

# Emergency Reporting using Smartphone

Iniya Shree S

Assistant Professor, Department of Computer Science and Engineering  
Bannari Amman Institute of Technology, Sathyamangalam  
Erode, India  
iniyashree@bitsathy.ac.in

Ramya R

Assistant Professor, Department of Computer Science and Engineering  
Bannari Amman Institute of Technology, Sathyamangalam  
Erode, India

Dinesh P S

Assistant Professor, Department of Computer Science and Engineering  
Bannari Amman Institute of Technology, Sathyamangalam  
Erode, India

**ABSTRACT:** *This project Emergency Reporting using Smartphone is about how a person in an emergency or anybody at the emergency site will avail the service. The common man can make use of this system in case of any emergencies. The system works in such a way, that users will get help from the requested team. This system responds to emergencies promptly. The objective is that it has to be user friendly and triggering of the application should take least time. The Emergency button is displayed in the home screen of the mobile to avoid waste of time navigation to the application stored somewhere else. Pressing the emergency button triggers the application in the background and immediately the location of the user in terms of latitude, longitude and general information of the place the user is currently in is sent automatically to the registered emergency phone numbers in the application. The application for full functioning demands GPS service to be available in the handset. If the phone doesn't have GPS service, commit to trigger this application can show an error message, however still send a text message to the registered phone numbers. This feature is extremely helpful taking those users World Health Organization don't have GPS enabled phone*

**Keywords-**Emergency,GPS,Google Matrix API

## I. INTRODUCTION

Emergency never comes with prior intimation and in real world scenarios, detecting such kind of emergencies and reporting them is a real challenge. Disaster management organizations, may be government or private one, have their own agenda in place to work-out on the plan and rescue the person who is in emergency. But many of such rescue teams/organizations complain that they won't get 'right information in right time' i.e. disaster management teams will not be able to get the right information of the emergency in right time, so more the delay in reaching information of emergency to rescue team leads to less chances of rescue. Medical emergency is the most important factor for all citizens. Even considering other personal emergencies like fire at home due to some unfortunate conditions and being alone, sleeping at home leads to major injuries; sometimes death. The person who is in emergency will not be in position to inform disaster management team, and that is the worst situation where needy needs help but not able to seek it. So by any means if emergency is detected and reported automatically to disaster management team, then these teams will be in position to rescue person in emergency, even before he/she knows about such emergency. To do so we would take help of all emerging technologies and available hardware sensors.

### 1.1 HELP ME SERVICE

This is a widely used mobile application in all over America. This system is centralized and available in both application and web format. Using this application the person on emergency site can take photo of it, which is automatically uploaded to website and other application user gets the alert regarding such emergency along with location and photo. So being one hand responder of any emergency, one can help others via this application. Help Me Features Include: Two-way communication: once user gets alert message on his/her phone, they can also reply with any other detail information regarding that emergency. Here rescue teams or any other helper can suggest the directions to get out of such situation.

## 1.2 GOOGLE MAPS

Maps are available and free. Not only maps but location-related information visible on the maps is an obvious feature. This work is an application of opportunistic networking for the spreading of maps and location-related data in an ad-hoc, distributed fashion. The system can also add user-created information to the map in form of points of interest. The result is a best effort service for spreading of maps and points of interest. The exchange of local maps and location-related user data is done on the basis of the user position. In particular, each user receives the portion of the map containing his/her surroundings along with other information in form of points of interest. The some applications is able to display the map of the whole world while online or, display a pre-downloaded map, track the user's location using (Google Cloud Messaging) .The Google maps API are used to show all the devices on that are registered in web application which is running on your home.

## II. LITERATURE REVIEW

Dinesh Raut (2015) elaborated the enhanced functionality of the emergency call for android. This is an application which has to be activated before the victim might get into an emergency situation i.e. before walking alone through a tunnel. Then you have to press a button or a finger on the screen. As soon as you lift the finger from that button/screen, the device will send an emergency call or message to a friends, family, police, and doctors and send the exact current position. As soon as they know the position of user they can reply to the rest of people.

