

Maximizing Women's Safety with an Effective System

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Abstract— In many countries as well as in India the safety of women in public areas or outside their homes is heavily being questioned in recent times. Every day we see many cases of women getting harassed, assaulted, robbed, or getting stalked by strangers in their workplaces, schools and colleges, public transport, parks, malls, and in many other places. So we chose this project to give women the confidence to go out in society freely and happily without being worried about their safety. We propose to build an application for women. This application will have many different features to help women when they are in danger, which can/will lead to immediate help or rescue from the situation. During an emergency by using the proposed mobile application, they can send alert messages with geolocation which will be sent to the registered guardian/emergency contact when they press the panic button. And immediate help can be given to prevent women from danger. Also, helpline services like hospital and police station details will also be provided for quick access. These would be some of the basic functions provided by the application. We are aiming to work with geofencing technology to get alerts in case a woman's kidnapping takes place or the woman goes out of a particular zone or a virtual boundary that she had set.

Index Terms—Mobile Application, Women safety App, Geofencing, Android.

I. INTRODUCTION

As a consequence of decades of civil society action, aided by women's groups, gender-based violence has still been a significant issue on a both national and international scale. Women still encounter injustice because, despite the fact that the nation has several laws and regulations protecting them from assault, abuse, and other forms of violence, in some cases implementing them has proven to be difficult, and as a result, women experience injustice. To protect women from these oppressions technologies can be effective. The proposed application will provide women with a quick way to act when they are in danger. So that the guardian or an emergency contact person could come to help or give help calls to the nearest police station by seeing the location details received in the alert message. Java is being used for the mobile application front-end. We are creating a back-end web application that will be connected to a front-end mobile application using the Wireless Application Protocol (WAP). We are also using a MySQL database and the Apache tomcat server. Women do not need to carry a separate safety gadget because they always and everywhere carry a cell phone, and this application would help them whenever they feel unsafe.

II. SCOPE AND SOCIETAL IMPACT

In the proposed project, the main user will be women. Giving women most of the necessary and quick access to various features in times of crisis or danger is the main scope of this project. This project has a positive societal and environmental impact. Women can advance and develop in a variety of ways if they feel safe leaving the house and participating in society. Working women can be economically effective in society. And also they will bring various morals and values into organizations. By using the proposed application, women who are in dangerous situations can be rescued by guardians, as well as using the help of the authorities. Many lives can be saved which impacts the environment.

III. PROBLEM DEFINITION

Women face many dangers in society, in these circumstances, some women could freeze or fail to respond quickly. They require an active, round-the-clock support system since they could encounter danger at any time. During the kidnapping, the women don't even get time to press the panic button on the mobile to send the alert message to their guardian, so they require a feature in the application to trigger itself to send the alert message in this kidnapping scenario.

IV. OBJECTIVE

To develop a mobile application to overcome the aforementioned problems. It will be active around-the-clock functioning applications. It will provide quick assistance to women in times of danger by sending an alert message to guardians/emergency contact personnel with just a few clicks. It will also contain helpline service details for faster access in one place. To solve the problem arising in a case of kidnapping where the victims (women) are not able to even press the panic button to send the alert message, we are trying to come up with a feature using geofencing where the alert message will be triggered automatically as soon as the women go out of the virtual fence or boundary which she will be set prior.

V. LITERATURE REVIEW

Shubham Nikam et al [1] proposed an app that is a simple way for a lady in a crisis to make an emergency call. All users should double-press the phone's volume button. Quickly and automatically, a message with her GPS coordinates and

pre-selected emergency contacts is sent to the police in an emergency. This is followed by a call to a specialist police helpline, after which the camera and voice recording starts. If it cannot be easily delivered, no user intervention is necessary. The location of the problem is plotted on a Google Maps interface, and the police receive an audio alarm, pictures, and other information at their station.

Prof. Kishore Sakure et al [2] proposed creating an application to develop and implement a women's safety system. According to the objectives, a location-tracking subsystem was successfully completed, and the relevant findings were presented. The system will be expanded in accordance with the future scope's aims. The report also goes over GPS technology, which may be used to track the victim's location using latitudes and longitudes.

Aarati Patil et al [3] The effort that authors put into this work is to design and develop an Android application that can be used to promote the use of the personal security system. Most of the fundamental problems faced by women will be addressed by this arrangement, which will also increase their sense of security. The proposal component grants the shaking sensor-based application access and locates the user's location in terms of longitude and scope so that they can be followed using Google maps. This theory lowers the prevalence of violence against women.

Dr.V.Suganya [4] laid out the detailed information of the geofencing technology. A geofence configuration may result in push notifications on mobile devices, SMS alerts or messages, targeted social media advertisements, fleet tracking, the disabling of specific technologies, or the supply of location-based marketing data. The author explained various applications and fields where geofencing technology can be used, one such is for providing safety and security to women.

Quazi Maliha et al [5] Here the author of this study introduced the Android software GoFearless, which focuses on women's safety. This program makes it easier for social media groups and emergency contacts to track the victim's whereabouts in real-time. One of the distinctive characteristics of this program is the availability of numerous sharing options in three different link types, including GeoURI, OpenStreetMap, and Google Maps. Simply shaking the device activates the panic signal, which has a high pitch. It can also be manually activated by tapping. The user can choose options in the settings, such as having the panic alarm recur even if the app is closed until the user turns it off when they feel safe.

