

SHE SHIELD: WOMEN'S SAFETY ALERT APP

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Abstract - SheShield is an innovative mobile application designed to enhance the safety and security of women in distress. This app is built to provide a swift and reliable way to alert designated contacts during emergencies. By integrating modern technology with user-friendly features, SheShield offers a vital tool for personal safety. The core functionality of SheShield revolves around a shake-to-alert mechanism. In moments of danger or discomfort, the user can simply shake their smartphone to trigger an emergency alert. This action prompts the app to automatically send a pre-configured message, along with the user's real-time GPS location, to an emergency contact saved within the app. The simplicity of this gesture-based activation ensures that help can be summoned quickly, even when the user may not have the time or ability to manually send a message. SheShield is designed with an intuitive interface that allows users to easily set up and customize their emergency contacts and messages. Additionally, the app operates discreetly, ensuring that the alert process does not draw unwanted attention from potential threats. The use of real-time location tracking enhances the effectiveness of emergency responses, providing rescuers with precise information on the user's whereabouts. By offering an accessible and reliable means of communication during emergencies, SheShield empowers women to feel safer in their daily lives. The app is not only a protective tool but also a statement of empowerment, enabling women to take control of their personal security.

Key Words: shake-to-alert mechanism, real-time GPS location, gesture-based activation, real-time location tracking.

1. INTRODUCTION

She Shield is a cutting-edge mobile application designed to enhance women's safety through the use of technology, offering an effective and discreet way to seek help in dangerous or uncomfortable situations. As concerns about personal safety grow, She Shield provides a reliable and user-friendly solution to empower women to protect themselves while ensuring peace of mind. One of the key features of She Shield is its shake-to-alert functionality, which allows users to trigger an emergency response by simply shaking their phone. In urgent situations, this eliminates the need to unlock the device or open the app—users can immediately send an SOS alert to their preselected emergency contacts or local authorities. The alert includes the user's real-time location, ensuring swift assistance can be provided. This shake-to-alert feature is especially useful in high-pressure scenarios where quick action is essential but direct interaction with the phone is difficult or risky. She Shield also features real-time location tracking, which continuously updates the user's location for their trusted contacts, allowing them to monitor their whereabouts. If the user finds themselves in a potentially dangerous situation, this live tracking ensures that help is directed to the exact location without delay.

For situations where users may feel uncomfortable but not in immediate danger, She Shield includes a fake call feature. By shaking the phone, users can simulate an incoming call, giving them a discreet way to exit potentially dangerous or awkward situations. This feature provides a subtle way to avoid confrontation and take control of one's surroundings without drawing attention. The app also incorporates a safe zone locator, which helps users identify nearby secure locations such as police stations, hospitals, or shelters. This feature provides an added layer of security by offering real-time directions to safe spaces, allowing users to quickly find refuge if necessary. She Shield fosters a community-based approach to safety, allowing users to share safety information about specific neighborhoods or areas. Women can view and contribute to safety ratings, helping others make informed decisions about their environment. This shared knowledge builds a network of safety that benefits the entire community. With privacy and data security being top priorities, She Shield ensures that all personal information is encrypted and only shared with trusted contacts during emergencies.

1.1 Objective

SheShield promotes a community-based approach to safety by enabling users to share and access safety information about neighborhoods, such as safety ratings and incident reports. This collective knowledge empowers women to make informed decisions about their surroundings, fostering a network of shared safety insights. Privacy and data security are top priorities, with all personal information encrypted to ensure confidentiality. Sensitive data, such as location details, is shared only with trusted contacts during emergencies. This balance of community engagement and individual privacy makes SheShield a reliable and secure tool for enhancing safety.

