite low compared to other countries, even developed countries. According to 2012 statistics, New Delhi has the highest number of rape-reports among Indian cities, while Jabalpur has the per capita incidence of reported rapes. Sources show that rape cases in India have doubled between 1990 and 2008. According to the National Crime Records Bureau, in 2012, 25,000 rape cases were reported across India. Out of these, 24,470 were committed by relative or neighbor. Men accounted to commit 98 per cent of reported rapes. The latest estimates suggest that a new case of rape is reported every 22 minutes in India.

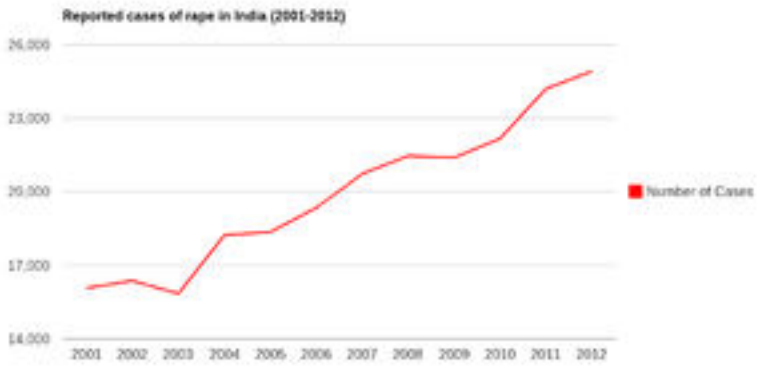



Figure 1.1: Reported cases of crime against body

People are not in a position to effectively handle these situations . The main reason for this is that they don't have the particular resources to do so. For example : dialling a 100 in a mobile will provide a call to server room , then based on your response they will redirect the call to your nearest police station. This takes a lot of essential time which may be used in a better ay so that the victim can be saved.

The 2012 Delhi gang rape case involved a rape and fatal assault that occurred on 16 December 2012 in Munirka, a neighbourhood located in the southern part of New Delhi, when a 23-year-old female physiotherapy intern was beaten and gang raped in a private bus in which she was travelling with a male friend. There were six others in the bus, including the driver, all of whom raped the woman and beat her friend. The woman died from her injuries thirteen days later while undergoing emergency treatment in Singapore. The incident generated widespread national and international coverage and was widely condemned, both in India and abroad. Subsequently, public protests against the Government of India and the Government of Delhi for failing to provide adequate security for women took place in New Delhi, where thousands of protesters clashed with security forces. Similar protests took place in major cities throughout the country.

The assault took place at 9:15 pm and the partially clothed victim were found at 11:00pm. The victim's father was not aware of what was happening the entire time , had the father or her friends known what was happening or where she was , she could have been rescued. This is not the only case where there was a loss of life due to the slow response time. Hence there is a need for a system that conveys where the victim is and how to protect them.

The literacy rate of our country is 73.8% as of 2012 . This rate indicates that most people who face unprecedented calamities need to be in a position to know what to do during those situations , Only then can they be prepared to handle those situations. So we are in need of a system that may make these people recognize the current happenings of their friends or relatives.

## 1.2 OBJECTIVE

- To develop an android application that can inform the relatives of the dire situation that a person is in.

- To transfer messages easily and practically
- To provide the resources to the people so that he/she can inform the police in the nick of time
- To take necessary actions without alerting the adversary
- To provide a mechanism which cannot put the police workforce at jeopardy.

## 1.3 PROJECT FEATURES

- The guardians or relatives can be easily informed through sms , so it is possible anywhere
- The necessary information such as the contact numbers of the nearby police station to the person in danger are made available to their friends and relatives.
- When in danger all the user's friends from FACEBOOK will be able to help them
- If the user wants he/she can delete the messages posted on their Facebook wall.
- The user may set a voice which can be played through emergencies so that nearby people can come to their aid.
- The relatives or friends need not be required to have an android smartphone since sms can be received in any phone.
- It is not mandatory that the friends or relatives should have our application
- The person in danger are required to just SHAKE their phones to send the details to their friends and relatives.
- The user may complain about a particular user using his/her IMEI number

# CHAPTER 2

## 2 SYSTEM STUDY

This project focuses on helping the victim during dangerous circumstances by two methods.

i. Sending a sms to his/relative
ii. Updating his/her facebook timeline
iii. Playing a help sound to help the victim

All these features will be executed by shaking the mobile when in a dangerous stituation. For achieving our objective we use the concept of Geocoding and Reverse Geocoding. By using the coordinates extracted from the phone using the GPS that is present in the android mobile phone.

