

# A SMART SAFETY APP FOR WOMEN'S PROTECTION



#### A DESIGN PROJECT REPORT

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in partial fulfillment for the award of the degree

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#### **BACHELOR OF TECHNOLOGY**

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**SAMAYAPURAM -621112** 

**NOVEMBER 2024** 

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#### **BONAFIDE CERTIFICATE**

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We jointly declare that the project report on "A SMART SAFETY APP FOR WOMEN'S PROTECTION" is the result of original work done byus and best of our knowledge, similar work has not been submitted to "ANNA UNIVERSITY CHENNAI" for the requirement of Degree of BACHELOR OF TECHNOLOGY. This design project report is submitted on the partial fulfilment of the requirement of the award of Degree of BACHELOR OF TECHNOLOGY.

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#### **ABSTRACT**

The usage of smart phones equipped with GPS navigation unit have increased rapidly from 3% to more than 20% in the past five years. Hence, a smart phone can be used efficiently for personal safety or various other protection purposes especially for women. This app can be activated by a single click when the user feels she is in danger. This application communiqués the user's location to the registered contacts for every few seconds in the form of message. Thus, it acts like a sentinel following behind the person till the user feels she is safe. This paper presents analysis a unique feature of this application to send the message to the registered contacts continuously till they are pressing 'HELP' button. Continuous location tracking information via SMS helps to find the location of the victim quickly and can be rescued safely. This application aims to ensure women safety. This is achieved by addressing the circumstances that compromise the safety of women in today's day and age. This app ensures women are not put into such situations through various features offered by our system

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# LIST OF ABBREVIATIONS

**SOS** Save Our Souls

**NDK** Native Development Kit

**IDE** Integrated Development Environment

**GPS** Global Positioning System

**OTP** One Time Password

#### INTRODUCTION

#### 1.1 OVERVIEW

Women's safety is a big concern which has been the most important topic till date. Women safety matters a lot whether at home, outside the home or working place. Few crimes against ladies particularly rape cases were terribly dread and fearful. Most of the women of various ages, till this day are being subjected to violence, domestic abuse, and rape. As ladies ought to travel late night generally, it's necessary to remain alert and safe. Although the government is taking necessary measures for their safety, still, there are free safety apps for women that can help them to stay safe. Most of the females these days carry their smartphone with them, so it is necessary to have at least one the personal safety apps installed. Such a security app for ladies will definitely facilitate in a way or the opposite. This is user-friendly application that can be accessed by anyone who has installed it in their smart phones. Our intention is to provide you with fastest and simplest way to contact your nearest help. In this system user needs to feed three contact numbers, in case of emergency on moving the phone up and down thrice, the system sends SMS and calls on one of the numbers feeded into the system with the location. The phone starts vibrating and siren starts ringing. This features for both everyday safety and real emergencies, making it an ultimate tool for all.

#### 1.2 PURPOSE OF THE PROJECT

The purpose of this project is to create an android application for women's safety purpose. The application aims to highlight a safety of the women's safety. As women's need to travel late night sometimes, it is important to stay alert and safe. Although the gov, is taking measures for their safety, there are free safety apps for women's that can help them to stay more safe.

#### 1.1 OBJECTIVE

The primary objective of a women's safety app is to provide a reliable and user-friendly platform to ensure the safety and well-being of women in distress. The app aims to facilitate immediate emergency alerts to trusted contacts and authorities, coupled with real-time location tracking for quick assistance. It incorporates multiple alert activation modes, such as button press, shake detection, or voice commands, to suit different scenarios. Furthermore, the app ensures offline functionality for critical features, like SOS alerts and alarms, even without internet connectivity. It provides access to nearby police stations, hospitals, and emergency hotlines, making it a comprehensive safety tool. With an intuitive design and customizable settings, users can easily configure their emergency contact lists and alert preferences. Emphasizing data privacy, the app secures user information, including personal details and location data. Additionally, it seeks to empower women by offering educational resources on personal safety and self-defense techniques, fostering community awareness and confidence.

LITERATURE SURVEY

2.1 The Role of IoT in Woman's Safety: A Systematic Literature Review

Authors:

Muhammadshoaib Farooq, S. A.M. Gilani, Ayesha Masooma 1, Uzma, Omer.

