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Women Security Safety System using Artificial Intelligence

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Abstract: A report compiled by the World Health Organization in 2013 stated that 35 percent of women around the world had been victims of sexual violence [1]. Mostly, victims are able to reach for help when they are in risk, but we can aid her before any incident happens. In this paper we propose a system where we will pre notify the user about the red alert areas where she will be going. Our system will track through GPS [1][2][3][4][5] which will find out their current location and inform them about the place being vulnerable. This paper introduces a mobile application called SWMS (SafetyApp for Women: a non-Magnanimous Shield) that provide an essential feature to place an emergency help.

Keywords: Women security, GPS, Registered Contact, Pre alert System

I. INTRODUCTION

Now-a-days women work in various job roles. They often work across ethnic, corporate and political divides to promote peace [6]. It is an unfortunate observation that there has been a substantial increase in crimes against women over the last few years. There is a need for creating a system that makes her feel safe in any circumstances. SWMS is an attempt to provide safety by enabling them to place an emergency call in a quick way.

We have thought of making an application in which we give precautionary warning and through that she will be fully prepared with safety measures. When the women install the app, she will go through the registration process. After that she would be logged in. After login, her location will be accessed and she needs to register her personal emergency contacts in order to get notified. This paper describes the development and usage of application as well as its technical implementation and future prospects.

The paper is divided into VI sections. Section I introduces the about the proposed idea. Section II discuss about the Related work done. Section III discusses about the Problem and Solution. Section IV comprises of Application Development. Section V consists of Use Case for the app. Section VI provides Conclusion and Future scope.

II. RELATED WORK

A. WoSApp [1]

WoSApp provides women with a reliable way to place an emergency call to the police. The user can easily trigger the calling function by simple process panic button screen. The system helps women at the time of crisis. This application also ensures the question regarding user's location and whom to contact. The user should shake her phone and an emergency message with her GPS coordinates and preselected emergency contact will be send to the police.

B. Abhaya [3]

This System uses GPS for identifying the location of the person in trouble. The system contains modules which includes location tracking and registration of users and their emergency contact list. It helps in live tracking of the location of victim through GPS along with one of the registered contact receives the call from root device. As the root device location rapidly changes the GPS identifies the exact location. User must click on the emergency button then the current exact location will be send to the nearest police station and also friends and family member.

C. Women Empowerment [10]

Different existing applications are specific only for emergency call when they may be at risk, some applications contains complete resources for victims of domestic violence, as well as a way to get help when you need it. But this application will provide information about domestic violence prevention laws, health tips for women . To use the mobile application, the user has to register. All information of user is saved in the cloud database. The GPS system on the smart phone of the user will locate exact position of the victim. The GPS system of mobile will locate exact position of the victim. The Emergency Call System helps the victim sends messages to the police, and family members that contain location and time.

D. VithU [20]

This mobile application sends a message to pre-selected contacts when the power button of the phone is pushed twice. The message contains the user's GPS location, and is sent out every two minutes with updated coordinates.

E. Nirbhaya [15]

This mobile application sends a message with the user's

GPS coordinates to a list of emergency contacts when a button on the app screen is touched. The coordinates are updated and resent with every 300m change in location. Additionally, it is free of charge and open-source, allowing improvements and customizations to be made easily for speedy replication of the application in other jurisdictions.

F. Glympse [17]

This app is a feasible for user to share location using GPS tracking in real time with friends and family. This app does not need any sign up and do not need any contact to manage.

G. Fightback [21]

This app is developed by Mahindra faction. In earlier days, this app was not complimentary, customer have to compensate for this app. This app send a message to your friend or contacts that "User is in trouble" using Email, GPS, SMS and GPRS. This app works on mobile which support Android Java Programming. The Application will also send SMS of location and Map.

III. PROBLEM AND SOLUTION

A. Motivation

The greatest motivation for this system was the Hyderabad case and Delhi Nirbhaya case that triggered the whole nation. Another thing which motivated us is that, the women going to unknown place is not aware of Red Alert Areas. If they are aware of Red alert areas, then they can be prepared with the preventive measures. The women safety application will provide alert with notification and emergency help.

Such pro applications can be used anywhere. This project proposes a new model for women security in public places which aims to provide the 100% safe environment. Every woman must feel free to travel anywhere by providing her the notification related to red alert area and providing the emergency panel activated whenever she will move to red alert area by this way providing her the safety at each step.

B. Problem Statement and Choice of Solution

Woman in homes, on streets, in public transports or in offices are not always safe. There have been multiple cases of sexual harassment from toddlers to old age women.

We live in such a society, that it is necessary to be prepared for our security in all aspects. The choice of creating a mobile application is to achieve the problem statement due to the fact that a mobile phone is normally carried by a person, so than a separate hardware device that could be misplaced.