### 2.1 GPS (GLOBAL POSTIONING SYSTEM)

The Global Positioning System (GPS) is a space based satellite navigation system that provides location and time information in all weather conditions, anywhere on or near the Earth where there is an unobstructed line of sight to four or more GPS satellites. In this project GPS iis turned on automatically and used so that the latittude and longitude information of the mishap can be used

### 2.2 GEOCODING

In this project we use the Location Based Services to get the contents for the Location Manager . The location Manager is used to get the latitude and longitude , this latitude and longitude collectively called as geocode is used for two purposes , firstly to publish the user's location on a map and secondly to give as input to the process of Reverse Geocoding.

## 2.3 REVERSE GEOCODING

Just forwarding the geocode to the relatives or friends means requires that they know how to read the geocode , hence there is a need for a process that converts the geocode to user readable form. We are using the Google api to conver the latitude and longitude to the specific address this way the user may know where the victim is

| GEOCODING | REVERSE GEOCODING |
|---|---|
| 9.9209216447684844,78.112106456864648 | West Marret Street, Madurai Main, Madurai, Tamil Nadu 625001, India |
| 9.5246786999999990,77.855308899999950 | EEE Block Lane, Mepco Schlenk Engineering College, Mepco Nagar, Melamattur, Tamil Nadu 626005, India |
| 8.731000930000000,77.710768199999965 | Tirunelveli Junction Periyar Bus Stand, Madurai Road, Vannarpettai, Tirunelveli, Tamil Nadu 627001, India |
| 28.649081564651548 ,77.199034400000078 | Desh Bandhu Gupta Road, Block A, Karol Bagh, New Delhi, Delhi 110005, India |

Table 3.3.1 : Test cases for geocoding and reverse geocoding

## 2.4 FACEBOOK CONNECTIVITY

The system posts the Emergency message on the user's timeline when a emergency action is performed. The post is done using Facbook api , that provides the features to upload the status on the timeline. The system stores the username and password internally on the mobile alone . This way when the user is in a emergency , the sytem automatically logs him/her in and posts the message on the timeline.

## 2.5 SHORT MESSAGE SERVICE

The system also send the message to five trusted friends/ relatives via short message service. The contact numbers are stored in the database by the user so that when the situation arises the sms can be sent to those friends.

## 2.6 EMERGENCY MESSAGE

The Emergency message consists of the user's latitude and longitude , the address in a readable form , a google maps link that conists of the nearby police station contact numbers to the victim and also the victim's IMEI number. The IMEI number can be used to track the user even when the mobile is switched off. The method used to track the IMEI number is called "Roving bug" this method is used popularly by the FBI and bureau organisations for tracking purpose.

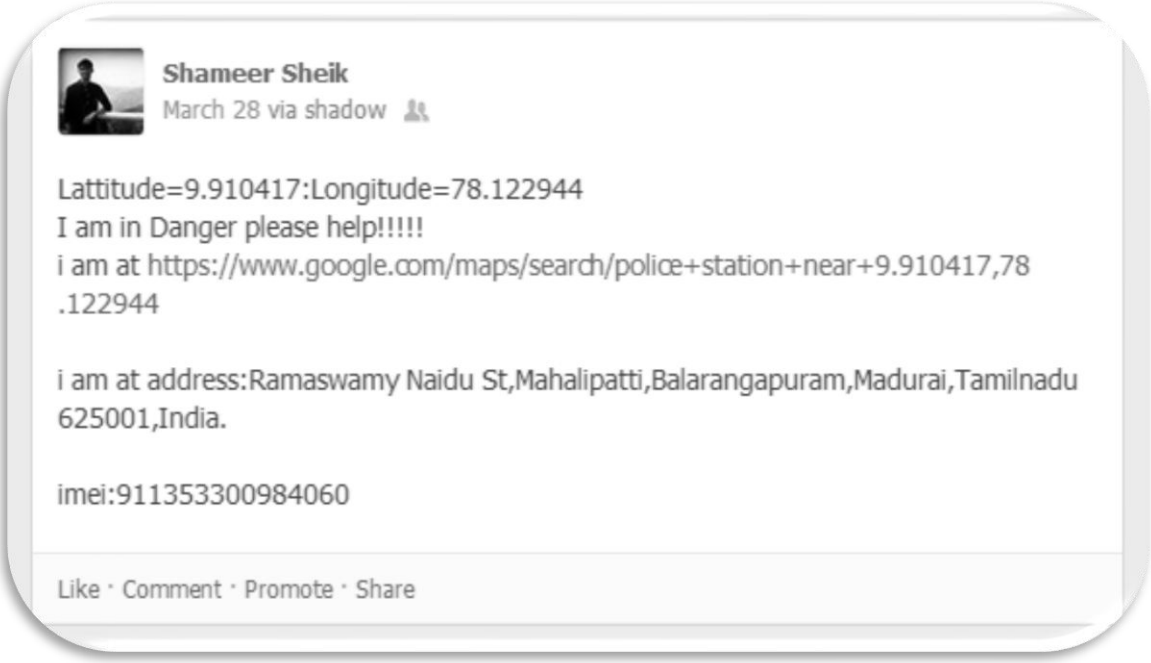



Figure 3.6.1: Emergeny message

## 2.7 SHAKE LISTENER

It is not acceptable that a victim in a dire situation needs to start our application and the do the emergency action. Hence there is a requirement for the victim to perform the emergency action without alerting anyone . We provide a method in which the victim shakes his mobile in a predefined fashion and the emergency action take place in response.

