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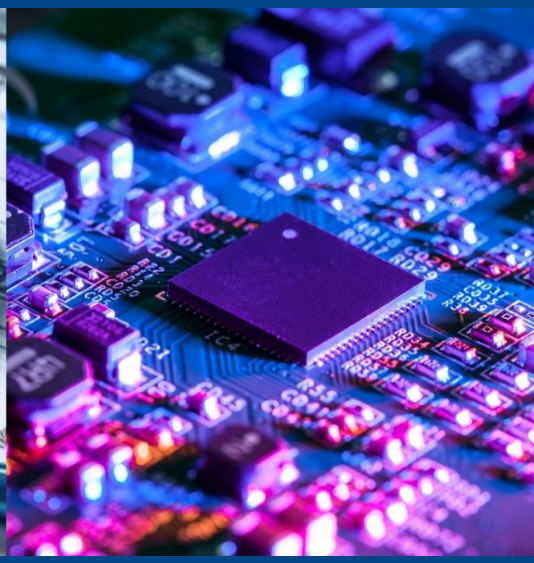

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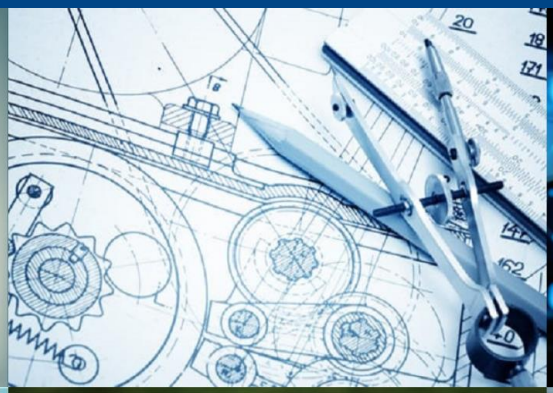

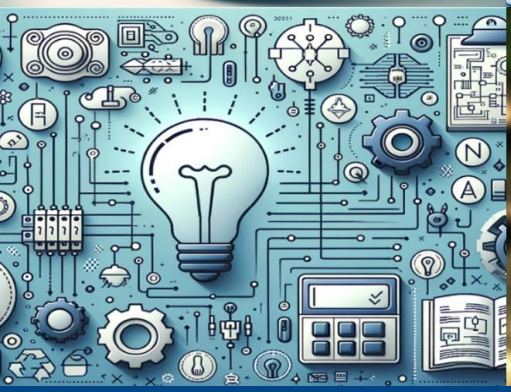

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# Stree Suraksha – Smart Protection App for Women

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**ABSTRACT:** The increasing concern over women's safety in public and private spaces has driven the need for technological interventions that can offer real-time protection and assistance. This paper presents *W-Safe*, an Android-based mobile application developed to address critical safety challenges faced by women in emergency situations. The app is designed with user-centric features such as a shake detector to trigger alerts, a panic button that sends SOS messages with real-time location, and integration with emergency helplines and personal contacts.Unlike traditional safety apps, *W-Safe* emphasizes both reactive and preventive safety measures. It includes offline functionality via SMS alerts, ensuring assistance even in low-connectivity areas. Additionally, the app fosters long-term empowerment through educational modules that include legal awareness, women's rights, and self-defense training videos. Developed using Android Studio with Java and XML, the application is optimized for usability, performance, and compatibility across Android devices.The W-Safe system architecture supports scalability, with planned future enhancements such as AI-based threat prediction, wearable device integration, and behavioral alert systems. This project demonstrates the potential of mobile technology to not only provide immediate safety solutions but also drive social change by empowering women through knowledge and rapid connectivity. The outcomes from testing and user feedback indicate strong reliability, usability, and practical impact, making *W-Safe* a viable model for tech-driven public safety tools.

