# SecureMe: An AI application for women safety

Prof. Pooja Kajale, Sai Naik, Rushikesh Nikam, Akshata Mhase, Om Rasal

[1]*Project Guide, Computer Science & Design Engineering, DVVPCOE, Maharashtra, India*

[2]*Student, Computer Science & Design Engineering, DVVPCOE, Maharashtra, India*

[3]*Student, Computer Science & Design Engineering, DVVPCOE, Maharashtra, India*

[4]*Student, Computer Science & Design Engineering, DVVPCOE, Maharashtra, India*

[5]*Student, Computer Science & Design Engineering, DVVPCOE, Maharashtra, India*

## ABSTRACT

*Women's safety remains a pressing concern worldwide, particularly in urban areas where harassment and violence are prevalent. Many women feel unsafe in public spaces such as transport hubs, malls, and even their neighbourhood's. Existing security measures are often inadequate, making it essential to leverage technology for real-time assistance.*

*SecureMe is a mobile application that utilizes AI for enhancing the safety of women by integrating multiple safety features. The application provides live location sharing, an SOS button, AI-based threat detection, and real-time evidence collection through recording audio and video. It even allows voice commands for sending emergency alerts, making it accessible even when physical interaction with the phone is not possible. SecureMe also includes an emergency contact list for quick dealing of police, ambulance, and fire services. For an additional layer of security, SecureMe also connects with wearable technology like smart bands and biometrically enabled wearables. These wearables allow for automatic activation of the distress signal upon detection of distress. Safe zone mapping is also provided in the application, which navigates the user to safe zones like police stations or hospitals in real time.*

*Unlike existing safety apps, SecureMe provides a total security ecosystem that not only alerts emergency contacts but also collects legal evidence, which allows law enforcement to act promptly. Future updates planned include hidden camera and microphone detection to protect users from surveillance threats, and crowdsourced mapping of danger zones, allowing users to find and be alerted about high-risk areas. By integrating AI, IoT, and real-time data analytics, SecureMe aims to provide an end-to-end, proactive safety solution that empowers women and enhances public safety.*

**Keyword: -** *Women's safety, AI-powered security, real-time threat detection, emergency alert system, wearable technology, location tracking, SOS button, biometric security, IoT-based safety, smart security solutions, public safety, evidence collection, safe zone mapping, voice-activated emergency alerts, crowdsourced risk mapping.*

## 1. INTRODUCTION

Women's security is a serious problem across the globe, especially in cities and developing regions where violence and abuse of women is rampant. Staring, passing comments, and other abuse is normalized in Indian cities. It is reported that 60% of women in cities like Delhi, Mumbai, and Pune feel unsafe on public transport or public areas. Women's "right to the city" is about being free to visit schools, offices, and other public areas without fear of abuse. Women feel insecure in shopping malls, public transport, and even in the neighbourhood. Such abuse has psychological and emotional implications on women and security measures should be a priority. The role of newer technologies like AI and machine learning in enhancing women's security cannot be overemphasized. For example, machine learning algorithm analysis of Twitter data on women's security offers insights on patterns of abuse and unsafe areas in cities. Such an analysis offers actionable recommendations to improve city security infrastructure. Using data smoothing and removal of redundant data, such a study offers a transparent view of security scenarios in Indian cities and suggests the need for immediate intervention [2]. SecureMe also emphasizes the importance of social awareness and assistance in enhancing women's security. It provides the facilities like live location share, emergency contact calls with family and friends, SOS button. Such a feature helps in becoming safe in emergency situations and provide security using the artificial intelligence.

