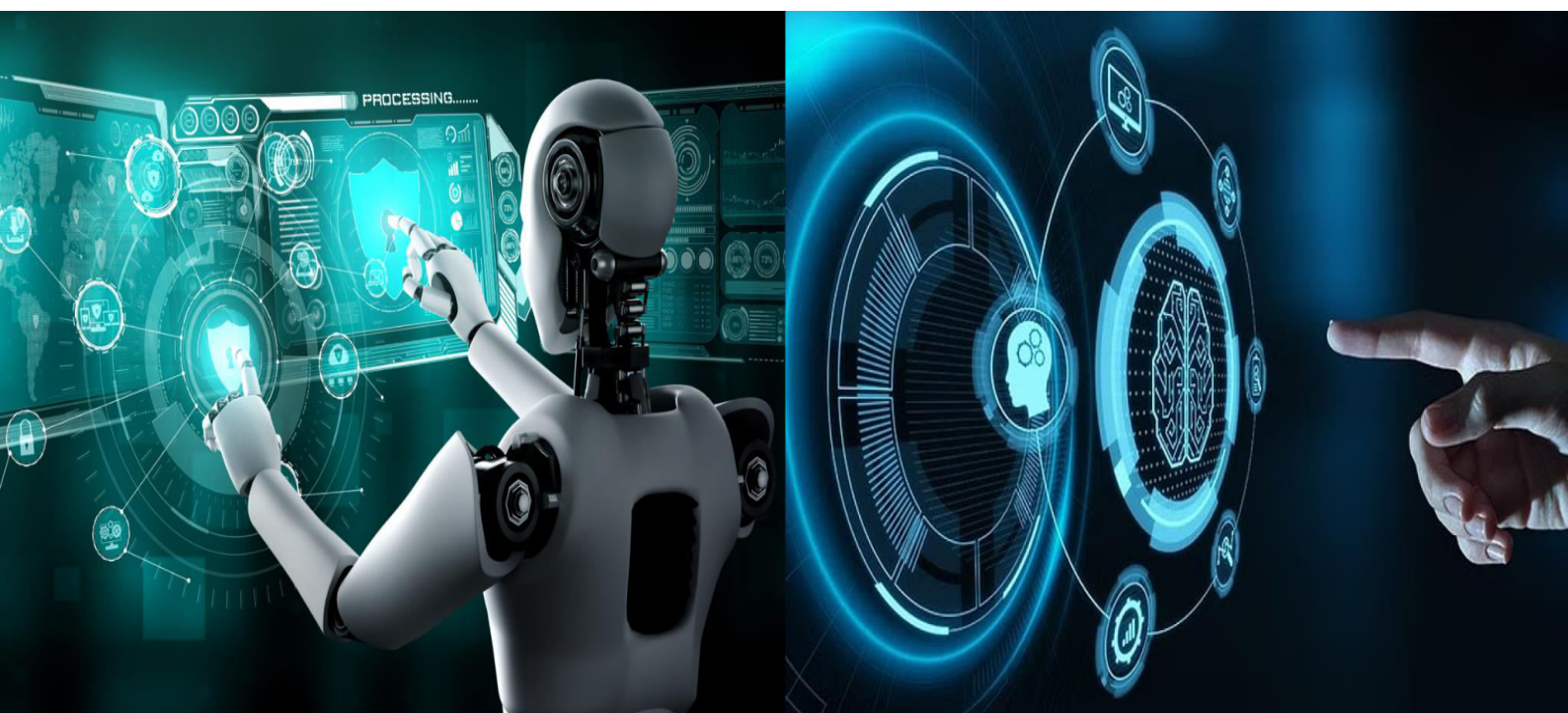# International Journal of Innovative Research in Computer and Communication Engineering

(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)

Women Safety Analytics

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ABSTRACT:Women's safety has become a major concern in today's society due to increasing incidents of harassment and violence. Traditional methods of help-seeking are often ineffective due to time delays, panic, or lack of location data. To address these issues, our project "Women Safety Analytics" proposes a smart mobile application that provides a fast and reliable safety mechanism. It allows users to send SOS alerts, share real-time location, and notify emergency contacts instantly through GPS and SMS. This application empowers women with an easy-touse, responsive tool to seek help during distress situations. The system includes real-time tracking, instant communication, user-friendly design, and cloud-based support. It acts as a digital safety companion to ensure security and immediate response, particularly in remote or unsafe areas.