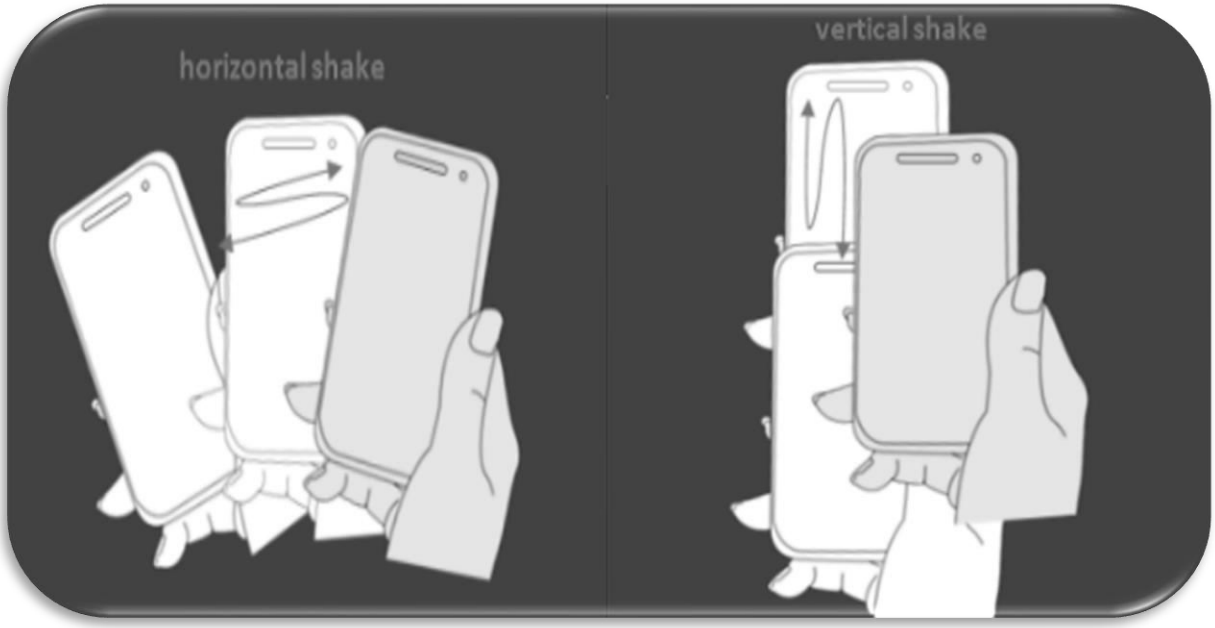



Figure 3.7.1:Shake listener

## 2.8 HELP VOICE

The victim may be in a position where he/she is forced not to raise an alarm , at that time a help sound for example a police siren alarm can be used from our application . This may at sometimes put the user in further trouble with the adversary so we offer the provision of customising our app to the user's need.

# 3 SYTEM DESIGN

This chapter will provide the system flow diagram and also explain the design of the various modules of the virtual security guard using GPS. This system consists of some major phases which are described below.

## 3.1 INTRODUCTION

A Sequence of modules are used in the project design , it involves the initial stages of registering with the server and setting up our application. The next step invloves getting the geocode from the location manager of the mobile phone and using reverse geocoding to convert the geocode to a user readable form . Then we create a google maps link with the generated data. Then the setting up of the message content takes place. The IMEI number is included and the emergency action is carried out.

