

Emergency Panic Button

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Abstract— Google's Android platform for mobile devices has quickly developed into a serious open source alternative. We explored the Android Operating System (OS) and software development environment and evaluated several of its capabilities by constructing a working application. This application collected speed and location information from the Global Positioning System (GPS) receiver, used the Google Maps Application Programming Interface (API) to determine the location of nearby hospitals, and gives message to hospitals and relatives, if a person need a help. The platform proved capable of supporting a melding of different services, and we believe such smartphones have broad applicability to public safety problems.

Index Terms - Android, Smartphone, GPS, Public Safety.

1 INTRODUCTION

Mobile technology solutions allow businesses to "connect" with the consumer like never before. The Mobile device is being positioned to become the world's leading media solution. GPS tracking technology has been applied to many of today's problems in innovative fashions, including as an aid to health services. This article outlines some of the advantages of GPS tracking devices for medical purposes and for emergency alert systems.

No one expects to be involved in a car accident. That is why they are called accidents. The reality is there are more than 15,000,000 accidents per year that lead to more than 20,000,000 insurance claims. While we hope you are not one of those 15,000,000 you can now download Emergency Panic Button, an ANDROID app that provides you and your family with access to virtually everything you need if you are ever involved in a accident. Emergency Panic Button technology provides you and your family with a one-click automated emergency communication system that contacts up to 3 family or friends, your insurance company, your insurance agent. It will even send your shop a map of your accident location so they can respond immediately. Because of its GPS location technology, Emergency Panic Button makes it easy for you to locate and contact the Police department, nearest Hospital [1].

2 PROBLEM STATEMENT

Anytime, anywhere, always on, always available.....The world has entered into the "all mobile" era, where mobile phones do it all. Mobile technology solutions allow businesses to "connect" with the consumer like never before! The Mobile device is being positioned to become the world's leading media solution. GPS tracking technology has been applied to many of today's problems in innovative fashions, including as an aid to health services. This article outlines some of the advantages of GPS tracking devices for medical purposes, particularly Alzheimer's patients and for emergency alert systems

Tree Tier Architecture

Three-tier is a client-server architecture in which the user interface, functional process logic("Business rules") com-

puter data storage and data access are developed and maintained as independent modules, most often on separate platforms. It was developed by John J. Donovan in Open Environment Corporation(OEC), a tools company he founded in Cambridge, Massachusetts.

The three-tier model is a software architecture and a software design pattern. Apart from the usual advantages of modular software with well-defined interfaces, the three-tier architecture is intended to allow any of the three tiers to be upgraded or replaced independently as requirements or technology change. For eg. a change of operating system in the *presentation tier* would only affect the user interface code.

Presentation tier

This is the topmost level of the application. The presentation tier displays information related to such services as browsing merchandise, purchasing, and shopping cart contents. It communicates with other tiers by outputting results to the browser/client tier and all other tiers in the network.

Application tier

The logic tier is pulled out from the presentation tier and, as its own layer, it controls an application's functionality by performing detailed processing.

Data tier

This tier consists of database servers. Here information is stored and retrieved. This tier keeps data neutral and independent from application servers or business logic. Giving data its own tier also improves scalability and performance[5].

3 SYSTEM INFRASTRUCTURE

Interaction of system component

Location Based Services (LBS) solutions involve the use of position information about a user's particular location with intelligent applications and solutions to provide relevant information and services. More recently the acquisition of a

user's location (typically latitude and longitude) has become more and more automated with connected GPS devices, GPS enabled cell phones, location services from various mobile operators and positioning technologies with WiFi and other wireless networks. With automated acquisition of user location; LBS scenarios are becoming more compelling and applications more useful. LBS solutions in their simplest form can include providing relevant maps, driving directions, proximity searches for Points of Interest (POI) such as a nearby ATM, and more advanced enterprise scenarios such as intelligent dispatch, field service and geo-fencing. These solutions often involve multiple application types including web based or client/server and mobile applications providing LBS on Pocket PC, Tablet PC and other mobile devices.

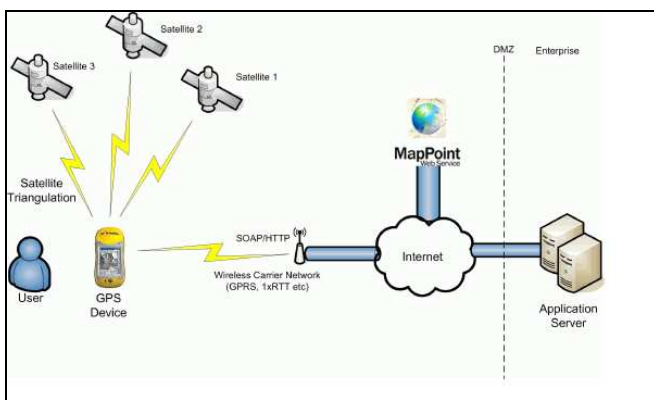


Figure 1: System Architecture

4 EQUATIONS

In this project we are calculating the path between the troubled user and nearest hospital using the three attributes Longitude, Latitude and Altitude.