One of the promising solutions to ensure the safety of women is integrating technology into wearable devices and mobile apps. For instance, a smart band with the Complete Women Security (CWS) app integrates hardware and software to provide immediate assistance in emergency situations. The system allows women to click on an emergency button on the band, sending

messages to family, police, and local volunteers. The app is also capable of sending the user's location and detecting nearby safety zones, providing end-to-end safety features [3]. The use of IoT and Raspberry Pi-based devices further enhances security by offering facilities like GPS tracking, camera capturing, and communication. Such devices ensure women's security through immediate monitoring and instant response systems [4]. However, it is not adequate for women's safety in society; women need the solution which instant provides assistance to them and protects them from harassment. SecureMe is an app which help them in this regard and provide a secure path until they reach home or any secure place. Live location sharing is the priority feature in this app which provide an end-to-end means of safety.

Wearable safety devices, i.e., intelligent shoes and biometric-enabled devices, provide new solutions to women's safety. Such devices incorporate emergency alarm, GPS tracking, and even self-defence capabilities in the form of a taser. For instance, an intelligent shoe is capable of sending emergency messages to family members and incapacitating an attacker, offering immediate assistance and providing self-defence capabilities to women [6]. Similarly, biometric-enabled safety devices incorporating features of fingerprint scanning and health monitoring capabilities provide a comprehensive safety solution. Such devices automatically trigger alerts to authorities and family members when a user is unable to scan his or her fingerprint in a pre-programmed pattern, offering assistance in emergency situations [7].

Another approach is the integrated safety system design that incorporates defence mechanisms along with legal evidence collection. For example, systems that can click photos or videos of the assailants and share GPS coordinates deliver both immediate response as well as legal help after the crime. Such solutions reduce the fear of women and relatives and create a safer environment. With all these improvements, the crime rates against women remain alarming. According to the National Crime Records Bureau, 93 women were raped per day in India in 2014, and 3,37,000 crime cases were registered on women in that one year. Such statistics point towards the need for effective safety solutions that combine technology with practical application [8]. SecureMe application also provides the capturing of images and audio recording of the assailants as evidence. It helps after the crime for evidence collection and then police action on them is quite easy.

The "SecureMe" application takes these available technologies and studies a step further to provide an AI-driven safety app for women. By integrating features such as voice and camera-based commands, live location sharing, SOS button with live location sharing and call the emergency contacts and real-time notification through the SMS, the app aims to build an end-to-end safety ecosystem. The SOS functionality of the app is activated through multiple mechanisms, such as the press of a button, or through voice commands, making it usable under various circumstances. Drawing inspiration from available research and solutions, SecureMe incorporates innovative features such as AI-powered chatbots to support the user during the time of emergency. The application leverages wearable technology to enhance the safety of users. By integrating with devices such as smart bands and biometric-enabled devices, SecureMe ensures seamless hardware-software communication. The integration allows features such as real-time location sharing, voice recording, and image capture, all of which are a part of a comprehensive safety ecosystem.

## 2. LITERATURE REVIEW

**1. Paper Name:** Lifecraft: An android-based application system for women safety
**Author Name:** Rabbina Ridan Khandoker, Shahreen Khondaker, Fatiha-Tus-Sazia, Fernaz Narin Nur, Shaheena Sultana.
**Description:** The article presents a new mobile application system designed to enhance women's safety during emergency situations. The system integrates AI-powered threat detection, real-time location tracking, and SOS alert mechanisms to enable timely responses during distress. Through the leverage of IoT-based security, Lifecraft enables features such as biometric login, voice-triggered emergency alerts, and automatic evidence recording through audio and video. The system automatically sends instant alerts to emergency contacts and law enforcement agencies with real-time location details. The application also offers a safe zone mapping feature that allows users to find safe zones in their area. The research illuminates the growing need for technology-based safety and brings to light how AI and smart technologies can effectively prevent and respond to threats against women.

