



# Travease: An Offline Android Mobile Application With One Tap Emergency Service

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**ABSTRACT:** The technological advancement in automobile industry and global economic surge, more and more people afford to own vehicle. Due to increase in population of vehicles on road there is an increase in chance of accidents. Though there are highway emergency services available, there is a delay in getting them since these are call based services. And also such emergency services are available only on highway roads but not in internal roads of city/town or in any remote areas. This article presents the application to overcome such drawbacks. There are so many accidents which occur and are left unattended due to lack of communication between victim and emergency authorities. The application is created considering all the above problem and to overcome this. So, this basically works on one tap SOS service into which nearest emergency services are notified with location. This application is useful for each and every type of commuter travelling such as, commuters travelling by train, bus or any other mode of transport. It consists of a simple UI, through which the victim or commuters can seek for emergency services easily.

**KEYWORDS:** SOS, GPS, GPRS, Dual Login Authentication.

## I. INTRODUCTION

India can accomplish its objective of becoming the super force and a financial centre point only if its enormous quantity of ladies takes part in advancement procedure. This paper presents an examination survey on the chief need of knowledge security framework with innovation prerequisite and difficulties to fabricate the framework. Since the expectation of such occurrence is preposterous thus to limit the chance of physical savagery (burglary, rape and so forth.) by keeping all the assist apparatuses with preparing to securely escape from brutal circumstance. This diminishes chance and brings help when required. The long range interpersonal communication is an amazing piece and furthermore a hotspot for ladies provocation by transferring the hostile photo taken by concealed cameras, despite the fact that these cases may occur with blamelessness guys, in whatever cases these folks end their life by submitting a suicide. The true representative of United Nation Ban Ki-Moon, expressed that "There is one well known fact relevant to all nations, societies and networks: brutality against ladies is rarely adequate, never understandable, and never bearable". The report of WHO expresses that. "A brutality demonstration against female sex upset the general wellbeing life of society and furthermore it disregards the human privileges of ladies". This paper continues as follows. In Section I present the investigation of a few existing frameworks with its usefulness. Area 3 investigations the current frameworks fundamentally dependent on cost factor. In Section IV presents the proposed model. Talks about the working of proposed model. In Section IV talks about the Working of Prototype created. The future extent of the proposed framework is talked about. Lastly in segment 8 presents the finishes of this paper.

## II. LITERATURE REVIEW

**Scream Alarm:** An android application created by Go Pal App Maker in November 2013. By clicking this application, it produces a high volume shout in the midst of misery when the lungs of an individual bomb in a tough situation. The produced shout is in a lady's voice is seriously useful in a tough situation creator. The main work done by this application is at whatever point the individual pushes or contacts the application, the mobile rings boisterously with a lady's voice.

**VithU:** Created by Star India Pvt. Ltd. This is a crisis App that, at the snap of the force catch of your Smartphone multiple times sequentially starts conveying ready messages at regular intervals to your contacts that you feed into the application as the assigned beneficiaries or watchmen.



**BSAFE- PERSONAL SAFETY APP:** This application is created by Bipper Inc. On March 6, 2015. The application's motto is Never Walk Alone. This application causes the client to make a posse of 'Gatekeepers' and SOS messages will be gotten by them when the client is in a difficult situation. Likewise, another great element of this application is one of the watchmen will likewise be called. The SOS message additionally incorporates the area of the client by means of GPS. The client can likewise empower the GPS tracker and let the companions know area whenever.

**Women's Safety App:** A voice keyword recognizing app to recognize the user and activate the app functionality even in the mobile keypad locked. The GPS module tracks the longitude and latitude to trace a precise location of a user and sends the pre-stored emergency message including location to the registered contact numbers. The recording module starts the recording of the conversation for five minutes and stored as evidences. The message goes in queue if network problem and send when network gets available. A notification is generated for successful deliver message. Also user can select contact through voice based contact list and make a call. Note: The spoken keyword converted into a text to compare with the registered keyword.

