

Nearest Patrol Search under Emergency Condition

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ABSTRACT

With rapid development of mobile internet technology and wide usage of Smart Phones, more attentions have been given to network access techniques and interactive applications through mobile phones. Emerging wireless technologies are opening up a brand new market for new styles of applications and services. Nearest patrol search is a GPS tracker application specialized for both personal safety and for those who feel insecure in crucial situations. Communications during emergency situations is very crucial for the victim as well as the rescue team. This system is intended to function in case of emergency situations in society. The emergencies include nightshift, walking alone on the road side, travelling alone in a cab or taxi we can use this application. Emergencies never come with prior intimation. In this we represent the Emergency Management System (EMS), which enables smart phones based ad-hoc communications at emergency situations over network connectivity. The system works on the principles of client-server system, wherein the server responds to the request of the client. We have implemented the EMS client application, rescue application and server. The client and rescue application is implemented as an android application. The server is implemented as a web based java application. In this application the client acts as the user who is under risk and the server act as the police. Location coordinates are sending on each request. The android application automatically tracks the user and updates the location to the nearest patrol through Google Map. The police can locate the person who is under risk so that immediate actions can be taken. We tested the system using several real android phones with Global Positioning System (GPS), clients communicating over Mobile Data. The aim of our application is to provide security for the people those who are residing with poor network signals, initiates easy payment thereby making the country more digitized.

KEY WORDS: GPS, Google Map, EMS, Java, Android, Ad-Hoc.

1. INTRODUCTION

The usage of smart phones equipped with GPS has increased rapidly in the past seven years. Location tracking is becoming very popular in the modern era. It offers innovative applications such as video surveillance, Human computer interface and vehicle navigation. Today Location Based Service (LBS) is defined as a new emerging, promoted and a valuable application for a mobile user. Location tracking is a Himalayan task. This situation is handled by LBS which is a mobile service that has the capability to provide real time information based on user's location.

The common issue is generally defined as the problem of tracking or estimating the position of the user. There are lot of personal safety applications that have been developed to tackle this issue.

The limitations of these models is that it supports only static database and not dynamic which results in lack of flexibility. Also the design of the application is complex which reduces the performance level and includes high cost. These applications can able to track the location only within the fixed area leading to a major drawback.

Therefore, the development of real time working algorithm is of essential importance. In order to accomplish such a challenging task, a number of tracking algorithms and real time systems have been developed.

A new application has been proposed in this paper using situation awareness. The features of traditional application have been extended which deals with static data and make the features such as they can work dynamically with real-time information.

Nowadays, security of women's is at the stake in our country. This application includes anti-theft facility for the women's or the user who is using the application so that their location information is sent geographically to the nearest patrol control system. The location is viewed through Google Maps.

The paper is structured as follows. In session II Literature survey is being discussed, session III briefs the proposed system along with the Architecture, session IV displays the activity diagram and the results obtained through implementation and the session V concludes the paper along with the future work to be enhanced.

Literature Survey: Shaveta Bhatia (2013), discussed a real Time Location Tracking Application based on Location Alarm. The motivation is to create an application where we provide the user with the information regarding a place he or she wants to visit. Only registered users can use this application. Admin will login to the application from the browser and will get the data of the people roaming all over. It has limitation of application constraint. (Ginger Myles, 2003), A client server system has been implemented in (Ginger Myles, 2003), helps the user to locate their friends and family members through mobile. The location has been tacked with the help of GPS and SMS notification is sent. The user will be provided with an alert message about his friend's location when the friend is within a couple of meters to the user. The user can be navigated to his destination dynamically using this application. It also helps the user when he is new to some place by knowing his location o spot. Using GPS the user can know the present location coordinates and if the user moves to other location automatically the coordinates will update and changes the location information

in the user's mobile device (Hiam Khoury, 2009), proposes an android based solution to aid parents to track their children in real time. The system consists of two sides, the client and the parent side. The parent side sends a request location SMS to the child's device to get location of the child. Thus it requires telephony and internet services to be enabled in the parent's phone for the system to function. (Peter Ruppell, 2006), The paper "Android based Tracking Application-DOPE HUNT" by Arushi Jain has developed a solution to pull out the worries of the parents for their children. This application is launched with a security code which is dialed via phone. The parents (concerned party) when want to get the location of their loved ones will send a simple message from their phone which has a hidden code out of the scope of user understanding. The smart phone will automatically detect the code and sends the user's location without even turning on the GPS. This is done automatically if they are not able to give the location to their parents because of any scenario. This application even helps the cops as well to find the criminals if they are aware of their contact number.

A new system has been proposed in this paper, to address the issues pertaining to the existing system.

Proposed System: This system has been implemented in Android 1.3.2 platform operating system. This is developed using SDK tools. The main reason why Android OS was chosen for implementation of this work is to target more users since this makes it the highest over smart phones operating system currently in the market.