**Year:** 06 mar, 2023

Abstract:

Women'ssafety has been highlighted as one of the major concern so any society

where several women are dealing with various safety issues like harassment, rape,

molestation, and domestic violence due to different social or cultural reasons. Internet

of Things (IoT) is becoming a promising technology to support day-to-day concerns

and provide support in handling various affairs. Many IoT-based devices have been

introduced by the community to help women deal with their potential safety threats.

This study presents a systematic literature review of research studies exhibiting the IoT

devices for women's safety, the main features these devices offer as well as the

wearable, sensors used, and the machine learning algorithms used. The review is

carried out by carefully examining and synthesizing the research articlespublished

between 2016 to 2022 in well-reputed research venues.

**Keywords:** 

Women's safety, women's safety using IoT, safety devices, human safety,

machine learning, IoT-based security devices.

2.2 FRNDY: A Women's Safety App

**Authors:** 

P. Premi, K.S. Savita, N. Millatina

Year of publication: 2022

**Abstract:** 

Women's security has always been a major concern, and numerous potential

solutions have been discussed regarding how technology can be used to address

the issue. Currently, the rapid rise in smartphone usage has made it possible to

integrate personal security efficiently and effectively with the help of hardware and

software. Existing security methods necessitate some form of human input and the

use of only pre-selected contacts. When it comes to tragic occurrences involving

women, the number is frighteningly high. Problems can arise from a variety of

situations, including women walking on the street after work, going to the

supermarket, or a variety of other reasons when they are alone. There has been a

spike in women-related crimes in Malaysia as well. Therefore, to enhance women's

safety in Malaysia this project suggests a mobile application that can come in

handy for women who find themselves in dangerous situations.

**Keywords:** 

Smart Phone, Android, Registered Contacts, GPS location, database, URL.

2.3 Android App for Women Safety

**Authors:** 

Dr. K Srinivas\*1, Dr. Suwarna Gothane1, C. Saisha Krithika2,

Anshika2, T. Susmitha2

**Year of publication:** 2021

**Abstract:** 

The usage of smart phones equipped with GPS navigation unit have increased

rapidly from 3% to more than 20% in the past five years. Hence, a smart phone

can be used efficiently for personal safety or various other protection purposes

especially for women. This app can be activated by a single click when the user

feels she is in danger. This application communiqués the user's location to the

registered contacts for every few seconds in the form of message. Thus, it acts

like a sentinel following behind the person till the user feels she is safe. This

paper presents analysis a unique feature of this application to send the message

to the registered contacts continuously till they are pressing 'HELP' button.

Continuous location tracking information via SMS helps to find the location of

the victim quickly and can be rescued safely. This application aims to ensure

women safety. This is achieved by addressing the circumstances that compromise

the safety of women in today's day and age. This app ensures women are not put

into such situations through various features offered by our system.

**Keywords:** 

Smart Phone, Android, Registered Contacts, GPS location, database, URL.

2.4 Smart Intelligent Security System for Women

**Authors:** 

Ramya Sree Yadlapalli, Vasantha Rama Lakshmi, Pasam, Tejaswi

Kondapalli, Anusha Miriyala

**Year of publication :** Mar 2016.

**Abstract:** 

This project describes about a smart intelligent security system for women.

Women all over the world are facing much unethical physical harassment. This

acquires a fast pace due to lack of a suitable surveillance system. Our project is

a venture to resolve this problem. We are using two objects wrist band and

spectacles that are used in day to day life. The system resembles a band on the

wrist incorporated with pressure switch as an input which when activates shows

the result Screaming alarm and tear gas mechanism are imposed for self-

defensing purpose and send location and messages to the emergency contacts

and also figure out the attacker using live streaming video. Tear gas mechanism

and live streaming video using webcam is incorporated in the spectacles that

act as a weapon of the smart technology. We really believe that this endeavor

will make a difference in the women life.

**Keywords:** 

Security, Live Streaming Video, GSM, GPS, ARMV7-

A, Raspberry pi 2.

#### SYSTEM ANALYSIS

#### 3.1 EXISTING SYSTEM

#### 3.1.1 Women's Security

The key features of the app are: the user has to save some details. These details include: Email address and password of the user, Email address and mobile number of the recipient and a text message. Then, app is loaded as a "widget", so that when the user touches the app, it alerts the recipient. Another key feature of app is that it records the voice of surroundings for about 45 seconds and this recorded voice, text message containing location coordinates of the user is sent to the recipient mobile number.