Jingang Li (2015) developed an application due to the actual demand of remote medical monitoring system, the overall framework of remote medical monitoring system which based on the Internet of things technology and cloud computing technology is designed. First, the overall framework of remote medical monitoring system is introduced. Second, the development of data communication method of Android Bluetooth and HTTP is discussed in detail, which is based on the Android framework. The Internet of Things and cloud computing technologies together to build a remote medical monitoring system. Android mobile terminal development on the medical applications of data processing centres and medical data display applications. Finally, the experimental results show that the system not only runs and transfers data stabilize, but also strong real-time, effective and feasible.

Muhammad Faisal Tahir (2015) developed an android application which has the capability of using the concepts of augmented reality to submerge the virtual information of user's surroundings by detecting and tracking user's location in real time. Eclipse is an open source software, used in professional development of software solutions and programming applications. It provides extensive availability of free libraries. It has been employed for the development of software used in this thesis. As the android GPS is notified, the application is fully location aware which keeps the track of user's location. When the user points the camera in a specific direction, the application tracks the camera orientation and displays the records of a specific place. Then the application keeps on updating the information as the direction changes. The additional information is displayed with the help of "Google" databases. The information when gathered is then displayed to the live feed of camera which helps the users to interact in a more reliable way. Option for viewing the places in map view with the help of Google Maps is also available.

## III. MODULE DESCRIPTION

The proposed model is designed to be user friendly and time saving. In this newly proposed system the button will be available on the home screen of that android mobile. So that it will be very easy to operate and trigger the system. User can use the application on the home screen, so that there will be no chances on running the app unknowingly. We name this system as the "Help" button. As the user press the button or touch the screen the application will trigger in the background and immediately the location of the user in terms of longitude and latitude will be attach to the custom message is send to the alternate number which is pre-registered in the application. The user can add number according to his/her requirement also can save the custom message. Thus the location of the user in problems will know to all persons whom message has been sent. To work this model accurately and properly the GPS service has to be available in the handset. If the handset has GPS service unavailable, the system will show error. But user has not to worry about that because still it will send the custom message to the register number which will helps the people whom message will send to know the trouble of the user. Also when the user sends the message to the registered number, if next person don't get message or unable to respond, the application will send message repeatedly after 10 minutes. Thus it gives guaranty of the delivery of the message which is very essential in such a situation when user can't do anything. Also the person going for help reaching at that place where user is located can reply to the rest of the people to which user sends the message. Along with these fantastic features the application will also make call to the registered number. If the

send message doesn't get response the call will help to the user in critical situations. If the handset user is not triggering this application, default home screen of the handset will be displayed continuously. When GPS signal is not available, then the smartphone use the cell tower information to triangulate your location. Using triangulation algorithm, only the position on the earth surface can be found but not the exact location. So instead of using triangulation algorithm various Google API's like Google Map API, Google Traffic API, Google Distance Matrix API can be used. Using these API's, the location, time and distance of the service can be easily found. Google API are used in order to overcome traffic, location and the distance in an array so it gives the shortest distance.



Fig 1.1 Triangulation Algorithm and Google Matrix API

The accuracy of the location obtained using the Triangulation algorithm is lower than GPS. Some geo-location systems use GPS and cell site triangulation (and in some instances, local Wi-Fi networks) in combination to zero in on the location of a device. Using the Google Matrix API and Google maps API the nearest distance from the user's location where the ambulance is located is found and sent the information of the user. Trilateration and Haversine formula are used by Google to triangulate the location of a particular object or person on ground or in air. Some of the advantages of the applications are it can be used for confined search of all the services around the location of the user. It also allows the user to communicate with the particular service team using the chat functionality in the application. It can also be used for searching the location of the service team from the user's location. The user will 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. This application uses Google maps to locate the available service in any particular area. Dijkstra's Algorithm is used to find the location of the user and the service team efficiently. The user of this application can avail help from the service team in less time and the system responds to the users promptly.