**2. Paper Name:** Analysis of Women Safety in Indian Cities Using Machine Learning on Tweets
**Author Name:** Deepak Kumar, Shivani Aggarwal.
**Description:** This study applies machine learning techniques to analyze tweets regarding women's safety in Indian cities. By applying natural language processing (NLP), sentiment analysis, and data mining, the study determines crime-prone areas and public perception of women's security. The study utilizes real-time social media data in categorizing the safety concerns to allow law enforcement agencies and policymakers to make informed decisions. The findings reflect public opinion trends and real crime trends, demonstrating how social media analytics can be applied as a proactive initiative to prevent crime and enhance safety.

**3. Paper Name:** Safety Solution for Women Using Smart Band and CWS App
**Author Name:** Tasnuva Tasneem, A. Z. M. Tahmidul, Al Mamun Mizan Kabir
**Description:** This paper proposes a smart band along with a mobile application, the CWS App, designed to enhance women's safety. The system features an SOS emergency button, real-time location tracking, and automatic transmission of distress alerts to pre-registered contacts and police authorities. The smart band also employs biometric sensors to track sudden physiological changes

like an increased heart rate, indicating distress. The study highlights the application of wearable technology in personal safety, indicating how IoT devices can provide real-time security services for women in threatening situations.

**4. Paper Name:** Smart Security Device for Women Based on IoT Using Raspberry Pi
**Author Name:** Prottasha Ghosh, Md. Emran Hasan, Tanjim Masroor Bhuiyan, Muhib Ashraf Nibir, Md. Rabiul Islam, Md. Rokib Hasan, Tanvir Hossai.
**Description:** This paper proposes an IoT-based security system utilizing Raspberry Pi for women's safety. The system integrates GPS tracking, a panic button, voice recognition for distress alerts, and a camera module for automatic evidence collection. Upon activation, the system sends real-time location and multimedia evidence to emergency contacts and authorities. The study accentuates the use of IoT in security systems, showcasing the utilization of low-cost portable technology as an effective means to upgrade safety measures for women.

**5. Paper Name:** A Comprehensive Safety Solution
**Author Name:** Saumya Pandey, Nikita Jain, Aditi Bhardwaj, Dr. Gagandeep Kaur, Vimal Kumar
**Description:** This research presents a multi-layered safety system that incorporates wearable technology, AI-driven threat detection, and mobile apps for providing comprehensive protection for women. It provides geofencing, voice-activated SOS alerts, and AI-driven predictive analytics for examining likely risks. It also suggests a community-driven safety network, where users can tag unsafe zones, creating a crowdsourced database for public information. The paper highlights how the integration of multiple technologies enhances the efficacy of personal security solutions.

**6. Paper Name:** Smart Shoe for Women Safety
**Author Name:** Vishesh Sharma, Yati Tomar, D. Vydeki
**Description:** This study proposes an intelligent shoe with integrated safety mechanisms such as pressure sensors, GPS location, and shock mechanisms to deter attackers. The shoe would send distress signals to emergency contacts when it senses unusual force or impact. The shoe also includes a shock-delivering mechanism to incapacitate an attacker briefly, providing the victim with a chance to escape. The study demonstrates the potential for integrating safety mechanisms into everyday wearable devices, enhancing security without requiring active user involvement.

**7. Paper Name:** A Novel Approach of Women Safety Assistant Device with Biometric Verification in Real Scenario
**Author Name:** Rubaiat Khan, Nagib Mahfuz, Nadia Nowshin
**Description:** This research proposes a new women's safety device with biometric authentication for verification in case of emergencies. The device utilizes fingerprint recognition and voice recognition to prevent unauthorized activation and ensure secure activation. It also provides GPS location, SOS alerts, and two-way real-time communication with emergency contacts. The research highlights enhanced security with biometric verification by restricting the activation of safety mechanisms to the authenticated user alone, making it a personalized and trusted women's safety device.