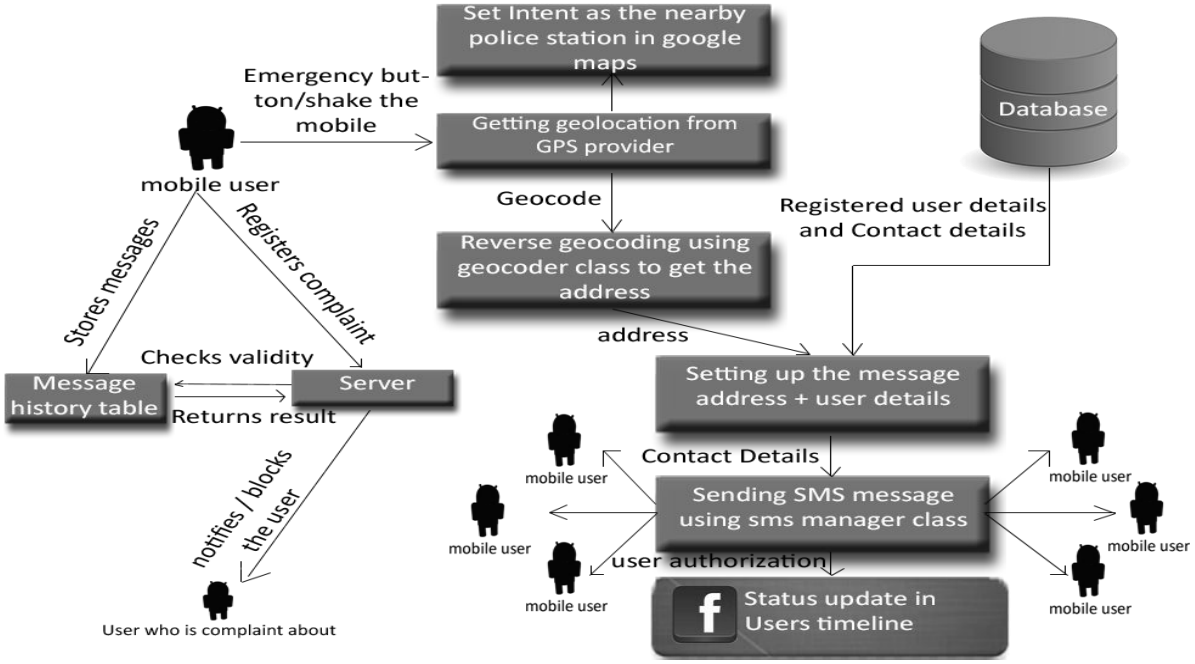



Figure 4.1.1: System design

## 3.2 MODULES DESIGN

### 3.2.1 REGISTERING USER

The user needs to register in the register page so that a unique id number is generated. This id is then used for further references with our server.

The input of this module is the user's details and the output of this module is the unique id that is generated.

### 3.2.2 GEOCODING

The lattitude and longitude of the particular mobile is collected from the location manager. The provider is chosen as network provider or GPS provider.

The input will be the emergency action and the output will be the gecode ie latitude and longitude.

### 3.2.3 REVERESE GEOCODING

The lattitude and longitude of the victim cannot be understood by the relatives/ friends . so we use reverse geocoding process to convert the geocode to user readable form. We use the google maps api to convert the geocode by sending a HTTP request to the google server.

The inputs are latitude and longitude , the output generated will be the address in the readable form.

### 3.2.4 EMERGENCY MESSAGE

This module sets up the emergency message for sending when there is an emergency action to be carried out. This combines the geocode , the address , the google maps link and the IMEI number.

The inputs are geocode, address in readable format , the google maps link and the IMEI number. The output will be a message that is ready to be posted or sent.

### 3.2.5 FACEBOOK STATUS UPDATE

This module posts the emergency message on the user's timeline. It uses shared preferences to store the username and password on their mobile phones. When there is an emergency action , the system automatically logs the user in and updates his/her timeline.

The input is the emergency action the output will be to update the user's status timeline.

### 3.2.6 SHORT MESSAGE SERVICE

This module sends the emergency message to the relatives/friends of the victim when a emergency action is performed . The contacts are fetched from the server or from the phone if the server is not available.

The input is the contact numbers , emergency message and the output is the sending of the sms to the contact numbers.

### 3.2.7 HELP SOUND

This module helps the user to choose a alarm sound from the available alarms that are provided. We use a Media player class that plays as service to play the alarm sound.

The input is the emergency action and the output is the playing of the sound.

### 3.2.8 SHAKE LISTENER

This module recognises the shake of the mobile phone. It categorizes the shake by checking the minimum distance covered , the time taken to cover the distance and the number of counts the action is performed

The input is the XYZ axis values from the motion listener , system's current time and the last shaken time. The output will be to activate the activity to the emergency actions.

### 3.2.9 COMPLAIN SECTION

This module helps the user to complain about a spam message. The user has to give the IMEI number and their phone number. We verify with our system if the complaint is legitimit . if it is for the first complaint we notify the user , if the complaint is registered for a second time, we block the users IMEI number.

The inputs are IMEI number and the output will be blocking the user from using our application

# CHAPTER 4

## 4 RESULTS AND DISCUSSIONS

### 4.1 GEOCODE

The figure 6.1 shows the current geo location of the user.it describes the latitude and longitude of the user.It is Displayed as a Toast message and displayed for a short period of time.

