IJREAT International Journal of Research in Engineering & Advanced Technology, Volume 4, Issue 2, April - May, 2016
ISSN: 2320 – 8791 (Impact Factor: 2.317)
www.ijreat.org

Women Security System Using Geo-Fence Technique

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ABSTRACT

Women's security is a critical issue in today's world and it's very much needed for every individual to be acting over such an issue. "GPS and GSM based mobile tracking and women employee security system" provides the combination of GPS device and specialized software to track the mobile's location as well as provide alerts and messages to the users friends and family as well as to their respective company. We are using android platform to develop an application in which a virtual "Geo-fence" is created around the daily route of a women employee. Whenever any women employee crosses the virtual geo-fence for specified duration and does not return to the actual route, the application will play its role of informing her friends, family and etc.Now a days due to recently happened cases such as rape by drivers or colleagues, burglary etc., employee security, especially women employee security has become the foremost priority of the companies. System uses the Global Positioning System technology to find out the location of mobile. The information of mobile position provided by the device can be viewed on Google maps using Internet or specialized software. The IT companies are looking forward to the security problem and requires a system that will efficiently evaluate the problem of women employees' security working in night shifts. This paper focuses on the proposed model that can be used to deal with the problem of security issue of women employees using GPS and GSM based mobile tracking. Critical issues which are happened to women are rectified by this safety android application.

Keywords—GPS (Global Positioning System); GSM (Global System for mobile), Geofence

1. INTRODUCTION

The corporate and IT sector is the base of Indian economy and the base of the corporate and IT sector are the employees working for a company. Today, girl's security is a major issue. Women in India have to face a lot of problems, especially professional women employees have to face lot of problems Transportation facilities for these companies require huge amount of workload and complex infrastructure. Generally most of companies prefer local transport vendors on a yearly contract basis for the transportation of employees .But this is not the proper solution to the transportation and safety problem. Due to recently happened mishaps such as robbery and rape cases security for the women employees, has become number one priority for most of the companies. Most of the companies have security systems for employees but there are some serious drawbacks with those system as company cannot trust the drivers of transportation vehicles ,cost of system. In order to deal with such security problems, the system is proposed with innovative solution. This system will help to track the location of vehicle through using smart GPS device.

2. OVERVIEW OF THE SYSTEM

This proposed system is 'GSM & Geo-fence Based Women Security System'. GPS must to activate in the mobile device. The device will provide the user's position information such as latitude, longitude of vehicle. An emergency button or panic button is used inside the specified area, and a geo-fence is used for automated alert .Whenever an user finds herself in any kind of trouble she will press the emergency button and an alert will be immediately sent to the specified mobile numbers and nearby police station. Then it is the responsibility of police squad to react on the situation. GPS is used to get the inputs such as latitude, longitude & sends it using GSM SIM card network operator

3. PROPOSED SYSTEM

The architecture of the system is classified into, mobile security unit, emergency button, request processing unit and android device. Mobile security unit consist the user's device, GPS settings of the system and alert specification settings using GSM. Emergency button is a part of the mobile unit, the data received from the device is interpreted, processed and used by the mobile security system. The co-ordinates and the device's location is displayed using the Google maps interface. The system architecture is shown in Fig.2. The system is divided into several parts. The mobile security unit, emergency button, request processing unit and android device.

