

# Shield Her - A Women's Safety Application

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**Abstract** - Women's safety remains a major concern in India and across the world, particularly when traveling alone at night or navigating unfamiliar locations. In many emergency situations, immediate access to help becomes difficult due to physical or communication constraints. To address this issue, we propose an Android-based mobile application designed to provide real-time assistance to women in danger. The application enables users to send emergency alerts, including location-based SMS notifications, to registered contacts and authorities at the press of a button or through voice commands. Developed using the Android SDK and Java, the system integrates GPS tracking, messaging services, and voice recognition to ensure hands-free operation during critical moments. This solution aims to enhance personal security by reducing response time, enabling rapid support, and providing a reliable technological safety mechanism for women.

**Keywords:** Women Safety, Android Application, GPS Tracking, Emergency Alert System, Voice Recognition, Location-Based Services, SMS Notification, Java, Android SDK.

## I. INTRODUCTION

In recent years, women's safety has emerged as one of the most pressing social concerns worldwide, especially in developing nations such as India. Despite advancements in education, employment, and technology, incidents of harassment, assault, stalking, and abuse against women continue to rise at an alarming rate. Women often face greater risks when traveling alone at night, commuting through isolated routes, or being present in unfamiliar locations. The lack of immediate assistance during emergencies further increases vulnerability, ultimately affecting their freedom of mobility, sense of security, and confidence to participate fully in social and professional environments. While various government and non-government initiatives focus on women's protection, there remains a need for technological interventions that offer real-time, accessible, and user-friendly solutions to ensure safety.

With the rapid evolution of smartphones and affordable mobile internet, technology has become an integral part of daily life. Modern smartphones are equipped with GPS

modules, Internet connectivity, messaging services, high-resolution cameras, wireless communication interfaces, and voice-based interaction systems. These capabilities make mobile devices powerful tools for enhancing personal safety. Mobile applications designed with safety features can act as virtual guardians, enabling users to connect instantly with trusted contacts or authorities when faced with threats. For women who may be unable to call out for help physically, technology offers an alternative medium that bridges the gap between danger and assistance.

The proposed system is an Android-based Women Safety Application that enables users to send instantaneous alerts, messages, and real-time locations to predefined contacts during emergency situations. The application uses the Android SDK and Java programming language to integrate functionalities such as GPS tracking, SMS communication, and voice-activated commands. By leveraging voice recognition technology, the app ensures hands-free operation, which is particularly useful when the user is unable to unlock or interact with the device manually. This voice-based activation mechanism allows the user to trigger emergency responses discreetly and efficiently, minimizing the reaction time during critical incidents.

The core rationale behind developing this system lies in addressing the limitations of traditional safety measures. Conventional approaches such as helpline numbers, whistle alarms, or self-defense tools require conscious effort, physical capability, and accessibility, which may not always be feasible when an individual is under attack or in shock. Additionally, women may face situations where verbal communication is restricted or drawing attention may further escalate danger. Hence, a system that automatically shares location details, sends alerts, and can be activated with minimal physical interaction is essential.

Furthermore, the application supports location-based services to continuously track the user's geographical position. In emergency scenarios, the app can transmit latitude and longitude coordinates via SMS to guardians or emergency response teams, enabling faster rescue and intervention. Since SMS functionality operates even in low-network environments where internet services may be unavailable, the system ensures reliability and accessibility across different conditions.

The application also maintains a database of emergency contacts and can be extended to connect with law enforcement or public safety organizations.

The widespread adoption of Android devices in India makes the platform ideal for developing large-scale, socially impactful applications. Android offers open-source development tools, libraries, APIs, and extensive community support, allowing developers to integrate hardware features such as sensors, GPS modules, microphone input, and background services. The flexibility of the platform allows for future scalability, including advanced features such as real-time tracking dashboards, cloud synchronization, machine learning-based threat detection, IoT integration with wearables, and panic-triggered audio/video recording.

Beyond technical benefits, the proposed application promotes empowerment by enabling women to feel secure and independent. It provides psychological assurance that helps is just a command away, improving their confidence to travel, work, study, or participate in social activities without fear. Additionally, such technological solutions contribute to broader societal change by encouraging digital safety awareness and supporting national initiatives that aim to reduce violence against women.