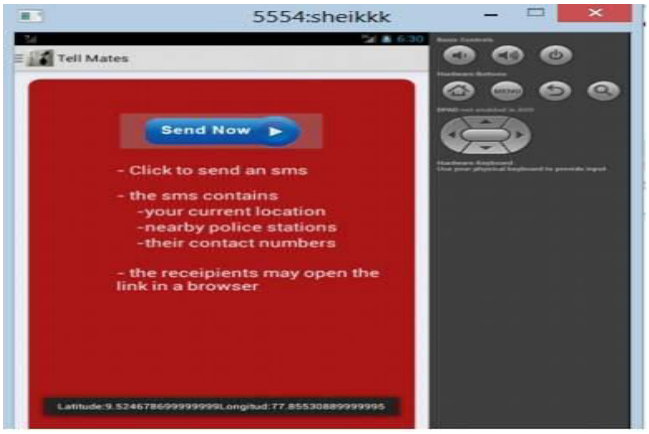



Fig 6.1.1 Geocode

### 4.2 REVERSE GEOCODE

The figure 6.2 shows the Readable address format for the given latitude and longitude.no one knows the latitude language like 6.000 or 7.ooo/so we r converting the latitude and longitude to a readable address format.for eg lat: longi : the readable address format is : .

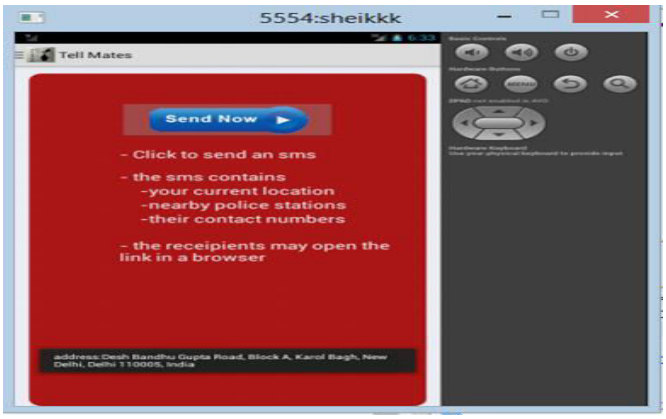



**Fig 6.2.1 Reverse Geocode**

## 4.3 POLICE STATION LINK

The figure 6.3 shows the Link to the nearest police station ,it displays the location of the nearest police station and the contact numbers for the nearest police stations.the range will be around 5o kms circle.the final full emrgency message is displayed in this picture.

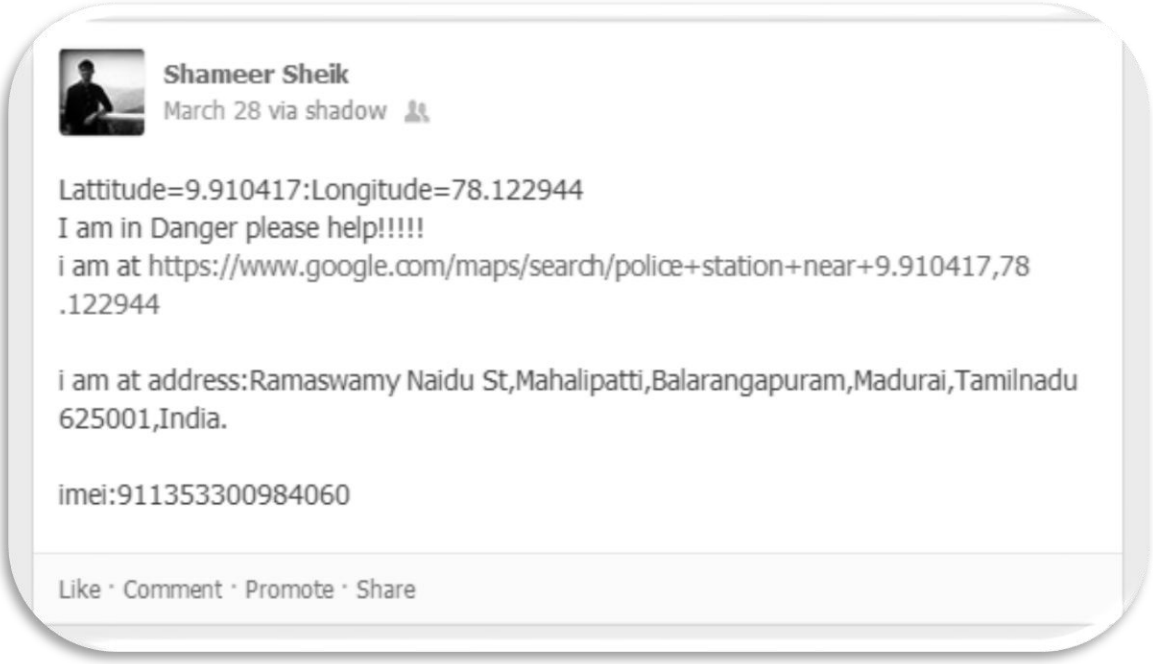



**Fig 6.3.1 Police Station Link**

## 4.4 SEND SMS

The figure 6.4 shows the Message sent from one mobile to another emulator.Emergency service sends tha sms to all those emergency contact numbers slected by the user.This message will be delivered with the emergency message content.