**IPROB:** An emergency response situation recognizing app called as IPROB to produce women safety even within the situation like terrorist attacks or natural disaster, by just shaking the mobile above the predefined threshold value automatically to activate the system. It starts capturing the surrounding voice to check and ensure the unsafe IPROB situation where it raised the notification and user fail to respond in predefined time then the message alert sends to the register contacts. If the mobile profile at the receiver is in silent mode then convert it into the final profile to administer the voice notification as "YOUR CHILD IS IN TROUBLE PLZ HELP...PLZ HELP ..." continuously sort of a ring tone, until they stop it. If a register contact confirms a PROB then appropriate emergency services like ambulance, fire brigade are alerted. If a register contact responds with an audible notification, then it automatically connects and enables the speakerphone at the victim side. An integrated tri-axial accelerometer used to evaluate the unique movements that a phone experiences as threshold.

**SCIWARS:** SCIWARS app (Spy Camera Identification and ladies Attack Rescue System) which consist of two modules. a primary module act as an intelligent alerts system which detects the infrared rays coming from every Night-vision hidden cameras placed in changing rooms, hotel rooms, etc and also informed the user about unsafe place through message. Now it's the user responsibility whether to register a complaint or not by forwarding the notification with the location to legal authorities like Police. The second module will get activated by pressing any key continuously which will provide the assistance to the victim from physical attack in unsafe situation. It sends the emergency message containing location to register contacts. It also records the voice and captures the pictures of the encircling for 45 seconds. This information also stored on the Q.T. location of mobile for future evidences. This app also ready to convert the receiver mobile profile from silent to general mode, and also supports the auto-call receiver at victim side.

### III. METHODS/IMPLEMENTATION

The Software Requirement Specification document provides a complete description of all the features of emergency SOS app. It emphasizes on the essential specifications that are to be kept in mind while designing and implementing the system. Secure and personalized tracking Application. Dual Authentication System – Password and Fingerprint Recognition Intended Audience. Live Location on Google Maps Background. Button feature to get the route on Google Maps from User location to searched location. SOS SMS with name and location to Hospital and Garages using Online SMS API Integration. Location for Hospital, Garages and Police Station using latitude and longitude intended audience of this Android app are the organizer team, the developer team, team, testing team and the user of the app i.e. are college student. This product uses a dual authentication system for login. Manual password keyword and fingerprint recognizing app to recognize the user and activate the app. The GPS module tracks the longitude and latitude to trace a precise location of a user and sends the pre-stored emergency message including location to the registered contact numbers. The message goes in queue if network problem and send when network gets available. This app is designed for various emergencies like car breakdown, need police help or hospital emergency.

### ALGORITHMS

#### 1. Distancing Algorithm Haversine

This uses the 'haversine' formula to calculate the great-circle distance between two points – that is, the shortest distance over the earth's surface – giving an 'as-the-crow-flies' distance between the points (ignoring any hills they fly over, of course!).



$$a = \sin^2(\Delta\phi/2) + \cos \phi_1 \cdot \cos \phi_2 \cdot \sin^2(\Delta\lambda/2)$$

$$c = 2 \cdot \text{atan2}(\sqrt{a}, \sqrt{1-a})$$

$$d = R \cdot c$$

The haversine formula ‘remains particularly well-conditioned for numerical computation even at small distances’ – unlike calculations based on the *spherical law of cosines*. The ‘(re)versed sine’ is  $1-\cos\theta$ , and the ‘half-versed-sine’ is  $(1-\cos\theta)/2$  or  $\sin^2(\theta/2)$  as used above. Once widely used by navigators, it was described by Roger Sinnott in *Sky & Telescope* magazine in 1984 (“Virtues of the Haversine”): Sinnott explained that the angular separation between Mizar and Alcor in Ursa Major –  $0^\circ 11' 49.69''$  – could be accurately calculated on a TRS-80 using the haversine. For the curious,  $c$  is the angular distance in radians, and  $a$  is the square of half the chord length between the points. If  $\text{atan2}$  is not available,  $c$  could be calculated from  $2 \cdot \text{asin}(\min(1, \sqrt{a}))$  (including protection against rounding errors).