KEYWORDS: Women Safety, Real-Time Tracking, Emergency Alert System, GPS, Mobile Application.

I. INTRODUCTION

With the rise of crimes against women, especially in isolated and urban locations, the need for fast-response safety tools is more essential than ever. Women often face delays in alerting friends or family due to shock, fear, or lack of communication tools. Mobile phones are widely used and can act as a life-saving tool during such situations.
"Women Safety Analytics" is a solution designed to bridge this gap by offering a mobile application that uses real- time technologies such as GPS, SMS, and Firebase to send emergency alerts. The main aim is to allow the user to trigger a safety alert with a single tap, even under panic or stress. The system is scalable, secure, and easily operable by anyone with basic mobile knowledge.

II. PURPOSE AND MOTIVATION

The motivation for developing Women Safety Analytics stems from real-life incidents and the urgent need for dependable safety solutions. Existing systems often rely heavily on internet connectivity or involve multiple steps to request help, which can be time-consuming and inefficient during emergencies. Our proposed solution addresses these limitations by enabling emergency alerts with minimal user input and leveraging real-time technologies to ensure swift action. The application is
designed to securely store user and contact information while maintaining functionality even in areas with low network coverage. The primary goal of this project is to offer a one-tap emergency alert system that ensures real-time location sharing, allows users to store trusted contacts, and automatically sends predefined SMS alerts. Additionally, it aims to provide a userfriendly interface and bring together all safety features within a single, secure, and responsive mobile application

III. MODELING AND ANALYSIS

The application was developed using the Waterfall model, which includes five main phases. In the Requirement Analysis phase, we identified the key needs of users such as a one-tap emergency alert, real-time location sharing, and SMS notifications. We also considered important constraints like low network availability, low-end devices, and the need for fast operation. To finalize the features, user interviews and surveys were conducted.

During the System Design phase, a client-server architecture was selected. The frontend was developed using Android Studio with Java and XML, while Firebase was used for backend services like Realtime Database and Authentication. Modules such as GPS tracking, SMS sending, and panic button integration were added. UML diagrams were prepared to represent the app's
structure and data flow.

In the Implementation phase, the panic button was programmed to trigger both the location and SMS services. The app uses GPS to fetch the user's current location and sends it via SMS to selected contacts. Firebase handles data storage for userprofiles, contacts, and alert logs.The Testing phase included unit testing for each module (GPS, SMS, Firebase), system testing on different Android devices, and user acceptance testing with real users. Stress testing was also performed in various network conditions to ensure the app works reliably.Finally, in the Deployment phase, the app was launched as an APK on Android devices. Firebase was used for real-time data sync. Future versions are planned to include features like voice command activation, auto-calling, and integration with local authorities.