**8. Paper Name:** Design and Implementation of a Rescue System for Safety of Women
**Author Name:** Madhura Mahajan, KTV Reddy, Manita Rajput
**Description:** This paper presents an emergency response system with quick response in case of danger. It combines wearable sensors, GPS tracking, and real-time law enforcement communication. The system detects abnormal physical movement or distress signals and triggers an alert automatically, leading to a quick response by law enforcement. It combines voice-activated enablement and an AI-driven risk assessment module that analyzes real-time environmental sensors to predict harm. The research confirms the effectiveness of the integration of IoT, AI, and mobile technology for enhancing women's safety.

**9. Paper Name:** Abhaya: An Android App for the Safety of Women
**Author Name:** G. Eason, R.S. Yarrabothu, B. Thota
**Description:** This article introduces Abhaya, an Android safety app providing real-time safety for women. The app provides one-touch SOS alerts, real-time GPS tracking, and automatic dialing of emergency contacts. The app also features a danger zone detection system that warns users when they enter unsafe areas using crime data analysis. The article emphasizes that mobile apps can serve as a viable and affordable safety solution through the provision of instant communication, location tracking, and threat detection.

## 3. MOTIVATION

The motivation behind developing an AI Application for Women's Safety arises from the pressing need to address safety concerns that women face across the world. With urbanization, increased commuting, and changing social dynamics, women are frequently placed in situations where they may feel insecure, especially when navigating unfamiliar or isolated areas. Studies indicate a

worrying increase in incidents of harassment, assault, and other crimes against women, often exacerbated by the lack of immediate intervention options. Unfortunately, while society has made strides in technological and social development, these advancements have not adequately addressed the day-to-day security challenges faced by women.

## 4. PROBLEM DEFINITION

Women's safety remains an urgent issue, and existing measures are frequently insufficient. Harassment, stalking, and assault are threats that are often not reported due to barriers to seeking help. Safety tools currently in use, such as panic buttons and mobile apps, depend on user initiation, which in a crisis may be impossible. Moreover, such solutions are reactive, not proactive, in that they respond to threats only after they have materialized. A preferable solution would integrate AI-driven predictive analysis, real-time data, and geolocation to assess risks beforehand. The objective of this project is to design an advanced safety app that not only detects threats but also provides early warnings and triggers automated emergency responses. Based on AI, crime patterns, and environmental factors, the system will make women's lives safer, offering a smarter, more effective safety solution.

## 5. PROPOSED SYSTEM

The SecureMe app is built as an integrated solution to provide enhanced personal security, leveraging the latest technologies to provide instant help in situations of emergency. The system outlined here addresses the limitations of existing safety apps by integrating advanced features on one platform.

The major parts of the system are:

1. Voice Command Trigger:
   For scenarios where a user is unable to physically access a phone, voice activation is supported. Users can discreetly initiate safety features using pre-programmed trigger words. The operation is especially helpful where manual interaction is not feasible, i.e., being restrained or in a high-risk situation.

2. Emergency Contact Directory:
   It contains a dedicated section of emergency phone numbers of fire departments, ambulances, and police stations. It provides users with direct access to services without having to search for phone numbers in emergency situations. It is also capable of finding the user and suggesting emergency centres around the user, which makes communication easier and response time quicker.

3. AI-Based Threat Detection:
   Artificial intelligence is applied in the system to scan environmental and contextual data, picking up on threats in real time. AI analyses user input, ambient noise, patterns of movement, and other external data to detect unusual behaviour. When a threat is detected, the system automatically alerts the user and suggests immediate responses, offering a faster response to unsafe situations.

4. SOS Button Capability:
   A panic button dedicated allows users to send SOS messages to emergency services and registered contacts with a single click. With this option, help is just a click away. The current GPS location of the user is also sent along with the message so that the emergency personnel can reach the user quickly. An automatic voice message or emergency sound alert is also available to attract attention, if needed.

5. Real-Time Evidence Collection:
   When the voice command or panic button is pressed, the app will automatically record both audio and video to collect evidence. The data is stored safely and can be used later to identify suspects or recreate situations. The system also offers users the feature to send live media files to authorities or emergency contacts, increasing the chances of instant legal action.