### 3.1 USER AUTHENTICATION PHASE

In this phase the user of the application has to login by entering a username and password the first time he opens the app on his device. He then remains logged into the application until he logs out explicitly. If the user does not have an account, he can register on the login screen. The user can also choose the password reset option in case he does not remember his password. A new password is set for the user and a mail containing this new password is sent to the registered email id. Once logged in, the user is directed to the main screen of the application.

### 3.2 LOCATION TRACKING PHASE

Location tracking is the most valuable and promising phase in the proposed system to make the system more enhanced and useful. With the help of GPS the system i.e. mobile device will automatically track the location. The device will track the location in the form of longitude and latitude along with the address of that area where the user is present. Along with tracking the location of user the system is able to track the location of the services which is located nearer to the user so that the system will send messages and calls to contact the emergency services like 108. Many a systems fails to find exact location of the user but in the proposed system the work had been improved. But this newly proposed system is able to track the exact location of the person who fall in the emergency situation and unable to help themselves.

### 3.3 TIME AND DISTANCE PHASE

In this phase using the above mentioned android API's like Google Map API, Google Traffic API, Google Distance Matrix API the user will get a message about the accurate timing, the distance and the hospitals near by the location from where the user has sent the request. Within the particular time the team will arrive at the exact location so that the victim can be taken to the hospital and the necessary treatment will be provided.

3.4 CALL DIALING PHASE and ACKNOWLEDGEMENT PHASE

In the proposed system as soon as the user press the button present on the home screen of the mobile phone or only shake the mobile, the mobile is able to make call automatically to the pre-registered numbers. As the call gets connected and receiver receives the call the user can talk to make request for the help. Otherwise there is another facility available i.e. as the receiver receive the call, they will hear audio clip which will help to know that user is in trouble. If in any circumstances after sending emergency message or call, the user is safe and he/she don't have anyone's help so he can send acknowledgement (i.e. he/she is safe and the SMS receiver has not to worry about the user) to the all numbers to whom user has sent the messages and calls. Along with that if any person reaches at the location where the user falls in emergency situation, they can send acknowledgement to all numbers.

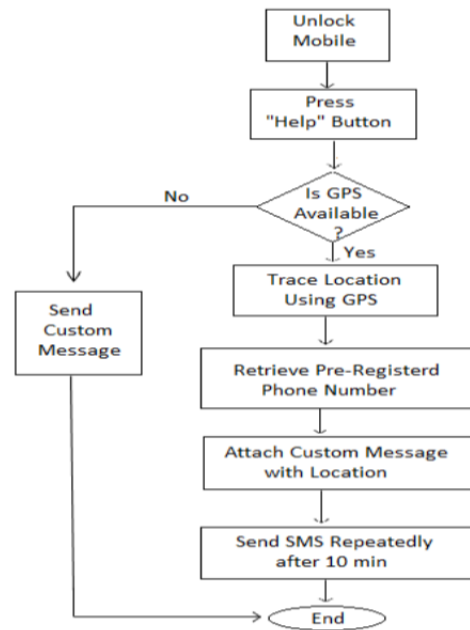


Figure 1.2 Flowchart for module description

Figure 1.2 explains the different types of modules in which,

1. The user must unlock the mobile and open this application.
2. On opening the app, he can see a help button. By pressing that button, if the GPS is available it will automatically send the location of the user to the emergency service.
3. If GPS is not available it will send a custom message and end the process.
4. In case the option to track location is selected and there is no internet connectivity on the device (both wireless and Cellular data), the application should be able to store the locations offline and send them to be stored in the database once the internet connectivity is up again.
5. After this the emergency service will send an acknowledge to the user which includes information such as the time, distance and the hospitals near the user's location.
6. The user can make use of this information and decide accordingly.