#### 3.1.2 Police Nearby

The police nearby scanner android app is built with the aim to connect citizens & students to their nearest police stations city wise at one click and will permit the community to become more involved right from your Android Smart phones. Any local, state, or school, College police department as well as other law enforcement agencies can use Police scanner Android App to provide you with enhanced service and get better communication. Police nearby app is free to download without signup.

#### 3.1.3 Scream Alarm

Scream Alarm, an android application. By clicking this app, it generates a very high-volume scream in times of distress when the lungs of a person fail in screaming in trouble. The generated scream is in a woman's voice is severely helpful in discouraging the potential strong trouble makers. The only work done by this application is whenever the person pushes or touches the application, the phone screams loudly with a woman's voice. [6] The applications mentioned above work on different platforms, some apps work on Android, Windows, IOS but some only in android or windows. But this application Security Alert is designed only for

android platform but in future it can be extended to work over Windows and IOS platforms. Android platform is open source and was built using open Linux Kernel in order to enable the developers in creating fascinating mobile applications that will take full advantage of the handset offers. A Virtual Machine is designed and utilised by Android in order to optimize the memory and hardware resources of mobile environment. Android can be enlarged adequately to merge new cuttingedge technologies as they emerge. Hence, android platform will always continue to be evolved as a developer community in order to build innovative applications for mobile environment.

#### 3.1.4 Demerits

Concisely summarizing the disadvantages of the above implementations:

- All the existing systems must be connected to the GPRS service to work properly, hence cannot be used during emergency if there is no internet connectivity.
- Monitoring was tedious.
- Mischance in arriving rate.
- This system cannot maintain the police station information.
- The existing systems are of wired systems and most of them are alarming systems which is conventional and cannot communicate efficiently.
- The disadvantages of using these applications are they only send the alert messages to the saved contacts.
- Because of previous systems there is less possibilities of overcome the dangerous situations of women.
- Previous applications also have gps tracking system for to track the women location but it has not specific range.
- Existing system don't have the feature that is it don't sends the alert message to nearby cell phones.

#### 3.2 PROPOSED SYSTEM

In this proposed system, the user writes the message content and also selects the contacts to which the message has to be sent and save it. So, when he is in some danger by just opening the app and pressing the HELP button, the message stored will be sent to those numbers he has added in this application. So that he can receive the help in correct time.

#### **3.2.1** Merits

The objectives of the proposed system include the following:

- To provide safety to women's.
- To provide integrity, confidentiality and security to user's data
- To collect dataset containing their information of 3 prime contacts and to alert them in case of danger.

#### SYSTEM SPECIFICATION

#### **4.1 SYSTEM REQUIREMENTS**

Here are the requirements for developing the application.

#### 4.1.1 SOFTWARE REQUIREMENTS

Below are the software requirements for the application development:

- 1. The required language is java.
- 2. Editor for Android Studio ,lang-java and xml.
- 3. API-Application Programming Interface
- 4. Google Chrome, Firefox, Microsoft Edge or Brave Browser with Extension Support

#### **4.1.2 HARDWARE REQUIREMENTS**

Below are the hardware requirements for the application development:

- 1. Operating System: windows
- 2. Processor: intel i3(min)
- 3. Ram : 8 GB(min)
  - 4. Hard Disk: 256GB(min)

# 4.1.3 FUNCTIONAL REQUIREMENTS

- The user shall be able to register to the system.
- The user shall be able to update her profile including information like emergency contact information.
- User shall have three option on main screen i.e., panic alert, cautious, and send status.
- In panic alert emergency alert message shall be sent to emergency contact for help.
- In cautious, message shall be sent for staying active.
- In send status option, user location must be sent to emergency contact.
- The system shall be able to send messages by shaking the phone in panic alert option.

• The system shall be able to send message by selecting send status and cautious option.

#### 4.1.4 NON-FUNCTIONAL REQUIREMENTS

#### Reliability

- Regardless of the number of attempts the system should be able to accurately detect the account type.
- System should be able to handle any exception properly.
- As for the output, the system should be able to provide a faster response.

#### **Scalability**

- To produce better results, the system should be able to differentiate the class of all accounts and be user friendly.
- The system must be able to cope up with any kind of updates in the model.

#### 4.1.5 CONCEPTS USED IN THE PROPOSED SYSTEM

#### **Android Studio**

Android Studio is the official Integrated Development Environment (IDE) for android application development. Android Studio provides more features that enhance our productivity while building Android apps.