6. Mapping of Safe:
   The application has a safe location mapping feature that helps users navigate to safety locations. It finds the closest police stations, hospitals, and other safety locations based on the current location of the user and pre-determined safety scores. It is particularly useful in unfamiliar or risky locations, enabling users to find a location of safety in a hurry.

7. Continuous Location Tracking:
   During an active emergency, the app continuously tracks and broadcasts the user's location to emergency contacts and authorities until the threat is resolved or manually disabled. This ensures that help remains on the way and users aren't left stranded in risky situations. To preserve battery power, the system reduces location tracking and updates contacts at intervals yet still offers real-time accuracy.

8. User-Friendly Interface:
   The interface is uncomplicated and user-friendly so that users can access major features without any difficulties even when under stress. The emergency features are also accessible within a few steps so that errors caused by panic are avoided. The app also provides options for customization so that users can set emergency contacts, preferred modes of alert, and shortcuts based on personal requirements.

### 5.1 Use-Case Model of the Proposed System

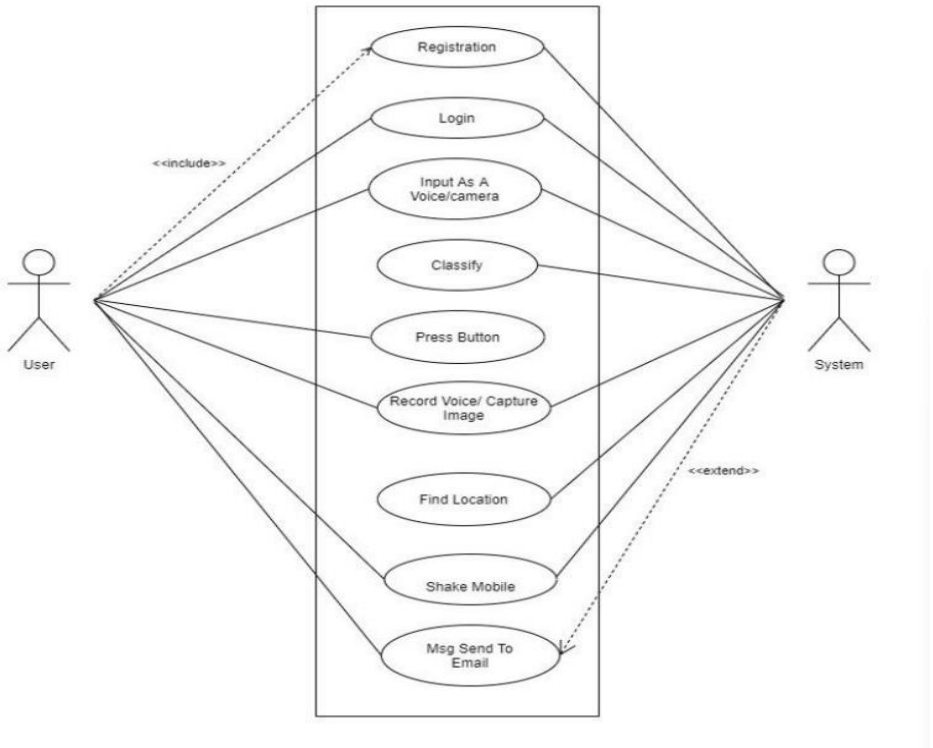


**Fig 1:** Use-Case Model

The application is coded with a set of user-friendly activities that fulfil different purposes and scenarios. Users start off by registering with the application to create a personal profile so that they can access the features of the application securely. Once registered, the login process is a seamless one, opening up the full potential of the app to users. Users get the convenience of accessing the application through user-friendly inputs such as voice commands or camera triggers, which also trigger significant security features when the need arises.