### Spherical Law of Cosines

In fact, JavaScript (and most modern computers & languages) use ‘IEEE 754’ 64-bit floating-point numbers, which provide 15 significant figures of precision. By my estimate, with this precision, the simple spherical law of cosines formula ( $\cos c = \cos a \cos b + \sin a \sin b \cos C$ ) gives well-conditioned results down to distances as small as a few metres on the earth’s surface. (Note that the geodetic form of the law of cosines is rearranged from the canonical one so that the latitude can be used directly, rather than the colatitude). This makes the simpler law of cosines a reasonable 1-line alternative to the haversine formula for many geodesy purposes (if not for astronomy). The choice may be driven by programming language, processor, coding context, available trig functions (in different languages), etc – and, for very small distances an equirectangular approximation may be more suitable..

$$d = \text{acos}(\sin \phi_1 \cdot \sin \phi_2 + \cos \phi_1 \cdot \cos \phi_2 \cdot \cos \Delta\lambda) \cdot R$$

### Equirectangular approximation:

If performance is an issue and accuracy less important, for small distances Pythagoras’ theorem can be used on an equirectangular projection. This uses just one trig and one sqrt function – as against half-a-dozen trig functions for cos law, and 7 trigs + 2 sqrts for haversine. Accuracy is somewhat complex: along meridians there are no errors, otherwise they depend on distance, bearing, and latitude, but are small enough for many purposes\* (and often trivial compared with the spherical approximation itself).

Alternatively, the *polar coordinate flat-earth formula* can be used: using the co-latitudes  $\theta_1 = \pi/2 - \phi_1$  and  $\theta_2 = \pi/2 - \phi_2$ , then  $d = R \cdot \sqrt{\theta_1^2 + \theta_2^2 - 2 \cdot \theta_1 \cdot \theta_2 \cdot \cos \Delta\lambda}$ . I’ve not compared accuracy.

## 2. Sorting Algorithm

QuickSort is a Divide and Conquer algorithm. It picks an element as pivot and partitions the given array around the picked pivot. There are many different versions of QuickSort that pick pivot in different ways.

1. Always pick first element as pivot.
2. Always pick last element as pivot (implemented below)
3. Pick a random element as pivot.
4. Pick median as pivot.

The key process in quicksort is `partition()`. Target of partitions is, given an array and an element  $x$  of array as pivot, put  $x$  at its correct position in sorted array and put all smaller elements (smaller than  $x$ ) before  $x$ , and put all greater elements (greater than  $x$ ) after  $x$ . All this should be done in linear time.

Step 1 – Choose the highest index value has pivot

Step 2 – Take two variables to point left and right of the list excluding pivot

Step 3 – left points to the low index

Step 4 – right points to the high

Step 5 – while value at left is less than pivot move right

Step 6 – while value at right is greater than pivot move left

Step 7 – if both step 5 and step 6 does not match swap left and right

Step 8 – if  $\text{left} \geq \text{right}$ , the point where they met is new pivot



APIs

A SMS API is well-defined software interface which enables code to send short messages via a SMS Gateway. As the infrastructures for SMS communications and the internet are mostly divided, SMS APIs are often used to 'bridge the gap' between telecommunications carrier networks and the wider web. SMS APIs are used to allow web applications to easily send and receive text messages through logic written for standard web frameworks.

1.SMSAPI

SMSAPI is a high-quality SMS platform, enabling you to integrate any of your applications with our SMS message sending and receiving system. The main advantage of our system is its simplicity of implementation. The SMS message may have your company name or any phone number you own as sender name. Every message sent from our system has its own unique id, which allows you to receive confirmation of its delivery.

2.GOOGLE MAP API

With the Maps SDK for Android, you can add maps based on Google Maps data to your application. The API automatically handles access to Google Maps servers, data downloading, map display, and response to map gestures. You can also use API calls to add markers, polygons, and overlays to a basic map, and to change the user's view of a particular map area. These objects provide additional information for map locations, and allow user interaction with the map. The API allows you to add these graphics to a map:

- Icons anchored to specific positions on the map (Markers).
- Sets of line segments (Polylines).
- Enclosed segments (Polygons).
- Bitmap graphics anchored to specific positions on the map (Ground Overlays).
- Sets of images which are displayed on top of the base map tiles (Tile Overlays)