IV. APPLICATION DEVELOPMENT

A. Methodology

When the women is logged in and she goes to any unknown location, the existing criminal dataset checks whether the current location matches with its dataset or not and if it is matched, it notifies her that the area is crime prone area. When she gets acquainted with crime prone area, she would be having alternative. Either she would avoid going there or she would have to be prepared with safety measures, here SWMS can prove to be helpful for her.

If she goes to the crime prone area and she suspects any kind of danger from strangers then, she is provided with the help button in the app.

After pressing the help button, a message will be generated. The generated message consists of the latitude and longitude of her current location as well as a tagline of "I am in trouble Please Help" will also be sent. The generated message will be send to the registered emergency contacts.

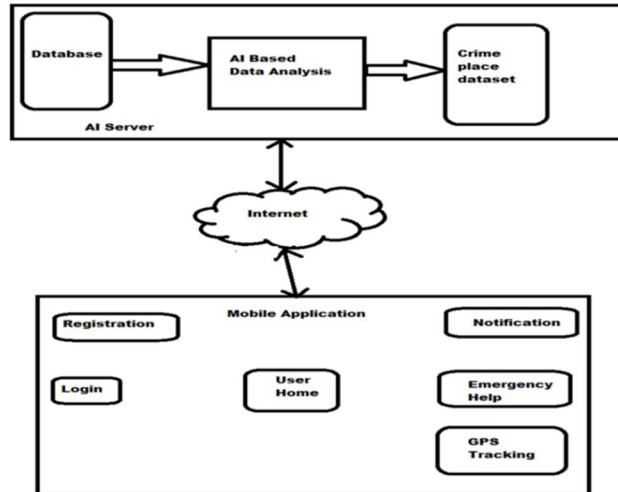


Fig. System Flow

B. Artificial Intelligence Model

Artificial Intelligence is the simulation of human intelligence processed by machines, especially Computer Systems. It is based on idea of building machines capable of thinking, acting and learning like humans. SVM algorithm is a part of machine learning and Artificial Intelligence. Classification is provided in Support Vector Machine Algorithm.

Here in this paper SVM algorithm helps our application to detect the crime related places. This algorithm helps the system to generate an alert to the user after the identification of the particular recorded crime place.

C. Technologies Used

The SWMS application has made use of following Technologies:

- 1) HTML for Front End developing.
- 2) JAVA for Client and Server side.
- 3) MySQL for Back End and for Processing.
- 4) Visual Studio for Server side processing.
- 5) Android SDK to build an Application supported by Android.

V. USE CASE FOR THE APPLICATION

A. Application Icon

Below Figure illustrates the general view of icons of various android applications. Our application has been named as SWMS (Safetyapp for Women: a non Magnanimous Shield).

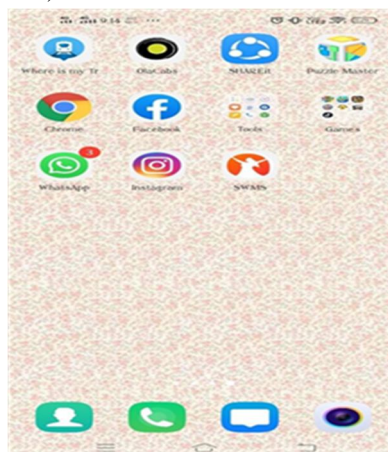


Fig.1 Application Icon

B. Registration Form

A registration form is a list of fields that a user will input data into and submit it to a server. To provide safety service, the server requires some of the basic details of the user. User needs to fill the required details and tap on Submit button. After that, user will be going to the Login page and proceed with their email ID and password for stepping into application.

The Emergency contact is saved in Registration form which is named as “Enter Mobile no”.

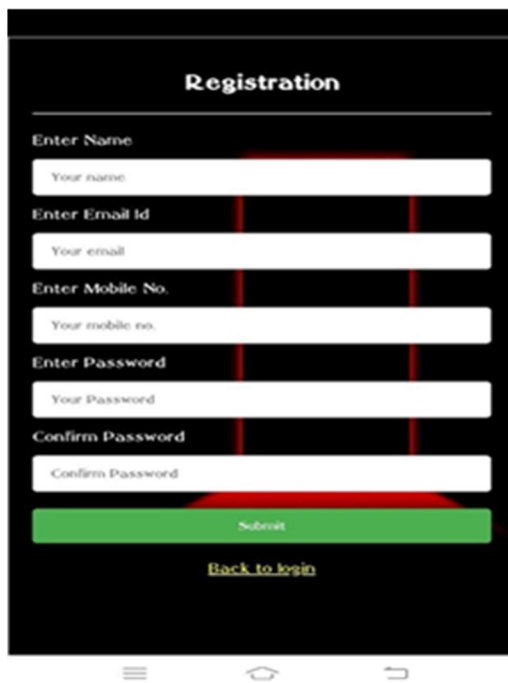
A screenshot of a mobile application registration form. The form is titled "Registration" and is set against a black background. It contains several white input fields: "Enter Name" with a sub-label "Your name", "Enter Email Id" with a sub-label "Your email", "Enter Mobile No." with a sub-label "Your mobile no.", "Enter Password" with a sub-label "Your Password", and "Confirm Password" with a sub-label "Confirm Password". Below the fields is a green "Submit" button and a yellow "Back to login" link. At the bottom, there are three navigation icons: a hamburger menu, a home icon, and a back arrow.