## I. INTRODUCTION

The issue of women's safety remains a significant global concern despite advances in education, legislation, and technology. Women continue to face harassment, violence, and discrimination in both public and private spaces, which calls for proactive and practical safety measures. The increasing penetration of smartphones and mobile internet access has opened up new avenues to address these concerns through technological solutions. In response, the W-Safe application has been developed as an Android-based mobile app aimed at enhancing women's safety through real-time support, emergency communication, and awareness. The app integrates multiple features such as a panic button that sends SOS alerts with live GPS location to registered contacts, shake detection to activate emergency mode, and siren sounds to alert nearby individuals. Unlike many existing safety applications, W-Safe also functions offline via SMS and offers educational content on self-defense techniques and women's legal rights. Built using Android Studio, Java, and XML, the application is optimized for usability, performance, and compatibility across a range of Android devices. It targets both immediate risk mitigation and long-term empowerment, creating a comprehensive solution that not only aids women during emergencies but also fosters knowledge and preparedness. This paper presents the design, development, and evaluation of the W-Safe application, along with a discussion of its real-world applicability and potential future improvements, such as AI-based threat prediction and integration with wearable devices.

## II. PROPOSED METHODOLOGY

The application is equipped with both manual and automatic emergency activation mechanisms. A **panic button** on the main interface enables users to send an instant SOS message to pre-registered contacts. Additionally, a **shake detector** is integrated using the device's accelerometer to automatically trigger alerts if the user shakes the phone vigorously in an emergency situation. Both features capture the user's real-time GPS location and send it via SMS or internet, ensuring timely communication even under stress.

### A. Emergency Support and Location Services:

To maximize user safety, W-Safe integrates with **Google Maps API** to provide real-time navigation to nearby police stations and hospitals. The **"Nearby"** feature enables users to find emergency services quickly during a crisis. The app

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also includes a **siren function**, which plays a loud sound when triggered, attracting the attention of people nearby and discouraging potential threats.

**B. Educational and Empowerment Features:**

The application promotes long-term safety awareness by offering legal knowledge and self-defense education. A **WebView component** is used to display **self-defense videos** hosted on platforms like YouTube. It also includes a section dedicated to **women's safety laws**, empowering users with information about their rights and how to report incidents effectively.

**C. Offline Functionality and Data Handling:**

One of the distinguishing features of W-Safe is its ability to function **offline**. In the absence of internet connectivity, the app sends SOS alerts via **SMS**, maintaining reliability in low-network areas. Emergency contact data and preferences are securely stored using **SharedPreferences**, ensuring privacy while maintaining ease of access and performance.

**D.Testing and Scalability:**

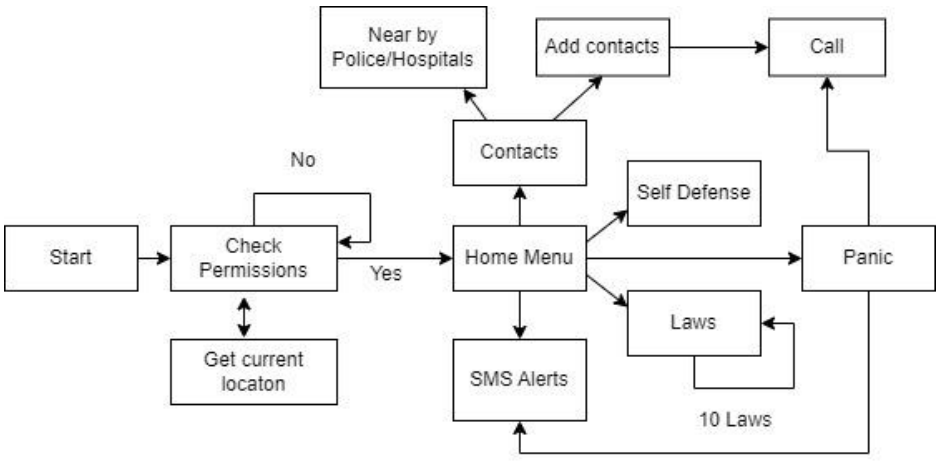
The application underwent comprehensive testing across various Android devices and emulators to validate its performance, stability, and responsiveness. Key scenarios such as low battery, poor network, and simultaneous feature access were simulated. The modular design and code organization support future scalability, with scope for integrating **AI-driven threat detection**, **wearable device support**, and **predictive alert systems** based on behavioral analytics.

## III. PROPOSED SYSTEM

The proposed system, *W-Safe*, is a mobile application designed specifically to improve women's safety by offering a set of integrated emergency and support features. The system aims to provide immediate help during distress situations by utilizing mobile technologies such as GPS, accelerometers, messaging services, and web-based educational resources. The app is developed using **Android Studio** with **Java** for backend logic and **XML** for user interface design, ensuring compatibility with a wide range of Android devices and ease of use for users from different backgrounds.