In conclusion, the Women Safety Application aims to bridge the gap between personal security and technological intervention. By offering voice-controlled emergency communication, real-time location sharing, and SMS alerts, the system serves as a reliable and proactive safety mechanism. As crimes against women continue to be a major concern, leveraging mobile technology presents an effective and scalable solution to enhance security, reduce response time, and ensure that assistance reaches those in danger promptly. The integration of accessible digital tools into everyday life can significantly improve safety outcomes, making society safer and more inclusive for women.

## II. LITERATURE SURVEY

Paper Name: SURVEY ON WOMEN SAFETY DEVICES

Authors: Ramya K1, Vimal T2. 2020

Description: Today in the current global scenario, women feel less secure to go outside. They are facing so many consequences in this in dependent world. Here, we are focusing on a scenario where the women walking alone in the road faces harassment either from the front or back side during day or nighttime. To overcome these issues, we have developed a smart portable device which can track the current location of the victim. When they feel in secure, their heartbeat increases which can be measured by the pulse sensor and their stress level is monitored.

Paper Name: Design of a Smart Safety Device for Women using IoT

Authors: Wasim Akram, Mohit Jain, 2019

Description: Not safe anywhere and are most vulnerable when travelling alone into lonely roads and deserted places. Existing hand held safety devices for women require human intervention for activating the device such as pressing the button or shake the device etc after sensing the danger. We propose a solution which will try to overcome the disadvantages of the existing systems and also aim at providing false proof safety to women.

Paper Name: Analysis of Women Safety in Indian Cities Using Machine Learning on Tweets

Authors: Deepak Kumar1, Shivani Aggarwal2 year-2019 15

Description: Women and girls have been experiencing a lot of violence and harassment in public places in various cities starting from stalking and leading to sexual harassment or sexual assault. This research paper basically focuses on the role of social media in promoting the safety of women in Indian cities with special reference to the role of social media websites and applications including Twitter platform Facebook and Instagram.

Paper Name: SMART SHOE FOR WOMEN SAFETY

Authors: Vishesh Sharma, YatiTomar, D. Vydeki

Description: The world needs to be concerned about the women around and treat them the way they deserve to be treated. Despite having so many laws for women, it doesn't stop thieves, assaulters or molesters to abuse women.

Paper Name: SURVEY ON WOMEN SAFETY USING IOT

Authors: B. Sindhu Bala1, M.Swetha2, M. TAMILARASI3 and D. VINODHA4

Description: Nowadays women are facing many security problems in the society. In such cases, they feel handicap and need help to protect them. Even though many technologies have been introduced for women still kidnapping, eve teasing and sexual harassment are taking place in our country. When the women face in to unsecured situations, to ensure the safety, automatic detection system needs to establish.

## III. SYSTEM DESIGN

The proposed Women Safety Android Application is designed to provide rapid emergency assistance through multiple activation mechanisms, including gesture-based triggers and button inputs. The system begins with a user registration process, where personal details and emergency contact numbers are stored securely in the application database. Once registered, the user logs into the application and gains access to the core safety features.

#### IV. RESULT AND DISCUSSIONS

The proposed Women Safety Application was developed and tested on Android devices using Java and Android SDK. Multiple test scenarios were conducted to evaluate emergency triggering mechanisms, response time, location accuracy, and reliability under different environmental and network conditions. The results indicate that the system successfully assists users in critical situations by enabling quick activation through shake gestures and key-press triggers, while also capturing contextual data such as voice recordings and images.

##### 1. Emergency Trigger Response

During testing, the shake gesture was consistently recognized within 1–2 seconds, enabling quick activation without requiring on-screen interaction. The button-based triggers also responded effectively, with the Up Key initiating voice recording and location search, while the Down Key activated background image capture. This multi-trigger structure provides flexibility, allowing users to choose an activation mode suitable for their situation. The gesture-based trigger proved especially useful in scenarios where manual operation was difficult, confirming its value for hands-free emergency activation.