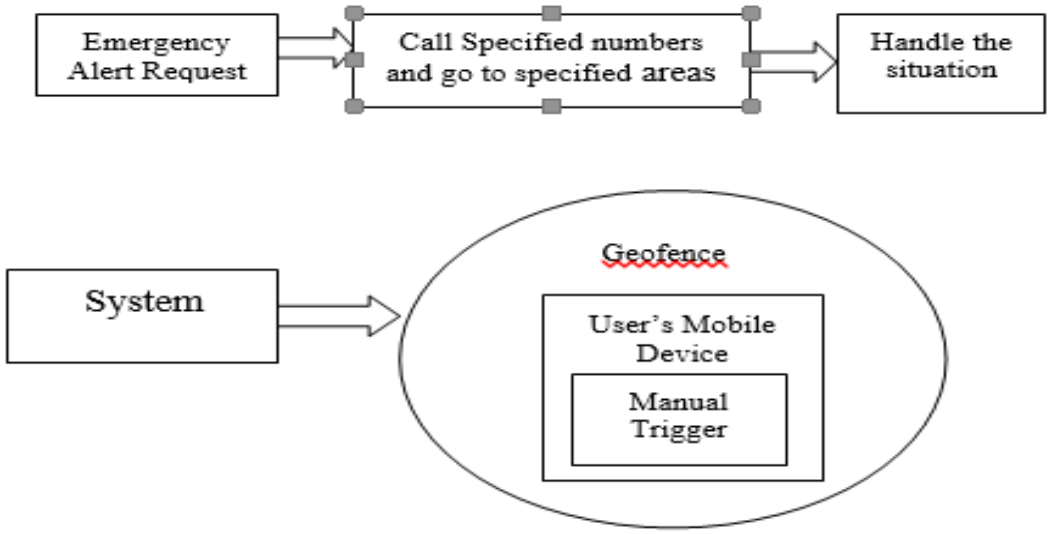
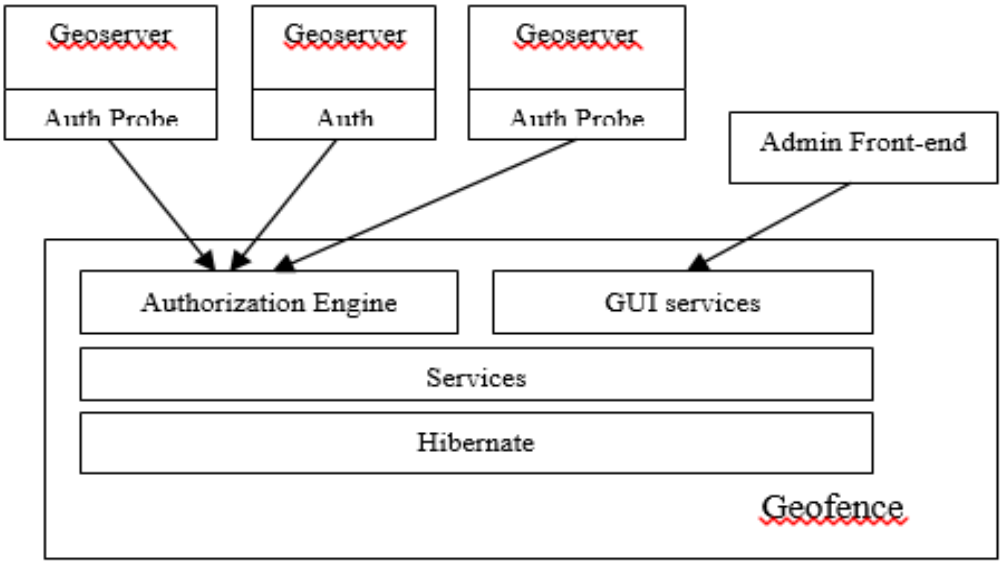


Fig2.System Architecture

3.1 Geo-fence

Geo-fencing (geo-fencing) is a feature in a software program that uses the global positioning system (GPS) or radio frequency identification (RFID) to define geographical boundaries.A geo-fence is a virtual barrier. Programs that incorporate geo-fencing allow an administrator to set up triggers so when a device enters (or exits) the boundaries defined by the administrator, a text message or email alert is sent. Our application will incorporate geo-fencing by defining specified boundaries using longitude and latitude or through user-created and Web-based maps.Geo-fence is a java web
Application authentication/authorization engine for Geo-Server .Geo-Fence provides a graphical user interface to administer Geo-Server users and authorization rules. An advanced and complete API allows the user a programmatic administration of rules and their data.Geo-Fence core modules and GUI are free and Open Source software, released under the GPL v3 license.