IV RESULT AND DISCUSSION

There are two sides of this application namely:

1. User Side
2. Service Side

The user side GPS is used just to get the location of the user when he/she presses the help button. The emergency device is tracked by the server. Using the Google Matrix API and Google maps API the nearest distance from the user's location where the emergency service team is located is found and the information is sent to the user. Trilateration and Haversine formula are used to locate the particular object or person on ground or in air. The user would be able to track his requested service. He would be able to know the exact location of the

service team as the team knows his. As the accuracy of the geo-location increases, the more accurate position of the user can be obtained. Even if the route is not known to the driver, still he can reach the user's location.

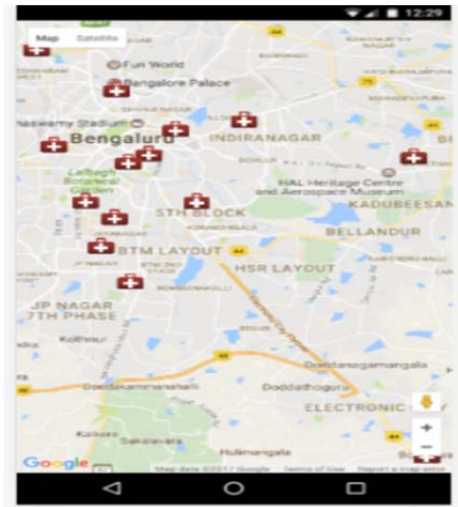


Fig 1.3 Displaying services in the map.

## V CONCLUSION

This Application for Android with Enhanced Functionality is immense useful for the people because it is very user friendly and takes less time to trigger. This application is freely available and runs on Android and iOS handsets. It is a personal security app that lets you send notifications to certain people via text messages and emails in case of emergencies. This app also keeps a track of your current location so that you always know the address of where you are. The app can also track your location periodically and store it permanently enabling you to see your location history. Yet now only limited number of users identity can be managed which is visualization of user location, this will be overcome by means of fetching separate server for gathering user's information by launching this, we can break the limitation which was occurred in previous task. So the future research will be able to implement the any number of user's identity.

## REFERENCES

- [1] Andrzej Podziewski 2012, "Emergency Button – a Telco 2.0 application in the e-health environment", 978-83-60810-48-4/\$25.00 c 2012 IEEE.
- [2] Ankita Deshpande 2014, "Location Based Services using Android Application", IEEE Transaction on Information Technology, vol.3, no.2, ISSN:2319-7064
- [3] Atack L. et al. 2013, "Emergency medical and health providers perceptions of key issues in pre-hospital patient safety", Volume-2, Patent number: 7362239.
- [4] Dhrubajyoti Gogoi 2013, "Android Based Emergency Alert Button", IJITEE, ISSN: 2278-3075, Volume-2, Issue-4.
- [5] Dinesh Raut 2015, "Enhanced Functionality of the Emergency call for Android", International journal of Engineering Science and Research Technology, volume-49, no.8, ISSN:2277-9655
- [6] Jingang Li 2015, "Remote Medical Monitoring System", International Journal of Smart Home Vol. 9, No. 4 (2015), pp. 163-174
- [7] Manav Singhal (2012), "Implementation of Location based Services in Android using GPS and Web Services", IJCSI International Journal of Computer Science Issues, Vol. 9, Issue 1, No 2, January 2012.
- [8] Muhammad Faisal Tahir 2015, "Location Tracking using Augmented Reality", IEEE Transaction on Computer Science, volume.19, no.7, pp.174-183
- [9] Poonam Bedarkar 2012, "Android Application developed on Android Studio", International Journal of Science and Research (IJSR), ISSN: 2319-7064.
- [10] Prawat Chairapra 2013, "A Real-Time GPS Vehicle Tracking System Displayed on a Google-Map-Based Website", International Journal of Computer Science and Information Technologies, Vol. 4 (6) , 2013, 979-982.