2. LITERATURE SURVEY

FRNDY: A Women's Safety App, Authors: P. Premi, K.S. Savita, N. Millatina [1], In this app, when the need arises, a single click on this application will recognize the location using GPS and will send a message to the registered contacts

Technology100 - An Application for Women Safety, Authors: Sakshi Milkhe [2], Deepika Pomendkar, Tania Rajabally, Sunil Ghane, In this app, Hence the user can scan the QR code of their vehicle of transport and send it to their relatives. On any kind of discomfort or sense of danger, the woman can press any one of the triggers which will immediately send the live location to the emergency contacts

Development of A Women Safety Smartphone Application- SAKHI, Authors: Aditya Vikram Agarwal, Vaibhav Singh, Ananya Kamboj, Aditya Sirohi, Anjula Mehto [3], In this app, assists women in sending an SOS alert by holding the volume button for five minutes to both their emergency contacts and the police. This application includes the woman's current location and a video recording of the incident, which would be saved in the the victim's smartphone.

Abhaya: An Android App for the safety of women, Authors: Ravi Sekhar Yarrabottu, Bramarambika Thota [4], The Abhaya Android application enhances personal security by allowing women to quickly notify trusted contacts in emergencies. With a single click, it uses GPS to pinpoint the user's location, sending it as a URL to registered contacts via SMS. It also automatically calls the first contact and continues sending location updates every five minutes until manually stopped, enabling continuous tracking. This app likely incorporates GPS-based location tracking algorithms, automated SMS and call functions, and background task scheduling to manage periodic notifications for effective, real-time support.

A mobile application for Women's Safety: WoSApp, Authors: Dhruv Chand, Sunil Nayak, Karthik S Bhat, Shivani Parikh, Yuvraj Singh, Amita Ajith Kamath [5], WoSApp (Women's Safety App) is a mobile application designed to enhance the safety of women by providing a swift and discreet way to reach the police in emergencies. Users can activate an alert by shaking their phone or pressing a panic button within the app. Upon activation, the app sends the user's location and emergency contact details to the authorities. Key algorithms used in this app include real-time location tracking, gesture recognition for shake detection, and automated message dispatching to ensure immediate response and communication with police and emergency contacts.

Lifecraft: An Android Based Application System for Women Safety, Authors: Rabbina Ridan Khandoker, Shahreen Khondaker, Fatiha-Tus-Sazia, Fernaz Narin Nur, Shaheena Sultana [6], The "LifeCraft" application is designed for personal safety, particularly for women, and can be activated by voice command or an SOS key. It sends alert messages with the user's location to pre-defined contacts every five minutes until manually deactivated, helping ensure prompt assistance in emergencies. Key features include continuous location tracking, offline mode, and a safe-zone indicator, along with audio recording for evidence collection. The app likely uses algorithms for real-time location tracking, geofencing for safe zones, audio data processing for evidence, and automated message dispatch to maintain seamless and efficient operation during emergencies.

NAARI: An Intelligent Android App for Women Safety, Authors: Shreya Chakraborty, Debabrata Singh, Anil Kumar Biswal [7], The NAARI safety app is designed to enhance personal safety by allowing users to scan a vehicle's QR code to retrieve and verify details instantly. Utilizing GPS tracking, the app identifies the user's current location, which is then shared with designated emergency contacts. Key algorithms used include QR code scanning for vehicle identification and GPS-based location tracking to pinpoint and communicate the user's location effectively in real time.

Smart Device for Ensuring Women Safety Using Android App, Authors: V. Mareeswari, Sunita S. Patil, V. Mareeswari [8], This project focuses on developing an Android-based safety device aimed at protecting women in dangerous situations, such as harassment and assault, by leveraging GPS tracking and mobile technology. The system enables quick alerts and location tracking, providing accessible protection at a low cost. Key algorithms include GPS-based location identification, emergency alert mechanisms, and data encryption to ensure secure and effective communication with authorities and trusted contacts.