3.2 Android Device

The mobile android device is used to enhances usabilityand reliability. The mobile device can trigger an alarm manually as well as automatically. The manual triggering system uses an button as a trigger, while the automated triggering system makes use of Geo-fence technique.As response to sending out an alert request the android device reacts by sending an alert in the form of message or an e-mail to the list of predefined cell phone numbers and mail-addresses registered with it.

3.3 Emergency Button

The emergency button is part of the mobile security system. Emergency button is very important facility provided to users travelling by bus or any other transportation. The Geo-fence technology is used so as to send an automatic alert if the specified region is crossed by the user for certain amount of time. The alert sends out the message containing the informationregarding the exact location area of the user GPS location to the nearest police station and the registered mobile numbers.

3.4 Technical Unit

System Components

3.4.1 GPS

The Global Positioning System (GPS) is a navigation and precise positioning tool Developed by the Department of Defense. Divided into six groups of four, each group is assigned a different orbital path to make sure that they can be detected from anywhere on the Earth's surface. The GPS system is used to track the user location.

3.4.2 GSM

GSM stands for Global System for Mobile communication. It is digital mobile telephony system. The GSM is activated in the mobile device to send and receive data using GPRS. The GSM SIM card number is registered with the system. It is also used to send the message to the police station as well as registered numbers when user is in emergency.

3.4.3 Database and Alerts

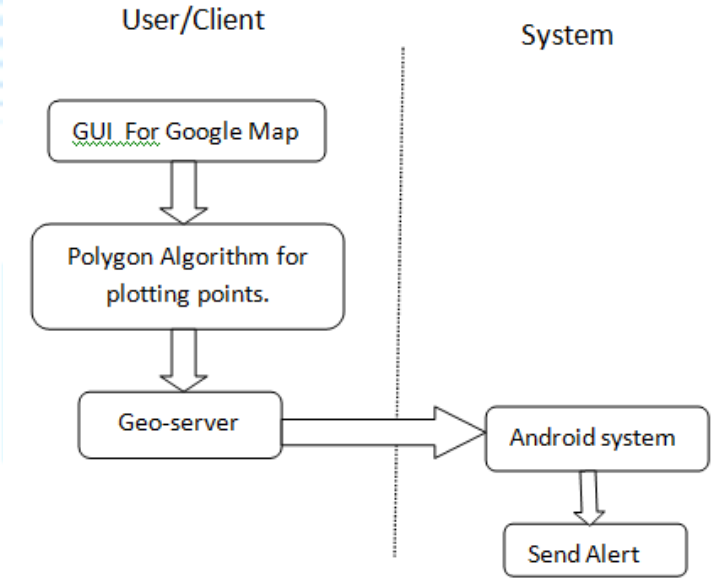
The Database is retrieved each time when an alert is to be given. The database consists police station numbers and the geographical address of each and every police station involved the system. The database also consists the cell-phone numbers of the pre-specified people. Text alert and ringing alert are generated using the AT commands. We need just a modem and SIM card to carry out the action of generating the alert. Alerts and the text information about the vehicle position area is send to the police station numbers and other necessary numbers. Also e-mail alerts are send to predefined e-mail addresses. On pressing an emergency button by employee in emergency situation, the android device sends alert to the e-mail addresses and to the specified contact numbers.

4. SYSTEM FLOW

The flow diagram of the proposed system is shown in Fig.4. Initially the user logs in the system , the system needs to verify the authentication and recognize the user. User if first time logging in needs to enter the profile details with the system .The entered information is then analyzed . This updated data is then saved to the database. The givenFig.5.describes the flow of the proposed system. The mobile device of the user makes use of GPS to track the exact location of the device. In case of emergency user will press the panic button and the alert is sent to the registered mobile numbers.After pressing the panic button android device will collect the locationand send. Geo fencing technique is used in this system to create a virtual barrier , a protected zone for the user. When the person using this application crosses the geo-fence, automatic alerts are sent to the specified numbers.

Step1: User will specify a route
Step2: Plot the points on the map using polygon algorithm.
Step3: Create a path using pre defined points by the user.
Step4: Create a Geo-fence to use as virtual barrier.
Step5: Get an alert request.
Step6: Send a response.

Fig. System Flow



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