

A Cost Effective GPS-GPRS Based Women Tracking System and Women Safety Application using Android Mobile

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Abstract

Women Safety Application can be used to find and Help Women in emergency. In recent time its been identified lots of misbehaving activity in urban and rural part of our country. With some statistics citing the occurrence of one rape incident every 20 minutes, it is evident that it has reached epic proportions. Since mobility growth is been identified in recent 10 years and Smartphone penetration started 5 years ago. With the rapid growth of Android user and cheaper internet cost we can provide a simple medium to create safety awareness among the working and professional women of young and teen age. Women Safety Application can show you exact location of the women in help to her relatives, guardian and friends along with the specific location, where you can go and help it. Women Safety Application system offers the added protection of being track by relatives on different time interval and different location. In the addition to thi family, parents can easily track and monitor her daughter .Women Safety Application as every girls have mobile phones and rarely put them down. Lots of families and pro ff estionals are waking up to the many benefits that Women Saftey Application.

Keywords:- GPS, GSM, GPRS, Human positioning, Google Map, Latitude, Longitude

1. Introduction

A wide range of tracking systems has been developed so far tracking vehicles and displaying

their position on a map, but none of the applications has been developed so far which tracks the mobility of a human being. Now a day's tracking a person's mobility has become a crucial issue these days be it tracking a criminal came on payroll or a system which is cost effective and can be used for tracking a human being using a GPS and GPRS equipped mobile phone rather than using a handheld GPS receiver. "The main focus of our project is to reduce the overall cost of tracking based on GPS system which is a satellite based service which is available 24X7 everywhere in the whole world. GPS system can be used to get location which includes details like latitude, longitude and altitude values along with the timestamp details etc. it a free of cost service available to every individual. In order to track the movement of the person we have used Google Maps for mapping the location sent by the mobile phone. The mobile phone which fetches the GPS location communicates with the server using General Packet Radio Service (GPRS). This service is a low cost service provided by the service providers which is a wireless data communication system. Mobile phones equipped with GPS receiver are easily available in the market these days and is a booming technology these days. This cell phone technology has enabled us to communicate almost every part of the world across the boundaries. The GSM/GPRS is one of the best and cheapest modes of communication present these days and in future.

2. Problem statement

Using Android we are going to implement GPS person tracking. If a person is interested in tracking another person's location through GPS then using java with android SDK we will create one interface which will retrieve positions of person anywhere on the earth and upload it on server. On server side we are using PHP and MYSQL to get the inputs from Android device. Using PHP commands we will insert the person's location in database. After that using maps we will plot location of person on map. So administrator of the system will be able to monitor people.

3. Proposed system Women Safety Application

can be used to find and Help Women in emergency. In recent time it has been identified lots of misbehaving activity in urban and rural part of our country. Rapes are not new in India. With some statistics citing the occurrence of one rape incident every 20 minutes, it is evident that it has reached epic proportions. Since mobility growth has been identified in recent 10 years and Smartphone penetration started 5 years ago. With the rapid growth of Android user and cheaper internet cost we can provide a simple medium to create safety awareness among the working and professional women of young and teen age. Women Safety Application can show you exact location of the women in help to her relatives, guardian and friends along with the specific location, where you can go and help it. Women Safety Application system offers the added protection of being tracked by relatives on different time interval and different location. The main objective of the system is to track the current location of the person which has an android enabled mobile by extracting the longitude and latitude of that target person. The primary objective of our system is to track the person and plot the location on real time system like Google map.

4. System Requirement

A) Hardware Interfaces: following are the important requirements: 1. Android Mobile with GPS and GPRS. 2. Computer System with hardware specification.

B) Software Interfaces: 1. Operating System: Windows 2. Language: ECLIPSE 3. Data

Bases: My Sql 4. Front End : HTML, CSS and PHP 5. Browser: Internet Explorer 5 above

PHP:-

PHP is a general-purpose server-side scripting language originally designed for web development to produce dynamic web pages. For this purpose, PHP code is embedded into the HTML source document and interpreted by a web server with a PHP processor module, which generates the web page document. It also has evolved to include a command-line interface capability and can be used in standalone graphical applications. PHP can be deployed on most web servers and as a standalone interpreter, on almost every operating system and platform free of charge. A competitor to Microsoft Active Server Pages (ASP) server-side script engine and similar languages, .PHP stands for PHP: Hypertext Preprocessor. It is a server-side scripting language, like ASP. Its scripts are executed on the server. PHP supports many databases.