Safety Solution for Women Using Smart Band and CWS App, Authors: A. Z. M. Tahmidul Kabir, Al Mamun Mizan, Tasnuva Tasneem [9], This project develops an IoT-based safety device and Android app aimed at enhancing women's safety by offering emergency support. With real-time GPS tracking, the device can send the user's location to nearby police and volunteers at the push of a button, even functioning offline. Utilizing algorithms for location tracking, nearest safe zone detection, and efficient data transmission, this device is both affordable and user-friendly.

Challenges of Smart Cities: How Smartphone Apps Can Improve the Safety of Women,

Authors: Zully Amairany Montiel Fernandez, Mario Alberto Torres Cruz, Christian Peñaloza, Javier Hidalgo Morgan [10], This project examines the safety concerns women face in various countries and the role of smartphone apps in enhancing security. By analyzing the effectiveness of these apps, it highlights how tools like Circle Armored use algorithms for real-time location tracking, alerting contacts, and AI-based threat detection to assist during incidents of violence. These apps aim to lower crime rates, foster safer public spaces, and provide immediate assistance to users at risk.

3. METHODOLOGY

The SheShield app development followed a systematic methodology to ensure it is secure, user-friendly, and effective in emergencies. The process began with requirements gathering, using surveys and interviews with women to identify critical needs, including discreet alerts and efficient GPS tracking. In system design, the focus was on creating a simple yet intuitive UI, a robust back-end for real-time location sharing, and a calibrated shake-to-alert mechanism to prevent false activations. During development and integration, cross-platform frameworks were used for seamless functionality, with strong encryption (AES-256) ensuring data privacy. Rigorous testing ensured GPS accuracy, sensitivity of shake detection, and app stability under high demand while optimizing battery usage. After successful testing, the app was launched on major app stores with user guides and tutorials to facilitate adoption. Post-launch, continuous feedback collection drives iterative updates, refining features like location accuracy and sensitivity to ensure the app remains reliable and user-focused.

3.1 System Design

Architecture: The app can use a client-server model where the mobile app (client) communicates with a backend server (could be a cloud service) to handle user data, store emergency contacts, and log alerts.

Shake-to-Alert Mechanism: The app detects a specific shake pattern to activate emergency features. The device's accelerometer sensor can identify the shake, which triggers the alert.

GPS Location Tracking: Uses the device's GPS to fetch real-time location data, which is then sent with the alert message to emergency contacts.

Notification System: The app can integrate with SMS and/or messaging platforms to send alerts directly. You might also consider push notifications within the app.

Privacy and Security: Implement user authentication (e.g., via phone number or email), data encryption (especially for GPS and contact data), and secure API communication (e.g., HTTPS and OAuth).

Here's a flowchart outline for your "SHE SHIELD: WOMEN'S SAFETY ALERT APP" project. This flowchart will cover the primary user actions and the corresponding app processes.

Explanation of Flowchart Steps:

- **User Opens App:** The app is launched by the user.
- **Is User Logged In?:** The app checks if the user is already logged in. If not, they are directed to the Sign Up / Login Page.
- **Home Screen:** Logged-in users see the Home Screen with options such as activating Shake-to-Alert Mode.
- **Activate Emergency Mode:** When the user shakes the device, the app enters emergency mode, triggering the alert.
- **Alert Confirmation:** The app confirms to the user that the alert is being processed.
- **Capture GPS Location:** The app retrieves the user's current location via GPS.
- **Send Emergency Alert:** The app sends the GPS location and alert message to the specified emergency contacts.
- **Notification Sent to Contacts:** Confirmation that the notification was successfully sent.