#### **Features of Android Studio**

- It has a flexible Gradle-based build system.
- It has a fast and feature-rich emulator for app testing.
- Android Studio has a consolidated environment where we can develop for all Android devices.
- Apply changes to the resource code of our running app without restarting the app.
- Android Studio provides extensive testing tools and frameworks.
- It supports C++ and NDK.
- It provides build-in supports for Google Cloud Platform. It makes it easy to integrate Google
- Cloud Messaging and App Engine.

#### **XML**

- XML stands for Extensible Markup Language.
- XML is a markup language much like HTML used to describe data.
- XML tags are not predefined in XML. We must define our own Tags.
- Xml as itself is well readable both by human and machine. Also, it is scalable and simple to develop.
- In Android we use xml for designing our layouts because xml is lightweight language so it doesn't make our layout heavy.

#### **JAVA**

- Java plays an important role in development of Android applications because business logic is written in Java.
- You can say that knowledge of core Java is must for the development of android application. Knowledge of advance Java is a plus point for the development. With the knowledge of advance Java, you can add new features to the application

#### SYSTEM DESIGN

#### 5.1 COMPONENTS OR USERS IN THE PROPOSED SYSTEM

#### Module

Help Button Which is useful for the user when he is in some problem or needs any help? When the user opens this application, he can see a HELP button. Then send SMS to Register contact nos.

#### **Adding Contact**

Using this module Adding 3 Emergency contacts numbers save it, so adding contact nos.

#### Messages

Store some message, to your danger situation. It's using to Emergency situation

#### 5.2 PROPOSED SYSTEM ARCHITECTURE

The proposed architecture depicted below shows the exact flow of control of the android application. Here the database acts as a storing media between the two mobile devices. The database information i.e., to which database the information has to be sent, the URL of the database is coded itself in the application. From the database, the location coordinates are sent continuously to the registered contacts of the user.

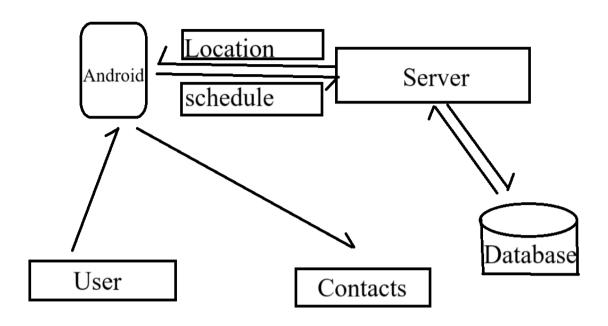


Fig.No:5.2.1

The proposed system will be implemented with the help of android application. Which will alert the nearby people who having this application by sending alert messages to them and alert sound in the guardian mobile on shaking of victim mobile. Also sends messages and alert sound to the saved contacts in the application and police station. Which also show the location of the victim with the help of GPS tracker system. Which also make sound in guardian mobile when his/her mobile in silent mode. In this app we can also add as many contacts as we can.

In new application we are providing a user friendly interface where the user could send the message alert more efficiently and smartly. The user couldn't have to remember all the important contact numbers of siblings, relatives or friends. The new system is also interactive to the users and provides the facility to know their nearby police station, hospitals and their own location.

#### 5.3. FEATURES OF SOS APP

In this section, the key features of the SOS App are listed below, which provides an overview of the system as well as explains why it is different from others.

#### A. Sign in is mandatory

1. The first time users have to register to the app by entering the basic details of the user

like Name, Phone no, Emailid, etc in the Signup Page.

- 2. A one-time verification code will be send to the user's email-account. Then, the user will have to enter the verification code in order to complete the registration process. Then, a message will be send to the user's mobile number for completing the registration successfully. The user now can access the main features of the app.
- 3. User will be able to manage their Emergency Contacts using the Add Emergency Contacts option.
- B. At Emergency Situations
- 1. There is an Alarm Button. On pressing the alarm button, a police siren (a shrill and loud noise) will be activated which will get the attention of nearby.
- 2. There is an Emergency Call Button. On pressing that button an emergency number will be autodialed. 3. There is a Panic Button. On pressing that button once, an alert message will be send to the emergency contacts along with his/her current location. In case, the user does not have an internet connection then only alert message will be send.
- 4. On pressing that button, there will be two modes available, like offline mode and online mode.