ECLIPSE:-

Eclipse is a multi-language software development environment comprising an integrated development environment (IDE) and an extensible plug-in system. It is written mostly in Java and can be used to develop applications in Java and, by means of various plug-ins, other programming languages including Ada, C, C++, COBOL, Perl, PHP, Python, R, Ruby (including Ruby on Rails framework), Scala, Clojure, Groovy and Scheme. It can also be used to develop packages for the software Mathematica. The IDE is often for Ada, Eclipse CDT for C/C++, Eclipse JDT for Java, and Eclipse PDT for PHP. The initial codebase originated from VisualAge. In its default form it is meant for Java developers, consisting of the Java Development Tools (JDT). Users can extend its abilities by installing plug-ins written for the Eclipse software framework, such as development toolkits for other programming languages, and can write and contribute their own plug-in modules.

MySQL Server 5.1

MySQL is a popular choice of database for use in web applications. Many programming languages with language-specific APIs include libraries for accessing MySQL databases. MySQL is primarily an RDBMS and ships with no GUI tools to

administer MySQL databases or manage data contained within the databases. Users may use the included command line tools,[citation needed] or download MySQL front-ends from various parties that have developed desktop software and web applications to manage MySQL databases, build database structures, and work with data records.

C) **Communication Interface.** Keyboard ii. Mouse iii. Monitor iv. NIC v. Android Mobile Phone

5. FEATURES OF THE TRACKING SYSTEM:

Generally the location tracking and determinate position can be categorized depends on the usage as follows:

1. Real time online.
2. Off line.
3. Semi off line.

1. Real Time online:

The Real Time online device receives the real time position from the satellite and relays the information to the general online system is based on GPRS/3G for the information relayed to the server. This online tracking system common with operations requiring locations at all time for example: logistic system, traffic system taxi system, etc. The advantages appear in the convenience of use-Managing and controlling is also efficient due to the server which acts as a monitor and controller. However, 24 hour information relay results in high monthly expense from GPRS/3G. Also incurring expense, or the server as the System Manager.

2.The offline:

Device also receives the present location from the satellite and records various data such as position, time, speed etc in its memory storage and it is the same as the black box of airplane. The information is not relayed to the user. The user must check recorded data when it is needed. So there is no expense because the system is connected to a network.

3. The Semi-Offline:

The Semi-Offline receives the real time location from the satellite and sends it to the user as requested. Sending data can be based on GPRS/3G or form of SMS. The advantage of SMS Semi-offline is that SMS costs free. The semi offline is thus using the tracking system at the time being.

6. System Architecture:

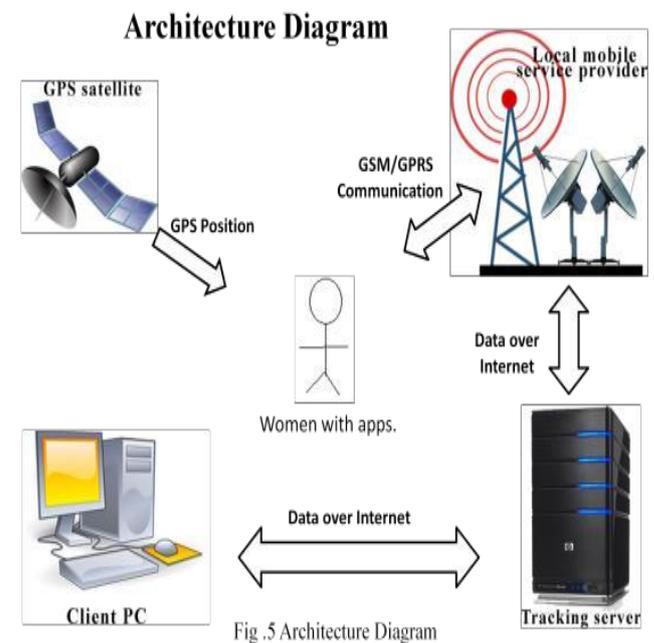


Figure 6.1: System Architecture

The proposed tracking system in this paper is designed to track and monitor AndroidPhone, status that is used by certain party for particular purposes. This system is an integration of several modern embedded and communication technologies. To provide location and time information anywhere in the world, Global Positioning System (GPS) "built in the Anroid" is commonly used as a space-based global navigation satellite system. The location information provided by GPS systems can be visualized using Google Earth. The path of this application can monitor the location graphically on Google Earth; it also can view other relevant information of each anroid in the fleet by using Real Time online.