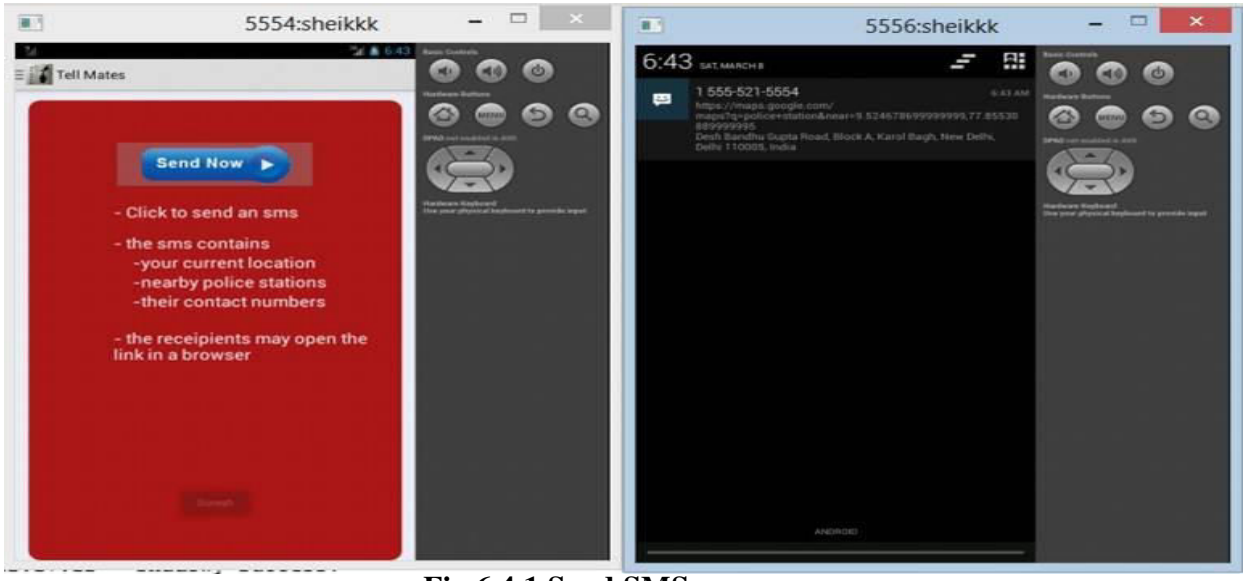
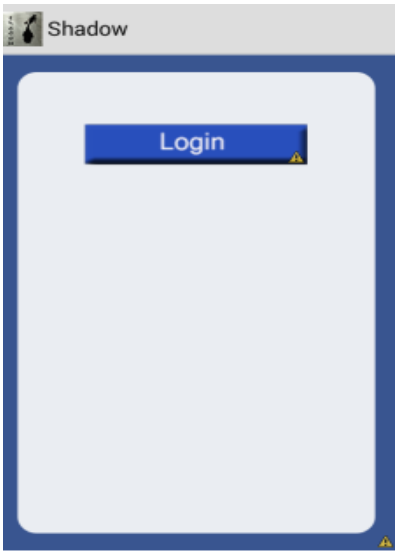



**Fig 6.4.1 Send SMS**

## 4.5 UPDATE FACEBOOK STATUS

The figure 6.5.1 shows login button screen of our application.It Will give us a fig ure6.5.2 Facebook login page.By Providing username and password of facebook user entered into the after login screen.Acess token will be stored in a shared preference.



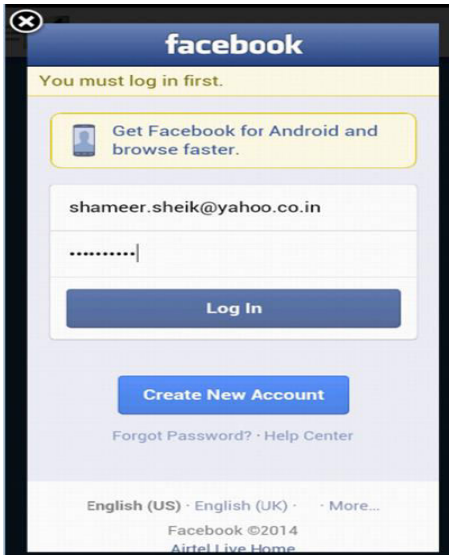




**Fig 6.5 Facebook page**

**Fig 6.5 Facebook login page**

The figure 6.5.3 shows facebook status updated with the emergency message.it has a location of the user,gmap link,imei number.fin 6.5.4 shows the google map link which has nearest policestaion and contact numbers.