Figure 1: System Architecture
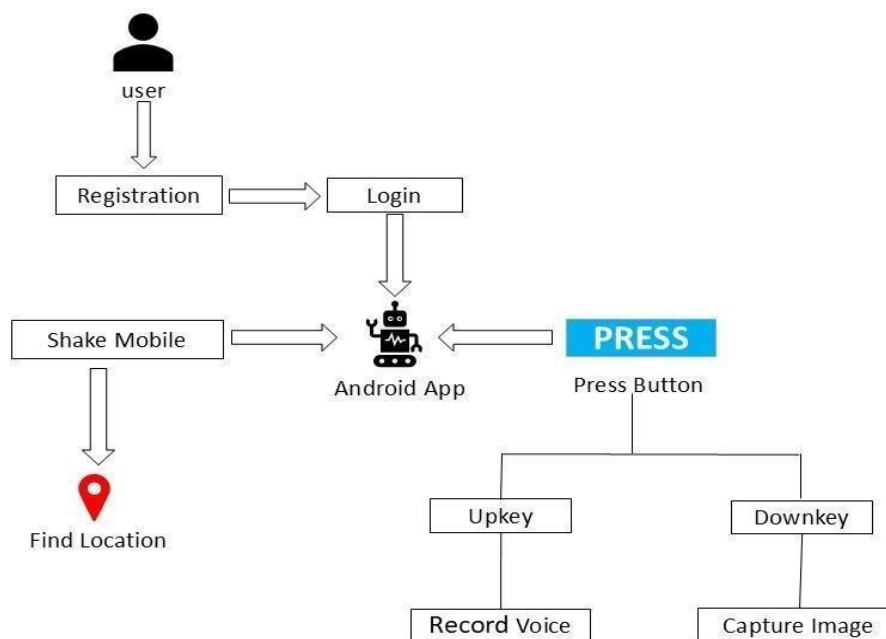
IV. BACKGROUND

Crime statistics and real-world incidents show that most victims of assaults are unable to notify others due to fear or time constraints. Apps like MySafetipin and Raksha exist but often lack real-time response, GPS accuracy, or require continuous internet connection. Our project aims to fill this gap with a lightweight, quick-responseapplication that requires minimal action and works reliably even in remote or low-network areas.Women Safety Analytics offers a smart and scalable solution that combines emergency communication with modern mobile capabilities. It can be used by school/college girls, working professionals, travelers, or even elderly women living alone.

V. DISCUSSION

Women Safety Analytics is a smart and practical digital tool aimed at reducing the risk faced by women during emergencies by providing instant alerts to trusted contacts and, in future versions, to authorities. One of its main strengths is its ability to share the user's real-time GPS location instantly, without requiring the user to manually open any map application. The app features a fast alert mechanism that allows users to send emergency messages with just a single tap, making it highly efficient in urgent situations.The emergency SMS is pre-defined and includes the user's name, a short alert message, and a live location link, ensuring that the recipient receives all the critical information at once. The interface is designed to be extremely simple, allowing even users with minimal technical knowledge to operate it comfortably. Data such as userprofiles and trusted contacts are securely stored and updated in real-time using Firebase integration, ensuring safety and reliability.Overall, the system focuses on reducing the response time, which is crucial in emergency scenarios. Unliketraditional safety applications that may require multiple steps or stable internet connectivity, this app is designed to work with a single tap and can potentially function even when the screen is locked, as planned for future updates.

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VI. RESULT

After complete implementation and thorough testing, the Women Safety Analytics app successfully met its intended Goals. It is capable of accurately fetching the user's real-time GPS location and sending instant SMS alerts that include the current location and a predefined emergency message. The application features a secure login system using Firebase Authentication, ensuring role-based access and user data protection. Users can create and manage their profiles, including their name, phone number, and emergency contact details. The backend, powered by Firebase, reliably stores all user data and activity logs in real time. Additionally, the app offers a smooth and responsive user interface, which has been tested for compatibility and performance across Android devices running version 8 and above.

Figure 1 : Home Screen of the Women

Figure 2:Instruction Page Safety App

Figure 3: Screen Displaying The List Of Saved Trusted Contacts

Figure 4: Phone Number Verification Screen

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VII. CONCLUSION

Women Safety Analytics is a step toward creating a safer society for women using technology. The application addresses key issues in safety, such as communication delays, lack of real-time tracking, and fear-based hesitation.
The project aims to empower women with a quick-response tool that is simple yet powerful. With additional features planned—like voice triggers, direct police alerts, and offline support—the app has the potential to become a nationwide safety companion.By combining usability, technology, and purpose, this project stands out as a practical solution to a real-world problem.

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