The application employs complex classification mechanisms to scan inputs, either voice commands or images, to find potential threats and respond appropriately. For added security, users also have an option to manually initiate an alarm by clicking on a dedicated button. The application is also capable of voice recording or snapping photos when activated, so important evidence is recorded in the event of an emergency.

For security purposes, the app uses GPS to locate the user in real time. One of the special features is shaking the phone as an alternative way of initiating the alarm system, providing a discreet and quick method of indicating distress. In emergency situations, the application sends detailed messages to a registered email address so assistance is alerted promptly.

From the system point of view, the application is coded with robust functionalities that construct and complement user activities. It not only facilitates regular activities like registration and login, but it also uses them to build a wide security network. For example, when an alarm is triggered, the system will execute activities like sending messages and data recording automatically, thus becoming a reliable and proactive security assistant to users.

### 5.2 System Flowchart

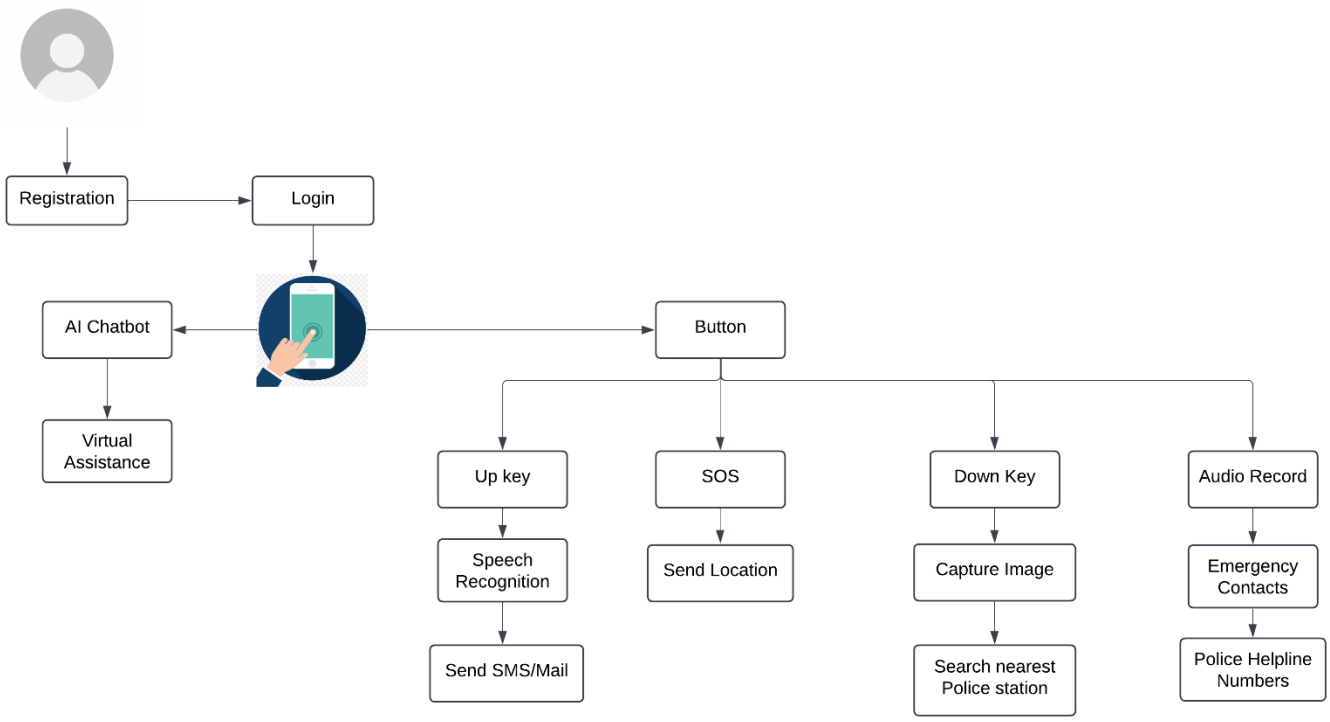


**Fig 2:** System Flowchart

Figure 2 illustrates the use case model of the "SecureMe" system, its primary functionalities, and the manner in which users may interact with it. On a fundamental level, the system offers access to primary features like the Login and Registration page, previously recorded audio, a user-friendly interface, and a dynamic map for navigation. Users may interact with the system using voice commands or by invoking an SOS action, which makes it highly versatile for various scenarios. At the backend, the system integrates with databases, GPS, and recording systems with ease and also supports text messaging and voice command processing to deliver overall safety assistance.