To calculate this path we used the Haversine Formula.

Haversine formula:

$$a = \sin^2(\Delta lat/2) \cos(lat1) \cdot \cos(lat2) \cdot \sin^2(\Delta long/2)$$

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

$$d = R \cdot c$$

where R=earth's radius,
lat=latitude of the earth,
lat=the latitude of the accident area,
lat1=the latitude of the hospital,
long=the longitude of the earth

Working Algorithm of the Project

1. On clicking EPB button firstly trouble user position calculates.

```
Double lat = (userList.get (0).getLatitude ());
Double lon = (userList.get (0).getLongitude ());
```

2. User current location compare with all locations of hospital.

```
Double dLat = ((arrList.get (i).getLatitude ()-lat)*3.14)/180;
DoubledLon= ((arrList.get (i).getLongitude () lon)*3.14)/180;
```

```
3. Using Haversine formula calculates nearest hospital.
Double a = Math.sin (dLat/2) * Math.sin (dLat/2) +
Math.sin (dLon/2) * Math.sin (dLon/2) * Math.cos (lat) *
Math.cos (arrList.get (i).getLatitude ());
Double c = 2 * Math.atan2 (Math.sqrt (a), Math.sqrt (1-a));
sd[i] = R * c;
Double min = sd [0];
Int minid=0;
for (int j=0; j<len; j++)
{
    if(sd[j] < min)
    {
        min = sd[j];
        minid = j;
    }
}
```

Working of the Dijkstra's Algorithm:

1. Suppose, hospitals are nodes and distance between hospitals and accident area is edges.
2. Now, when we get the edges using GPS then using Haversine formulae we calculate the distance and using Dijkstra's we will get the nearest node i.e. nearest hospital.

5 WORKING SCENARIO

Emergency Panic Button for Android allows you to improve your own safety and letting everybody know you are in trouble by sending a short alert notification to your friends or family via email or text message. You set up a list of contacts and every time you are in need of assistance or emergency, you can issue an emergency call by a combination of presses on the power or sleep button. Your current location and predefined message will be sent to your predefined contacts as SMS or Email. You can add a password so that only you can change the settings of the App.

Communication between Asset Track Box and the gateway server can be implemented using HTTP/HTTPS/SOAP protocols over the GPRS network. Data will be sent to the gateway server using HTTP/SOAP protocols.

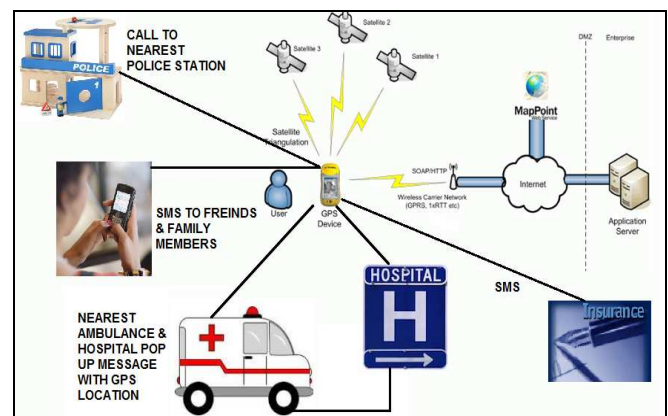


Figure 2: Working Scenario

6 ACKNOWLEDGMENTS

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7 CONCLUSION

Thus "Emergency Panic Button" is important application based on mobile, which is used to provide facility to the customer who suffers from the accident. We can more implement this application using android operating system. This is a new system which enables users to communicate with hospitals & their family in case of emergency as soon as possible. This is first experience who to perform such a professional work. Developing such system was really very exciting, a wealth of information and a very good opportunity to learn process, System analysis, and designing.

.In this system we are using manual method to operate Android phone instead of that in future it makes automatically. This system may use for sending the images of the accident.

REFERENCES

- [1] N.Martinez Madrid, R.Seepold,A.Reina Nieves,J.Saez Gomez Dpto.de Ingenieria Telematica Universidad Carlos III de Madrid Leganes, Madrid, Spain, ralf.seepold@uc3m.es "Integration of an Advanced Emergency Call Subsystem into a Car-Gateway Platform".
- [2] Common NMEA Sentence types." Online. Internet. Available WWW: http://www.commlinx.com.au/NMEA_sentences.html - A page with the sentence structure of the most important NMEA strings. Gives samples of data that could be received by your application. Great for setting up your parser.
- [3] Franson, Johan. "GPS Programming & .NET." June 2004. Online. Internet. Available WWW: <http://www.ddj.com/documents/s=9175/ddj0406j/0406j.html> - Gives sample code on how to build a GPS application. Shows you how to check the checksum and calculate distances between points.
- [4] <http://www.travelbygps.com/articles/tracking.php>
- [5] Yuan-Cheng Lai, Frannie Han Department of Information Management National Taiwan University of Science and Technology Taipei, Taiwan laiyc@cs.ntust.edu.tw "A GPS Navigation System with QR Code Decoding and Friend Positioning in Smart Phones".