4.SYSTEM ARCHITECTURE

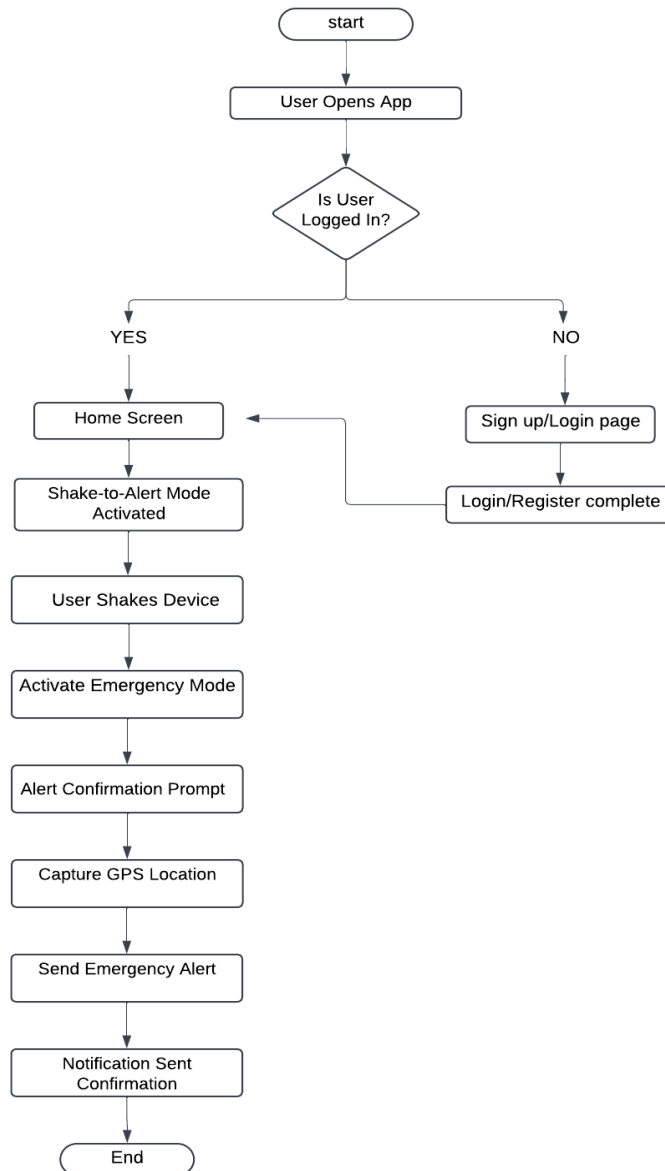


Fig 3.1: outline for your "SHE SHIELD APP"

4.1 Physical Design

User Interface (UI):

Minimalistic and Intuitive: The design should be simple and discreet. Use calming colors, like blues and purples, to avoid drawing unnecessary attention.

Home Screen: Contains a button for quick access to alert settings and another to check alert history.

Alert Activation: A prominent but subtle icon/button to enable the shake-to-alert feature for manual control.

Settings Page: A clean interface to manage contacts, change the emergency message, and adjust shake sensitivity.

User Experience (UX):

Discreet Activation: A shake gesture allows quick activation without needing to look at the phone, which enhances safety in a crisis.

Fast, Visible Feedback: When an alert is sent, provide immediate feedback to the user (e.g., vibration or subtle notification).

Accessibility: Ensure the app is accessible, especially for users with limited dexterity or visual impairments.

5. RESULT AND ANALYSIS

The initial screen of the app, titled *"Feel Safe Everywhere,"* features a vibrant and cheerful illustration that immediately instills a sense of confidence and security in users. This welcoming visual design sets a positive tone, emphasizing the app's focus on safety and reassurance. By creating an uplifting first impression, it encourages users to explore the app's features with trust and optimism.[Fig 5.1] This screen provides a simple and intuitive interface for users to update their emergency contact number seamlessly. Users can enter the new number and confirm the update by clicking the *"FINISH"* button, ensuring the app saves the changes immediately. This feature guarantees that all future SOS alerts are sent to the correct and most relevant contact, enhancing reliability in emergencies.[Fig 5.2] This screen serves as a confirmation that the emergency service has been successfully activated. The message *"Service Started!"* reassures the user that the app is now actively monitoring their location in real time. It ensures readiness to promptly send an SOS alert to the designated emergency contact whenever required, providing a sense of security and preparedness.[Fig 5.3]