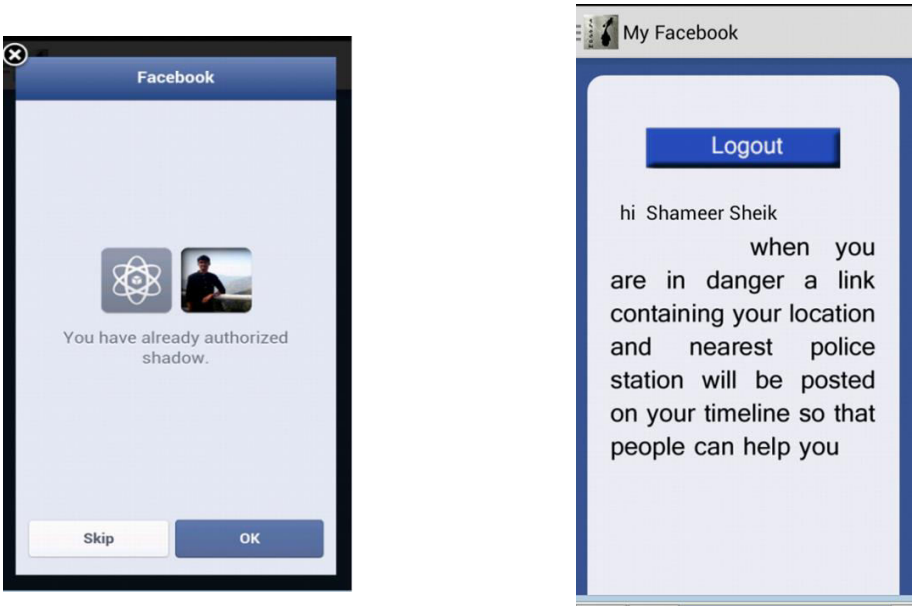



**Fig 6.5.1 status updated in facebook**

## 4.6 DELETE FACEBOOK STATUS

The figure 6.6 shows the list of facebook status uploaded from our application.the user selected status will be deleted from tha wall of the user,not only from his wall but also from all those who share this status..


**Fig 6.6 .1Delete fb status**

## 4.7 REGISTER PAGE

The figure 6.6 shows Register page.For unregistered user,The user has to enter the required details in the register page.After storing the details into the server it will return the unique id of the registered user.For registered user the details taken from the shared preference displayed in the corresponding places.


**Fig 6.7.1 Register Page**

## 4.8 CONTACTS PAGE

The figure 6.7 shows Contacts .The mobile contacts whre fetched into the contacts page and each text view is an auto complete text view.so just by giving the starting letter it will displayed a list of names from that the user can select .After saving it in centralized server it will be store in share preference.It will be retrived from shared preference whenever neede rather than contacting with the server.


**Fig 6.7.1Contact Page**

## 4.9 COMPLAINTS PAGE

The figure 6.8 shows the complaint page.The imei number and phone number will be given.After proper validation and checking the complaint will be registered.

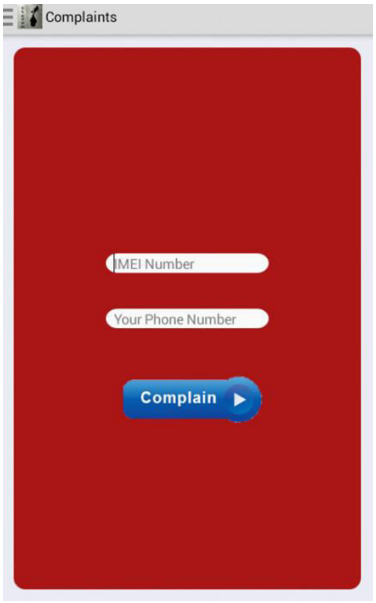



**Fig 6.8.1 Complaint page**

## 4.10 SETTINGS PAGE

The figure 6.8 shows settings page.All the Feautures will be displayed .The user can set their settings based on there preference.If the Settings Are Enabled then Green L8 will be Shown.If the feauture were disabled then red l8 will be shown.


**Fig 6.8.1 Settings Page**

## 4.11 MY LOCATION

The figure 6.9 shows My Location Page.This Page Shows the location of the surrent user in a google maps.We use Normal View for maps.The Location of the user were displayed as a marker in tha google maps.