The experience begins with Registration and Login, where one registers to customize the experience to meet one's needs. Once registered, login is used to unlock the full range of features of the system to provide safety and convenience. The system is activated either by shaking the phone or by clicking a specific button on the app interface. Both methods provide flexibility and ease, even under stressful conditions.

If the user shakes his or her phone, the system is activated and initiates several important safety measures. It first automatically sends the user's location to pre-programmed contacts so that instant assistance is provided. It then utilizes its navigation capabilities to help the user find a safe route depending on where he or she is. The system is also capable of directly dialling emergency services in case of an emergency. For further user assistance, an AI-powered voice-capable chatbot provides instant guidance and instructions in real time, and the system is a valuable safety aid.

| Features | Raksha [1] | I Go Safely [1] | Shake to Safety [1] | Safety pin [1] | Abhaya [1] | Proposed system [1] |
|---|---|---|---|---|---|---|
| **Alert message** | Yes | Yes | Yes | Yes | Yes | Yes |
| **Send location** | Yes | Yes | No | Yes | Yes | Yes |
| **Live GPS tracking** | No | No | No | Yes | Yes | Yes |
| **Safe Zone** | No | No | No | Yes (Not always available) | No | Yes (Always available) |
| **Audio recording** | No | Yes | No | No | No | Yes |
| **Offline mode** | Yes (No recording) | No | No | No | No | Yes (with recording) |
| **Voice command using AI** | No | No | No | No | No | Yes |
| **Panic Button Integration** | No | No | No | No | No | Yes |
| **Has all these features?** | No | No | No | No | No | Yes |

### 5.3 Comparison Between Existing Systems and Our Proposed System

## 4. CONCLUSION

The SecureMe app is a robust, AI-based solution that is specifically geared towards filling the urgent need for enhanced personal security, particularly of women. With the integration of features such as AI-based threat detection, voice-controlled activation, live GPS location tracking, and evidence collection, the app offers a complete safety solution on a user-friendly Android platform. It not only bridges the gaps in existing safety apps, but it also empowers users to respond courageously in emergency situations. The proactive and holistic nature of SecureMe has the potential to bring much safer communities and improved living conditions.

In future we will make it more secure so that we can minimize the crimes at the lowest level. We will introduce two special features in this application which are new in safety app. That is hidden camera detection and microphone detection. Because this is also a safety issue of women. User can scan that is there any camera or microphone hidden in the location. There are two ways to detect hidden camera by our mobile app. One is to detect magnetic field and second is to detect the white light which is not visible. We will detect hidden camera by using the magnetic sensor of the hardware of the smart phone (magnetometer) and infrared sensor (IR) in the camera. User can bring his/her phone closer to suspected location, if strong field is detected then user is sure about hidden device which is concealed inside the object or inside the wall. Second method is by detecting light reflected by a lens which is detectable by the camera of the phone.

Another thing we will be adding in the future is indicating the unsafe zones. If any user finds himself/herself in any unpleasant situation at any place, then he/she is free to mark that place as danger zone. Another user will be warned by our system when he/she is near to that place. We hope, it will be more useful and reliable.