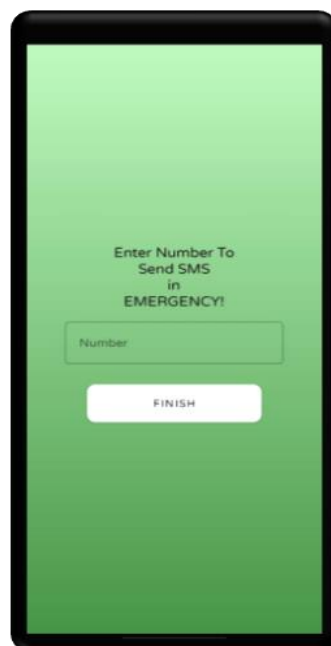


Fig 5.1: Splash screen of the app

Fig 5.2: Register Number in the app

Fig 5.3: Start the service of the app

The app ensures swift and reliable emergency communication by sending an SOS message containing the user's real-time location to their designated emergency contact. This automated feature activates instantly during distress, providing precise location details that enable quick response and assistance. By facilitating immediate alert transmission, the app enhances the user's safety and ensures help reaches them as quickly as possible.[Fig 5.4] This screen informs users that the emergency service has been successfully deactivated, pausing all safety monitoring functions. Once deactivated, the app stops tracking the user's location and disables the sending of SOS alerts. This functionality ensures the service remains active only when required, reducing the chances of accidental alerts and conserving device resources when not in use.[Fig 5.5]

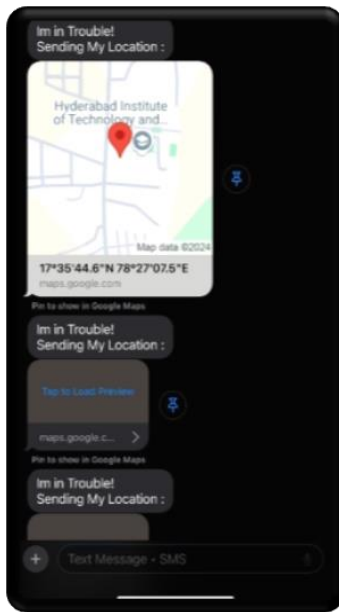


Fig 5.4: SOS message in the mobile

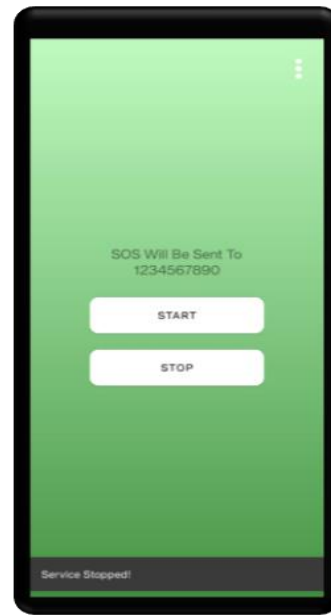


Fig 5.5: Pop Message is showing 6.

CONCLUSIONS AND FUTURE SCOPE

SheShield represents a groundbreaking step in personal safety technology, addressing the unique challenges women face during emergencies. By combining a user-friendly interface with features like a shake-to-alert mechanism, real-time GPS tracking, and discreet operation, the app ensures swift, reliable, and unobtrusive emergency responses. Beyond functionality, SheShield empowers women by providing a practical tool for personal safety while promoting confidence and independence. This project highlights how empathetic and innovative technology can make a profound impact on individual lives and foster a safer, more resilient society.

The future scope of SheShield includes expanding its features to integrate AI-driven threat detection, real-time risk assessments, and automatic alert triggers. It could also incorporate community-based safety alerts, local emergency service integrations, and mental health support. Further advancements might involve wearable devices and IoT integration for enhanced real-time safety monitoring. These innovations will ensure SheShield continues to evolve, providing even more comprehensive and accessible safety solutions for women.

7. REFERENCES

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