IV. PRODUCT DESIGN

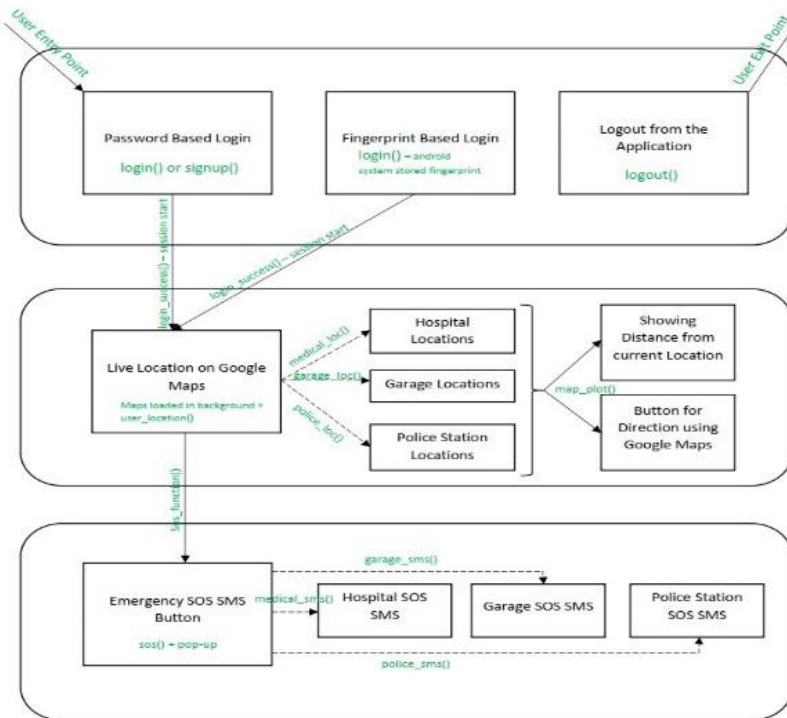


Fig.1 Architecture of Travease Application

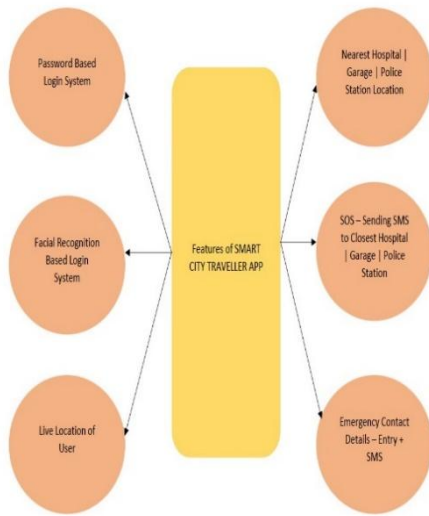


Fig.2 Feature Diagram of Travease Application.

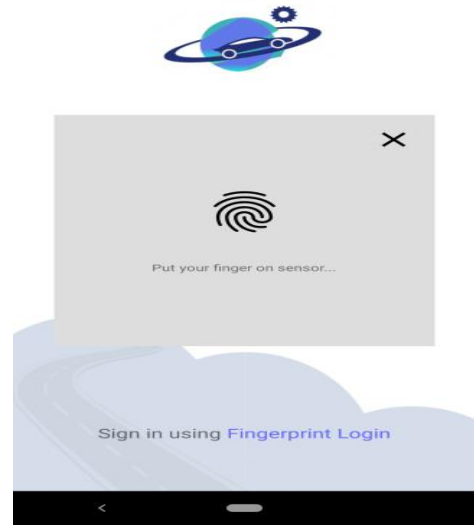


Fig.3 Dual Login Authentication.