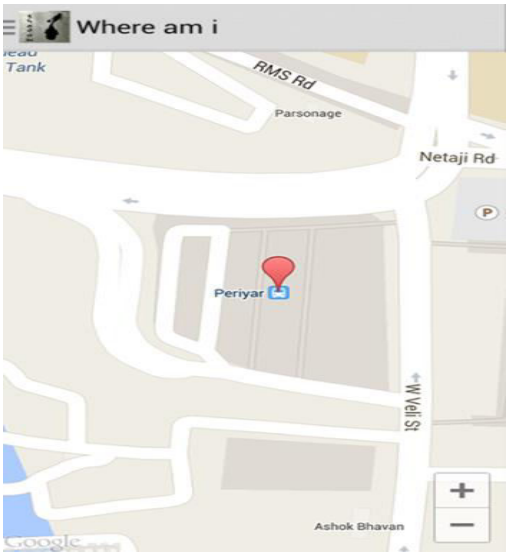



**Fig 6.9.1 My Location**

## 4.12 HELP VOICE

The figure 6.10 shows help Voice page. It Shows the List of audios .The user have to select an audio from the list.the index value will be stored in the shared preference.it will be retrived when needed.


**Fig 6.10 .1 Help Voice**

## 4.13 NAVIGATION PANE

The figure 6.11 shows Naviagation pane.It is a Slider.It display when the user touch and slides it out.The navigation pnae has the details of all the pages and link to get into that particular page.

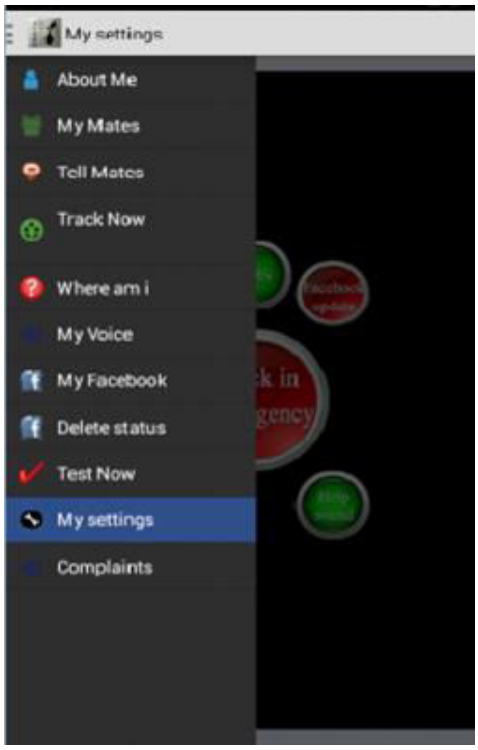



**Fig 6.11.1 Navigation Pane**

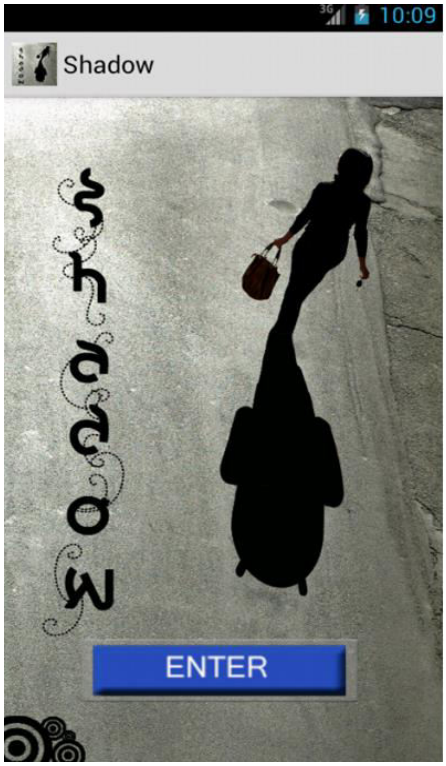



**Fig 6.12.1 Enter page**

# CHAPTER 5

## 5 CONCLUSION AND FUTURE ENHANCEMENT

This chapter concludes the project report and provide the possible scope for various enhancements that can be made to this project in the future.

### 5.1 CONCLUSION

This project focuses on finding the location of the person under danger , convert the location into a readable form so that their relatives , friends and other people from their Facebook account and the sms that is sent can know of their location. The people can call the nearby police station using the numbers provided at the time of need by our application. The application comes very handy to the user who are in peril since it requires only shaking of their mobile phones. The application also sends the IMEI number so that the user can be tracked easily.

### 5.2 FUTURE ENHANCEMENTS

Our app can be enhanced to know the type of dangerous situation the victim is in and take action depending on the situation.

Our app can be improved to be installed on all government automobiles and can be used to convey hazardous situation and track them.

Our app can be improved to provide emergency calling facility as well.