6.2 Workflow of System

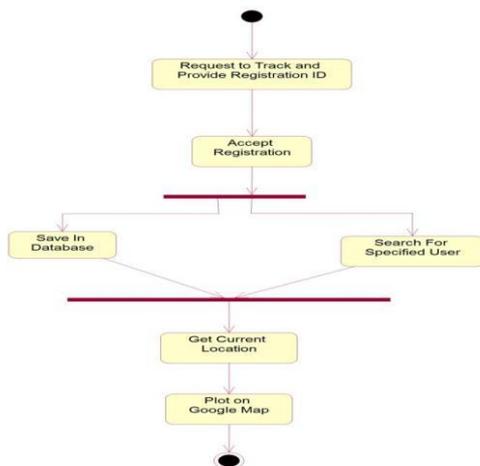


Figure 6.2. Workflow of System

In System Process when we registration has done and get the password through administrator When woman click the app then GPS to trace the phone find the location of that woman and send to the GPRS server .All this information store in database and server send the information via message to its

family member. This message continuously send after some timeslab.

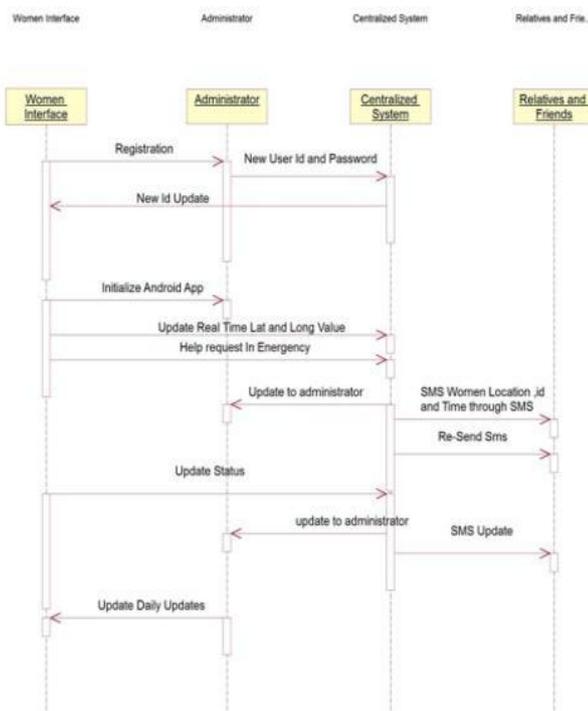


Figure 6.3. System Process

7. Algorithm:

Alorithm for mapping location:

Step 1: Request user location

Step 2: For the current user detect location using google API

If location is detected goto step 3 Else Goto step 1
 Step 3: Send the extracted location to the administrator

Step 4: Store the received coordinates in the database

Step 5: Generate javascript to display the location on map Display the location

Alogorithm for Distance Calculation Compute the distance travelled by a user as follows:

Step 1: Read the starting and ending point of the user

1) $\Theta = \text{lon1} - \text{lon2}$ 2) $\text{Dist} = \sin(\text{deg2rad}(\text{lat1})) * \sin(\text{deg2rad}(\text{lat2})) + \cos(\text{deg2rad}(\text{lat1})) * \cos(\text{deg2rad}(\text{lat2})) * \cos(\text{deg2rad}(\Theta))$ 3) $\text{Dist} = \text{acos}(\text{dist})$ 4) $\text{Dist} = \text{rad2deg}(\text{dist})$

5) $\text{miles} = \text{dist} * 60 * 1.1515$; 6) $\text{unit} = \text{strtoupper}(\text{unit})$; 7) If $\text{unit} = \text{K}$ Then

Return $\text{miles} * 1.609344$

Else

If $\text{unit} = \text{N}$

Then Return $\text{miles} * 0.8684$ Else Return miles

8. Advantages

A. Provides security to Women. B. Reduced cost. C. User Friendly GUI. D. Get Live Position. E. Free message service

9. Conclusion

In this paper, a low cost women tracking system using GPS and GPRS of GSM network, suitable for wide range of applications all over the world. The combination of the GPS and GPRS provides continuous and real time tracking. The cost is much lower compared to SMS based tracking systems. Free Google map and the use of HTTP protocol as data sending method reduces the

monthly bundle cost for the individual user and also for the small business owner. It is expected that the full implementation of the proposed system would ultimately replace the traditional and costly SMS based tracking systems.

10. References

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