#### MODULE DESCRIPTION

#### **6.1 USER AUTHENTICATION**

The User Authentication module ensures secure and seamless access to the app while enabling users to manage their safety settings effectively. During registration, users can sign up using their email, phone number, or third-party integrations like Google, with a mandatory OTP or email verification to validate authenticity. As part of the setup, users are prompted to add and verify emergency contact phone numbers, ensuring accurate and reliable communication during emergencies. The login process supports strong password policies and biometric authentication, such as fingerprint or face recognition, for convenience and security. Multi-factor authentication (MFA) adds an extra layer of protection, combining methods like passwords and OTPs. The module includes password recovery options via email or OTP, ensuring users can regain access without compromising security. Emergency contact management allows users to edit, prioritize, and periodically verify their contact list to keep information up-to-date. All sensitive data, including passwords and contact details, is encrypted to ensure privacy. This module provides a robust foundation for secure access while enhancing the app's emergency response capabilities.

#### **6.2 EMERGENCY ALERT SYSTEM**

The Emergency Alert System is a critical module designed to provide immediate assistance in distress situations. It features a one-touch SOS button that triggers instant alerts to pre-configured emergency contacts, including real-time location details and a customized distress message. The system supports multiple activation modes, such as voice commands and device shake, ensuring accessibility in various scenarios. Alerts are sent through multiple channels, including SMS, in-app notifications, and emails, to ensure prompt delivery. Users can assign priority levels to their contacts, enabling sequential alerts or escalation if the primary contact is unresponsive. For enhanced functionality, the system integrates live location

tracking, allowing contacts to monitor the user's movements in real-time and access directions to their location. Additionally, the module supports offline mode by sending the last known location via SMS when internet connectivity is unavailable. This robust and versatile system ensures timely communication and facilitates swift response, enhancing user safety during emergencies.

#### 6.3 REAL-TIME LOCATION SHARING

The Real-Time Location Sharing module enables continuous GPS tracking to ensure user safety by sharing their live location with trusted emergency contacts during critical situations. Activated automatically when an SOS alert is triggered, this feature provides real-time updates, allowing contacts to monitor the user's movements through a map interface. Users can customize the duration of location sharing, from temporary updates to continuous tracking, based on their needs. The module supports geofencing, which sends alerts to contacts when the user enters or exits predefined safe or unsafe zones. In the event of connectivity issues, the system ensures the last known location is shared via SMS. For added convenience, emergency contacts receive navigation guidance to the user's location and periodic updates for situational awareness. With advanced encryption protocols to safeguard privacy, this module delivers reliable, secure, and effective location-sharing capabilities to enhance safety and response times during emergencies.

#### **6.4** ALERTS AND NOTIFICATIONS

The Alerts and Notifications module ensures timely and efficient communication during emergencies by delivering critical information to users and their emergency contacts. When an SOS is triggered, the system sends automated alerts containing the user's real-time location and a distress message through SMS, email, and in-app notifications. Geofencing capabilities notify contacts if the user enters or exits designated safe or unsafe zones. The module also includes periodic safety check-ins, prompting users to confirm their well-being, with alerts sent to contacts if there is no response. Additionally, it supports proactive notifications, such as low battery warnings or connectivity issues, ensuring emergency contacts receive the last known

location if the phone powers down. Users can customize alert preferences, such as notification frequency and delivery channels, while all communications are secured with advanced encryption. This module provides a robust, multi-channel alert system that guarantees effective response and enhances overall safety during emergencies.

#### **IMPLEMENTATION**

#### 7.1 SOURCE CODE

```
1) Main Activity
package com.example.t;
import android.content.Intent;
import android.os.Handler;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
public class MainActivity extends AppCompatActivity {
@Override
  protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);
    new Handler( ).postDelayed(new Runnable() {
     @Override
    public void run() {
         if(MainActivity.this==null){
            return;
         }
         Intent intent=new Intent(getApplicationContext(),MainActivity2.class);
         startActivity(intent);
         finish();
       }
    },3000);
```