## 5. REFERENCES


[1] Rabbina Ridan Khandoker, Shahreen Khondaker, Fatiha-Tus-Sazia, Fernaz Narin Nur, Shaheena Sultana. “Lifecraft: An android-based application system for women safety” 2020 International Conference on Sustainable Technologies for Industry 4.0 (STI), 24-25 December, Dhaka, 2020

[2] Deepak Kumar, Shivani Aggarwal. “Analysis of Women Safety in Indian Cities Using Machine Learning on Tweets.” Amity University, Noida, India (Uttar Pradesh), 2020.

[3] Tasnuva Tasneem, A. Z. M. Tahmidul, Al Mamun Mizan Kabir. “Safety Solution for Women Using Smart Band and CWS App” 17th International Conference on Electrical Engineering/Electronics, Computer, Telecommunications and Information Technology (ECTI-CON), 2020.

[4] Prottasha Ghosh, Md. Emran Hasan, Tanjim Masroor Bhuiyan, Muhib Ashraf Nibir, Md. Rabiul Islam, Md. Rokib Hasan, Tanvir Hossai. “Smart Security Device for Women Based on IoT Using Raspberry Pi” 2nd International Conference on Robotics, Electrical and Signal Processing Techniques (ICREST), 2021.

[5] Saumya Pandey, Nikita Jain, Aditi Bhardwaj, Dr. Gagandeep Kaur, Vimal Kumar. “A Comprehensive Safety Solution” Proceedings of 2021 Tenth International Conference on Contemporary Computing (IC3), 2021.

[6] Vishesh Sharma, Yati Tomar, D. Vydeki. “Smart shoe for women safety” School of Electronics Engineering, VIT Chennai, India, 2022.

[7] Rubaiat Khan, Nagib Mahfuz, Nadia Nowshin. “A Novel Approach of Women Safety Assistant Device with Biometric Verification in Real Scenario” Electrical & Electronic Engineering (EEE) American International University-Bangladesh (AIUB), 2022.

[8] Madhura Mahajan, KTV Reddy, Manita Rajput. “Design and Implementation of a Rescue System for Safety of Women” IEEE International Women in Engineering (WIE) Conference on Electrical and Computer Engineering (WIECON-ECE), 2023.

[9] G. Eason, R.S. Yarrabothu and B. Thota, "Abhaya: An Android App for the safety of women," 2023 Annual IEEE India Conference (INDICON), New Delhi, 2023

[10] Dafallah, H.A.A, “Design and implementation of an accurate real time GPS tracking system.”, e-Technologies and Networks for Development (ICeND), 2014 Third International Conference on Year, 2023.

| | |
|---|---|
|  | I am Pooja Kajale, an Assistant Professor at Dr. Vithalrao Vikhe Patil College of Engineering, Ahilyanagar. I hold a Master's degree in Computer Engineering and have been actively involved in guiding students in their academic and research projects. |
|  | I am Sai Naik, a B.E. Computer Science and Design student with a strong focus on UI/UX and graphic design. Experienced in creating user-cantered digital solutions. Completed the internship in UI/UX designing at ByteUprise. Currently working on SecureMe, an AI-driven application dedicated to enhancing women's safety through smart and responsive technology. |
|  | I am Rushikesh Nikam, a final-year computer science and design student at DVVP College of Engineering, passionate about web development technologies. Specializing in front-end development, I craft responsive, interactive interfaces using HTML, CSS, JavaScript, and React. Currently, I'm developing "SecureMe," an AI-powered women's safety app. |
|  | I am Akshata Mhase, a BE Computer Science and Design (CSD) Engineering student with a strong interest in technology and innovation. I have hands-on knowledge of Python, web designing, and artificial intelligence. Currently, I'm working on SecureMe, an AI-powered application focused on enhancing women's safety. |
|  | I am Om Rasal, a fourth -year computer science and design engineering student at DVVP College of Engineering, passionate about web development technologies. Specializing in front-end development, I craft responsive, interactive interfaces using HTML, CSS, JavaScript, and React. Currently, I'm developing "SecureMe," an AI-powered women's safety app. |