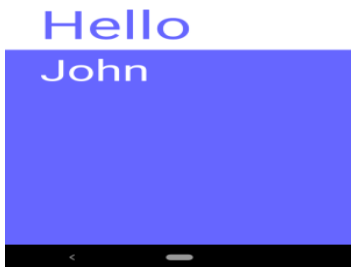


Fig.4 Successful Login

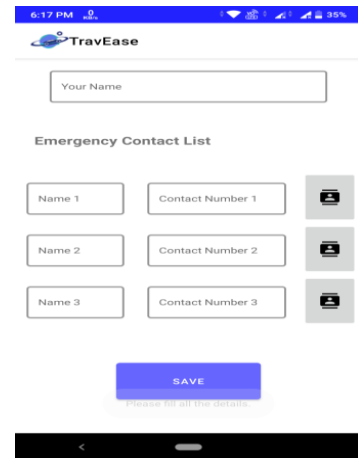


Fig.5 Adding Emergency Contacts

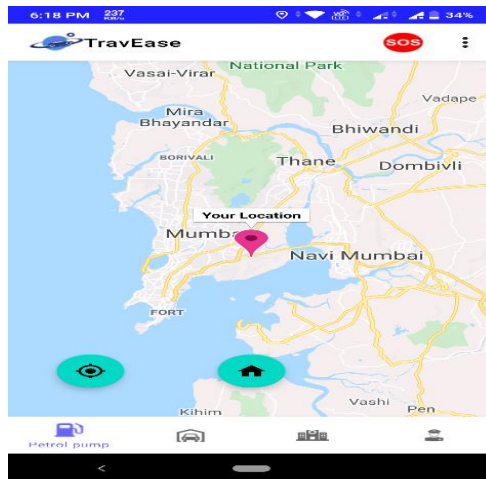


Fig.6 GPS Location

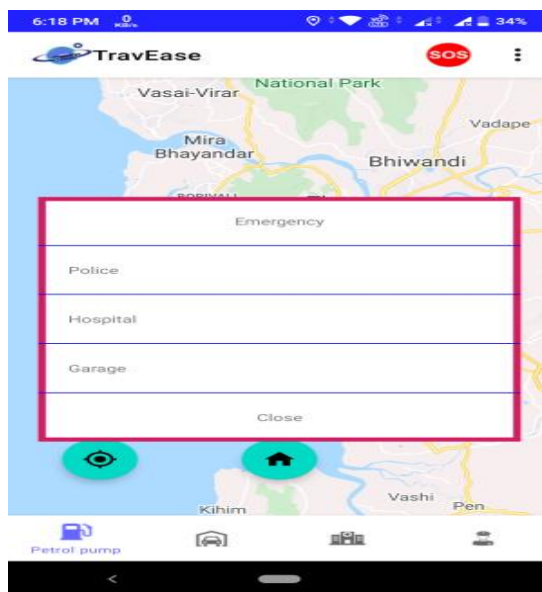


Fig.7 One Tap SoS Feature

### V. RESULTS AND ANALYSIS

Once logged in, the user is directed to the main screen of the application. This is the screen that would open up when the user opens the application. The user can press the panic button to send text messages and emails to the contacts set up. The user will also see his current location on the main screen. This way he would know his exact location and. This location is also sent as a part of the text and email messages. The user can set the contacts to send the text message and emails within the app. He can either select the contact from the contact book or can enter one manually. He can also set the text message and the email message that would be sent. The user can enable the option to start location tracking. If this option is selected, the application fetches the location of the device (about every 15 minutes) and stores it in an external database. If the permission to track the location was granted, the user can at a later point see the various locations he had been to for a time interval on a particular day. He would be presented with a map that displays these locations. The user can see the address and the time he was at that location by clicking on the marker for a location. In case of car breakdown, on clicking the SoS button, the emergency message will be sent to the nearest garage. The mechanic at the garage will be notified and will reach the location where the user’s car has broken down to fix it. In case of hospital emergency, the user on clicking the SoS button, an emergency message will be sent to the nearest hospital and the contacts the user enlisted while registering for the app. The hospital staff on receiving the message will rush to the location from where the user sent the message.

| Shortcoming                                                 | Vulnerabilities                                                                          | Cost and Parameter that affect the cost                                        |
|-------------------------------------------------------------|------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|
| Needs to remember the keyword for activation.               | A system may not recognize the user, if noise added with voice.<br>Cost-Free/ Very Less. | A software implementation makes cost less.                                     |
| User should remember the Shaking way to activate the system | A system may not recognize the threshold when shaking frequency gets varied.             | Cost-Medium.<br>An integrated tri-axial accelerometer evaluates the threshold. |
| Receiver profile checked and converted to General.          | The infrared coming from other device can be generating the noise signal.                | Cost-Medium.<br>An infrared signal detecting system detects a hidden camera.   |

Table 1. Critical Analysis





## VI. CONCLUSION

We developed a system that works for safety of an individual. Adding special features to our application we provide a user friendly and easy interface. We build a network of relationship with your family and friends providing quick access to help when in a hazardous condition. Providing self-confidence to an individual by providing them our system that helps them to be independent without worrying about security or any other issues that may occur. Users can quickly push the designed buttons for help via sending (short) messages or Phone calls, both of which automatically include position Information, to default emergency corresponding people or Institution. This application will be available to android users first and then analyzing the scope of the project we would extend its use to other platforms too.

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