W-Safe includes a **panic button** and a **shake detector sensor** that allow users to quickly trigger emergency protocols. Once activated, the app sends a real-time **SOS alert** along with the user's GPS location to pre-registered emergency contacts. It also triggers a **siren sound** to draw attention and deter potential threats. In cases where internet access is not available, the app is designed to function **offline** by sending emergency alerts via **SMS**, ensuring uninterrupted support.

To provide users with comprehensive assistance, W-Safe integrates **Google Maps APIs** to locate and guide users to the nearest police stations and hospitals. Additionally, the app includes access to **national emergency helplines** and allows users to **store multiple emergency contacts**. These features increase the chances of receiving timely support in critical situations.



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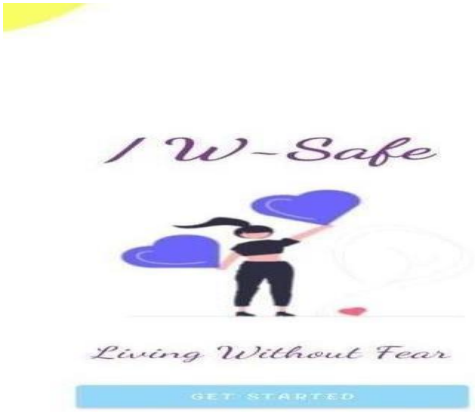
## IV. RESULTS AND DISCUSSIONS




User Interface


Home Page

The Main Activity class handles button clicks on the home page and initializes the Fused Location Provider Client for location retrieval. It launches specific activities (Laws, Contact, Self Defense, SMS) based on the clicked button. The "Panic Button" checks location permissions, retrieves the user's location, sends an SOS message to emergency contacts, and initiates a call to the first contact.


Contact and Nearby Page

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The Contact Activity lets users manage emergency contact numbers by adding, deleting, or viewing them through a user-friendly interface. It uses Shared Preferences to store and edit the primary contact number via a dialog for valid 10-digit input. The activity also features a Recycler View with a custom Contacts Adapter for displaying and managing contacts and includes buttons to find nearby police stations or hospitals via Google Maps.


SMS Alert Page

The SMS Activity manages SMS services with options to start/stop the service and access helpline numbers. It starts the Service Mine class (handling SMS functionality) after checking permissions and stops it via a broadcast when the stop button is clicked. A helpline button launches the Helpline Call activity for emergency contact access.


Law Feature

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Law Displayer

The Law Displayer Activity shows law names and their details, enabling users to browse through them with circular navigation. It initializes arrays for law names and content, sets up click listeners for navigation (Next, Back) and Close buttons, and updates displayed data via the set Data() method. The activity supports seamless browsing and exits when the Close button is clicked.


Self-defence Page

The Self-defense Activity sets its layout to activity self defense and initializes a WebView to display a YouTube video. The WebView is configured with a Web Chrome Client, image loading, and JavaScript enabled for proper functionality. The YouTube URL is loaded via load URL(), allowing users to view and interact with the video seamlessly within the app.


Panic Button

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The Panic Button Activity triggers an emergency response when the panic button is pressed. It checks location permissions, retrieves the user's last known location via the Fused Location Provider Client, and sends an SOS message with coordinates to emergency contacts stored in shared preferences. Additionally, it initiates a call to the first contact, ensuring immediate assistance during emergencies

## V. CONCLUSIONS AND FUTURE WORK

The W-Safe Android Application is a comprehensive and practical solution designed to enhance women's safety through real-time emergency support, self- defense education, and awareness of legal rights. By leveraging mobile technology, the app provides essential features such as an SOS panic button, live GPS tracking, emergency contacts, and quick access to helplines, ensuring immediate assistance in critical situations.

The development of W-Safe demonstrates the potential of mobile applications in addressing societal concerns, offering a scalable and user-friendly platform that prioritizes security and empowerment. The rigorous design, implementation, and testing phases have ensured that the application is reliable, efficient, and accessible to users from diverse backgrounds.

Future enhancements could include AI-driven threat detection, integration with wearable devices, and predictive alerts based on behavioral patterns to further improve safety measures. By continuing to evolve, **W-Safe** aims to make a lasting impact, contributing to a safer environment for women and promoting social change through technology-driven solutions

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