Fig.2 Registration form

C. Login Form

When the app is initialized, Login page will be displayed. For login, registration is required so tap on New user option.

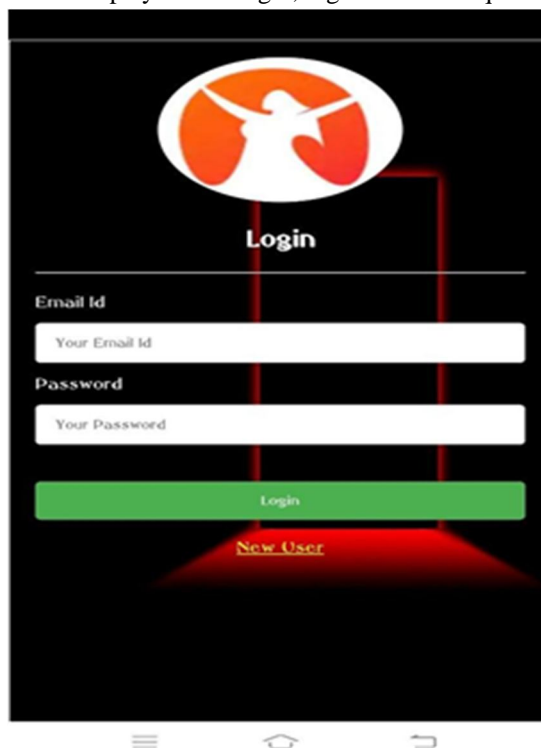
A screenshot of a mobile application login page. The page features a logo at the top center, which is a white silhouette of a person with arms raised inside a red and orange oval. Below the logo is the title "Login". There are two white input fields: "Email Id" with a sub-label "Your Email Id" and "Password" with a sub-label "Your Password". Below these fields is a green "Login" button and a yellow "New User" link. At the bottom, there are three navigation icons: a hamburger menu, a home icon, and a back arrow.

Fig.3 Login page

D. Crime Place Detector

When the user will enter the name of the place where she will be going, results would be that either the place is highly crime prone or not according to the dataset. Her location will be available on the map and the nearby crime areas will be highlighted by Google map pin, described as following:

- 1) Green indicates the users current location
- 2) Red indicates the high crime prone zone
- 3) Orange indicates the moderate crime prone zone
- 4) Yellow indicates the low crime zone.

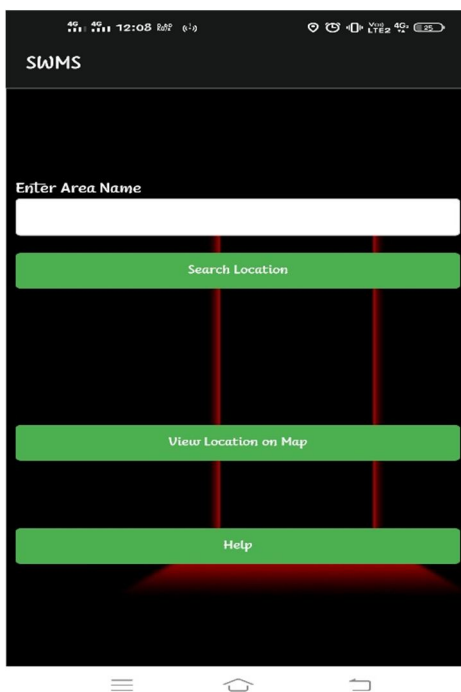


Fig.4.1 Crime place detector

Fig. 4.2 depicts the crime zones of that particular area depending upon the current location of the user.

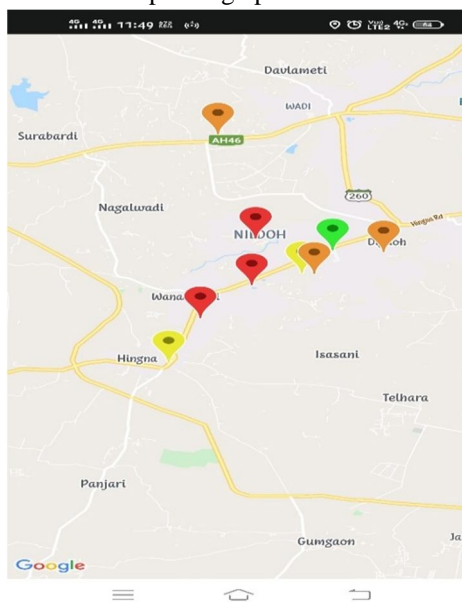


Fig 4.2 Location detected on Map

E. Help Button

Below image depicts the screenshot of message that user will send after clicking HELP BUTTON.