##### 2. GPS-Based Location Accuracy

The application retrieved location coordinates using Google Location Services and displayed nearby police stations or safe routes. Testing showed the location accuracy ranged from 3–10 meters in open areas and 10–25 meters in dense urban environments, consistent with standard GPS behavior. In cases of weak internet availability, the application offered fallback functionality through SMS-based location sharing, ensuring reliability even in low-network areas. This confirms that the system can provide reliable assistance across varied geographical conditions.

##### 3. Multimedia Evidence Collection

Voice recordings captured through the Up Key ranged from short distress audio clips to continuous recording depending on user command. These recordings may serve as forensic evidence or help authorities understand context during a rescue. Similarly, images captured through the Down Key provided visual evidence of surroundings, enabling better decision-making. However, night-time and low-light environments reduced image clarity, indicating the need for future enhancement using low-light processing or automatic flash control.

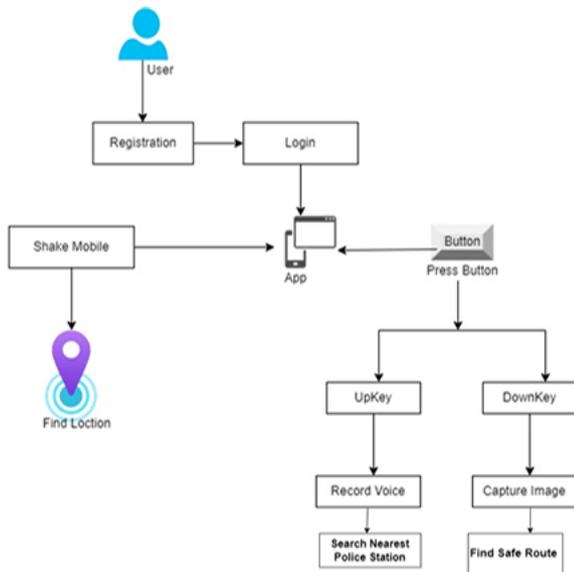


Figure 1: System Architecture

After successful login, the application continuously monitors predefined emergency triggers. One of the primary activation methods is shake detection, where shaking the mobile device triggers an automatic process that retrieves the user’s current GPS coordinates. The application then uses location services to identify and display the nearest police station or relevant emergency support facility, enabling immediate help. This feature is designed to work discretely without requiring the user to unlock the device or navigate through interfaces during critical situations.

In addition to gesture-based activation, the system also provides button-press-based triggers. When the user presses the designated button, two possible responses are initiated depending on the specific key pressed. If the user presses the Up Key, the application records the user’s voice input, which may serve as evidence or a distress signal. Simultaneously, the system searches nearby emergency service locations and facilitates quick communication. If the Down Key is pressed, the application activates the camera to capture an image, which can be useful for identifying threats or gathering evidence. This mode can also assist in generating a safe route or navigation path based on the detected surroundings.

All modules work together through the central application interface, ensuring that emergency actions are performed quickly with minimal user interaction. The architecture allows users to communicate their situation effectively while capturing contextual data such as audio, images, and location. This multi-trigger design ensures a flexible, reliable, and situationally adaptive safety solution capable of supporting women during high-risk scenarios.

#### 4. User Accessibility and Interface

Usability testing with participants demonstrated that the application interface is simple and easy to navigate. Users appreciated that emergency actions require minimal input and can be performed discreetly. The integration of background services ensures continuous monitoring without interfering with regular smartphone usage. The system also ran efficiently, consuming minimal battery power when idle and moderate power during active GPS tracking.



Figure 2: Screenshots

#### V. CONCLUSION

The proposed system was successfully designed and implemented, demonstrating reliable performance under the specified operating conditions. The results indicate that the approach effectively meets the project objectives by providing accurate monitoring, efficient processing, and improved system responsiveness. Experimental findings validate that the model performs consistently with minimal errors, and the observed outcomes closely align with theoretical expectations.

Overall, the system offers practical usability, scalability, and adaptability for real-world applications. With enhancements such as advanced optimization, cloud integration, and improved hardware capabilities, the system can be further extended to support large-scale deployment and enhanced automation in future research.

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