VI. PROPOSED SYSTEM

A mobile application created using Java programming language. The application's main focus is to provide quick access to the features present in the application as our objective demands it. Alert messages with the location details will be sent to the guardian/emergency contact person with minimum clicks. Many helpline services are easily accessible at one location allowing women to get a faster response in times of danger. The user(woman) can register for the application by providing the necessary information. After registration, the

user can enter the details of the guardian/emergency contacts such as the name and mobile number. She is given the option to update, add or delete the guardian /emergency contacts details. All the details provided will be kept secure, and as the application requires authentication, only women can change the guardian/emergency contact details. We are developing a different feature for providing safety to women by using Geofencing technology. In kidnapping cases where women could not get any time to react or to even press the panic button, this geofencing feature comes in handy. As soon as a woman crosses or goes out of the virtual fence or boundary which she has set on the map, the alert message with location details will be sent, as we can see in fig ...So as soon as kidnapping takes place, the information regarding this will be sent the earliest to the guardian, hence allowing the guardian to take quick action to rescue or inform the nearest authority in getting their help to save the women as soon as possible before any major damage could happen.

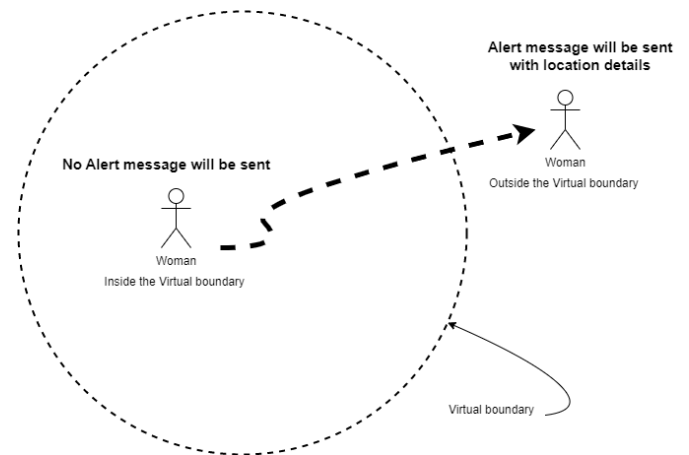


Fig. 1. Geofencing

VII. DESIGN

Figure 2 represents the system architecture design for the proposed project. This design will act as the skeletal structure for developing the application. The main components of the system architecture are our mobile application, web application, and database. It gives us a view of the structure of the project. To access the functions offered by the application, location service must be enabled. We are using WAP to connect the web server with a mobile application. And we are using SMS service for sending the alert message and also in times when helpline service will be used. Here the user (woman) will access the mobile application. The web application will be used by the admin.

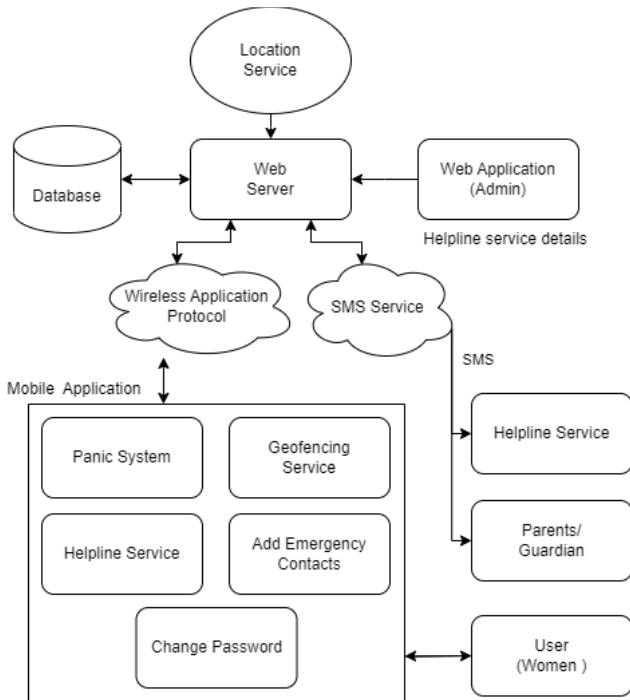


Fig. 2. System Design

VIII. METHODOLOGY

The methodology used is geofencing, short message service, and Wireless Application Protocol.

Short message service short SMS as we know, is used for communication purposes. It is a text messaging service found on most mobile phones and telephone systems. SMS uses the Short Message Peer to Peer Protocol (SMPP) to exchange messages with telephone service providers' gateways. When a victim presses the panic button in our app, SMS messages are delivered, and the victim's location is revealed in the alert message.

The technology being used to create a virtual fence in the map will trigger some action that has been pre-defined upon crossing the perimeter, it could be coming inside or going outside the virtual fence; it is the basic idea behind geofencing technology. The global positioning system is being used in this technique to know the whereabouts of the target. A geographic mapping system is used and upon this, the geofence region will be created. The virtual boundary can be of variable size depending on the application's functionality or the user. By using the Geofencing API we will be implementing this technology. Wherein a few companies, and organizations provide this API service for free. This technology can also use radio frequency identification for functioning.

Wireless Application Protocol (WAP) is one such technical standard protocol that facilitates data access between a browser/internet and a mobile device. It is built for small browsers, allowing the development of web applications for mobile devices.

This protocol's primary goal is to deliver enhanced data services and internet content to various wireless terminals, including mobile devices. To allow for scalability and expansion, the protocol is designed in a tiered manner. With a multilayered structure made up of Application, Session, Transport, Security, and Transaction layer, it also offers flexibility

IX. CONCLUSION

The basic objective of the application has been built using Android studio. We are working towards achieving the enhancement of the mobile application. Implementing the geofencing feature has been quite challenging and is still in progress. With several measures taken around the world by many personnel and organizations in providing women safety, our mobile application will be one among those efforts to make women feel secure and confident to go out in society.

X. FUTURE SCOPE

A voice recorder can be included as one of the features and it could be stored in the cloud storage service so that even if a mobile phone cannot be accessed, gets lost, or gets damaged during a time of crisis, the recorded clip could be fetched from the cloud service for future procedures.

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