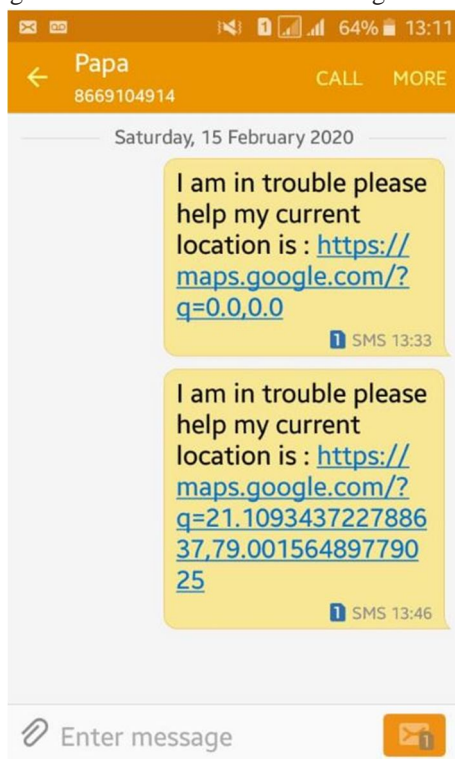


Fig 5.1 User sends message

Below image depicts the screenshot of message that register contact will receive.

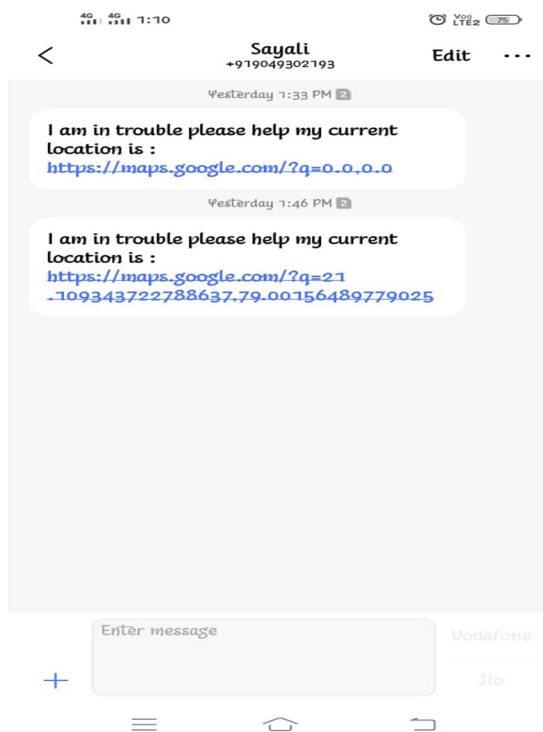


Fig.5.2 Message received to registered contact

Below image depicts the screenshot where user location will be tracked, from the receiver's message.

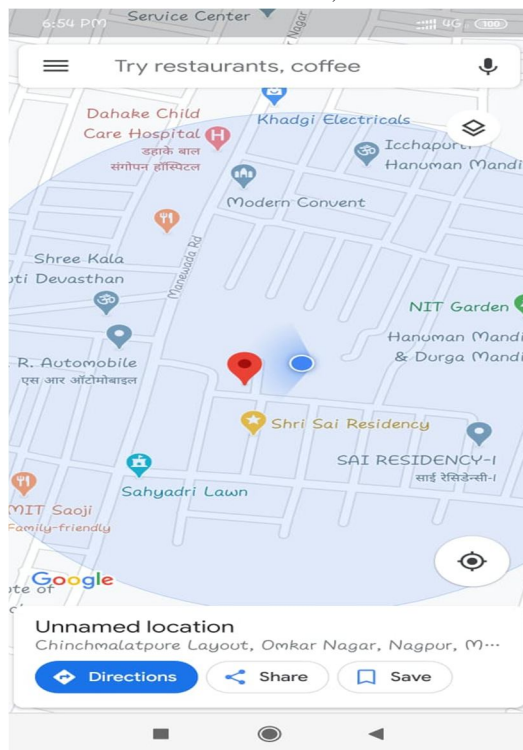


Fig 5.3 Location of user

VI. CONCLUSION

This mobile application is helpful for women. Using SWMS can reduce the cases happening in society. With the help of this application, women will get alerts about the unknown places. So that she will be ready already for any situation. The application can be further used for Machine Learning that can be applied to monitor the sound produced by surrounding and classify the word, make comparisons and thereby identify the level of threat.

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