#### 2) Main Activity 2

```
package com.example.t;
import static android.Manifest.permission.CALL_PHONE;
import static android.Manifest.permission.SEND_SMS;
import android. Manifest;
import android.annotation.SuppressLint;
import android.content.DialogInterface;
import android.content.pm.PackageManager;
import android.database.Cursor;
import android.location.Location;
import android.net.Uri;
import android.os.Build;
import android.provider.Settings;
import androidx.annotation.NonNull;
import androidx.appcompat.app.AppCompatActivity;
import androidx.appcompat.app.AlertDialog;
import android.os.Bundle;
import android.content.Intent;
import android.location.LocationManager;
import android.telephony.SmsManager;
import android.view.View;
import android.widget.Button;
import android.widget.Toast;
import androidx.core.app.ActivityCompat;
import androidx.core.content.ContextCompat;
import com.google.android.gms.location.FusedLocationProviderClient;
import com.google.android.gms.location.LocationSettingsRequest;
import java.util.ArrayList;
public class MainActivity2 extends AppCompatActivity {
  static String x=null;
```

```
static String y=null;
  Button b1,b2;
  private FusedLocationProviderClient client;
  DatabaseHandler myDB;
  private final int REQUEST_CHECK_CODE=8989;
  private LocationSettingsRequest.Builder builder;
  LocationManager locationManager;
  Intent mIntent:
  @Override
protected void onCreate(Bundle savedInstanceState) {
super.onCreate(savedInstanceState);
setContentView(R.layout.activity_main2);
b1=findViewById(R.id.button);
b2=findViewById(R.id.button2);
myDB = new DatabaseHandler(this);
  locationManager=(LocationManager)
  getSystemService
   (LOCATION_SERVICE);
  if(!locationManager.isProviderEnabled
  (LocationManager.GPS_PROVIDER)){ onGPS();
  startTrack();
   }
  else{ startTrack();
   }
  b1.setOnClickListener(new View.OnClickListener() { @Override
  public void onClick(View v) {
  Intent i=new Intent(getApplicationContext(),Registor.class);
   startActivity(i);
   });
```

```
b2.setOnClickListener(new View.OnClickListener() {
@Override
       public void onClick(View v) {
         loadData();
       }
    });
   }
  private void loadData() {
    ArrayList<String> theList=new ArrayList<>();
    Cursor data= myDB.getListContents();
    if(data.getCount()==0){
     Toast.makeText(this,"nocontenttoshow",Toast.LENGTH_SHORT).show();
  }
  else {
       String msg ="I NEED HELP LATITUDE :" +x+"LONGITUDE: "+y;
       String number="";
       while (data.moveToNext())
      {
         theList.add(data.getString(1));
         number=number+data.getString(1)+(data.isLast()?"":";");
         call();
       }
      if(!theList.isEmpty())
         sendSms(number,msg,true);
       }
```

#### **7.2 OUTPUT**

Fig.No: 7.2.1



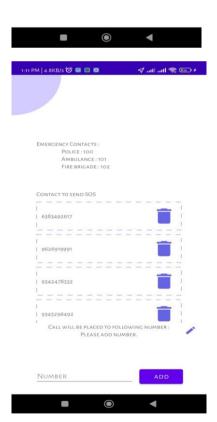


Fig.No:7.2.3

Fig.No: 7.2.2



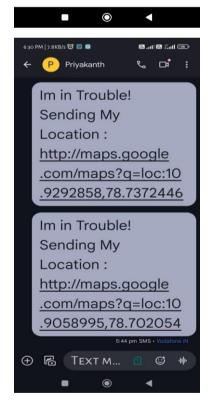


Fig.No:7.2.4

#### **CONCLUSION**

Unfortunately, the safety of women is in doubt and security is not concerned. Many headlines still coming across against women indicates that increasing trends of such sexual assault rapes still happening in today's generation. Around 80 percent of women are losing confidence and have fear of the realization of freedom. So we are trying to contribute little efforts towards women which will ensure the safety and respect for women so that she canal so have the right to grow equally like men. This mobile application is very much helpful for anyone. This application will help the user by scanning the QR code which will be nothing but she can attach the vehicle detail send through GPS the current address will be fetched and send it to any contact depending on the user. Here the user can take precautions before coming to the actual danger. It is to let every women is now safe to travel alone as someone is getting their updated location and also has vehicle information. For the future, we have in mind to extend this app where she can also contact nearby police patrolling vans in case of need. This project that I have made is small scale but has a large development scope and I look further to the Online Social networks now face a growing problem of fake and clone profiles. This poses threats to our personal and professional lives. The proposed system detects whether a profile is real or not by using a machine learning algorithm. The system identifies and informs the user as to whether a profile is legitimate or not.

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