Use case Model for Users:

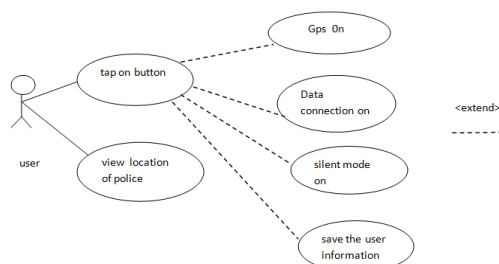


Figure.1. Use case modeling for users

In Figure.1, the use case for client phase has been given. It is basically an android phone owned by the user. By clicking on this application, the GPS, network connectivity is automatically switched after which location is immediately sent to the nearby patrol.

Use case Model for Patrol:

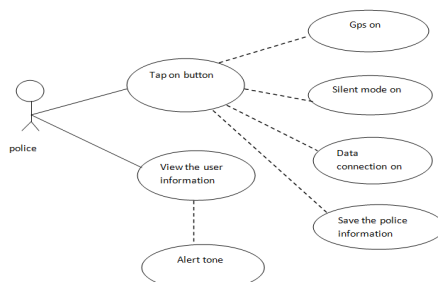


Figure.2. Use modeling for patrol

The use case model for patrol phase is shown in figure.2, where the user's location sent to the patrol provides an alert sound which helps the police rescue them. The location is keeps on updating in the database as the user moves from one place to another.

System Architecture: Based on the use case modeling, the system architecture has been designed and shown in figure.3. It consists of two phases. Patrol phase which acts as a server and the user phase acts as a client. These two phases are combined and implemented as the architecture diagram being shown in Figure.3. On clicking the application the mobile turns on to the silent mode and the GPS is switched on automatically. Then the nearby police receive an alert beep. This helps the cop to track the location of the person who is under risk. This location keeps on updating as the user moves from one place to another. When the network connectivity is not available in the user's device then an alert SMS is sent to the pre-registered mobile number. This helps to rescue the person.

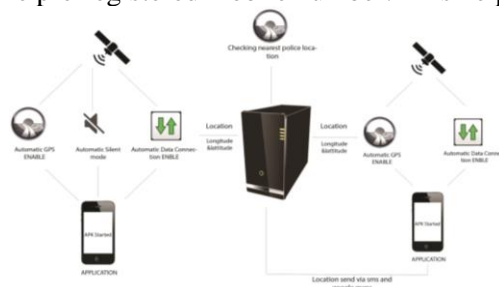


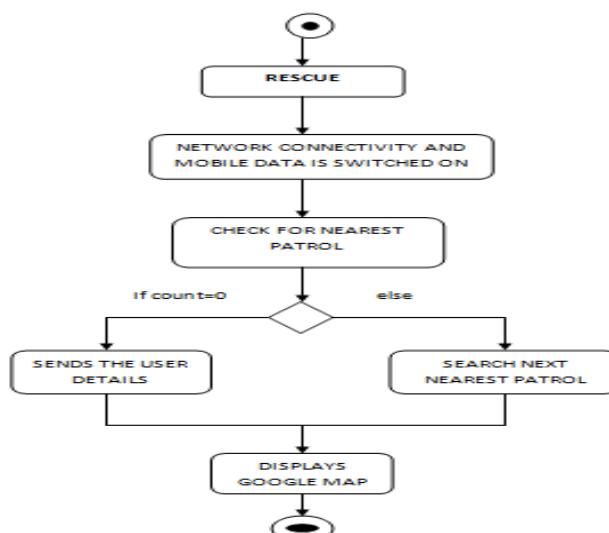
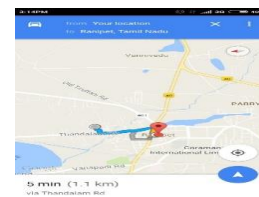
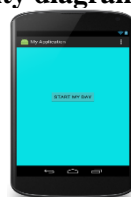
Figure 3 System architecture

Merits of the proposed system:

- Tracks the nearer dynamic location.
- The System integrates EMS client application, rescue application and server.
- Location coordinates are automatically updated on each request.
- Mobile Phone automatically turns to silent mode and GPS is automatically switched on.

2. IMPLEMENTATION AND RESULTS

Activity diagram for the proposed system is shown in figure.4. Once a rescue button is pressed, the network connectivity is getting established and the device is searching for a nearest patrol and the status of the user details have been uploaded as shown in figure.4.

**Figure 4 Activity diagram****Figure.5. Implementation screen**

The developed application screen is shown in figure 5. The proposed system is compared with the existing system and listed in table.1.

Table.1. Comparative study

Existing Application	Disadvantages	Advantages in the Proposed System
Women Safety App	Difficult to get the absolute measure.	Accurate location is tracked.
Red Eye	Alerts your dear one when you are in same location for a long time during travel.	Alerts only when the user is under risk
Women Safety Shield Protection	Dynamic search is not enabled	Supports dynamic data
Himmat	Complex design	Easy user interaction.

3. CONCLUSION AND FUTURE WORK

By considering women safety and kids monitoring, a system has been developed and implemented in android platform. The objective is to track the location of the user and provide immediate security. As the location Based services are emerging great popularity, these kind of application can satisfy the user needs by automatically enabling the network connectivity. The future work would be focused on developing this system in other platform and more adaptable with any of the operating system.

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