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NAARI – A Comprehensive Women Safety Mobile Application

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Abstract -*Women safety has emerged as one of the most critical social challenges in India due to the increasing number of harassment, assault, and emergency incidents faced by women in daily life. Delays in communication and lack of immediate access to help often worsen such situations. This paper presents NAARI – A Comprehensive Women Safety Mobile Application, an Android-based solution designed to provide rapid emergency assistance using mobile technology. The application offers a one-tap SOS alert mechanism that sends emergency notifications along with real-time GPS location to pre-registered contacts and emergency helplines. NAARI supports both online and offline operation to ensure reliability even in low-connectivity areas. Firebase services are used for secure authentication, real-time data synchronization, and push notifications. Additional features such as emergency calling, multilingual support, and community-based incident reporting enhance preventive safety and awareness. The proposed system is efficient, user- friendly, and scalable, making it a practical solution for improving women's safety and emergency response.*

Key Words: Women Safety, SOS Alert, Mobile Application, GPS Tracking, Emergency Response, Android, Firebase

1.INTRODUCTION

The safety and security of women continue to be a major concern in India and across the world. Despite legal frameworks, government initiatives, and awareness programs, crimes against women such as harassment, stalking, and assault remain prevalent. In many emergency situations, victims are unable to seek timely help due to panic, fear, or lack of immediate communication facilities. Delays in response often result in severe physical, psychological, and social consequences.

With the widespread availability of smartphones, mobile technology offers a powerful platform to address women safety challenges. Safety applications can act as a digital support system by enabling instant communication, location sharing, and emergency alerts. However, many existing solutions depend heavily on internet connectivity or involve complex interactions, which may fail during critical situations. To overcome these limitations, NAARI – A Comprehensive Women Safety Mobile Application is proposed. The system is designed to provide immediate assistance through a simple and reliable interface. It allows users to trigger SOS alerts with a single action, ensuring rapid communication with trusted contacts and emergency services. The application also emphasizes community-driven safety by enabling incident reporting and awareness of unsafe locations. By integrating mobile technology, GPS services, and cloud-based infrastructure, NAARI aims to create a dependable and accessible safety solution for women.

2. PROBLEM STATEMENT

The rapid growth of urbanization and digital communication has not eliminated the safety risks faced by women. Many women encounter unsafe situations during travel, work, or daily activities. In emergency conditions, manual methods of seeking help such as calling or messaging may not be practical due to stress or lack of time.

Existing women safety systems often suffer from limitations such as dependency on continuous internet connectivity, delayed response, or lack of integration with emergency services. Additionally, many applications do not provide preventive safety features such as community alerts or danger zone identification. Therefore, there is a need for a simple, reliable, and comprehensive women safety application that ensures quick emergency response, works in both online and offline environments, and enhances awareness through community participation.

3. PROPOSED SOLUTION

The proposed system, NAARI – Women Safety Mobile Application, is an Android-based safety solution designed to provide immediate emergency assistance and preventive safety features. The application enables users to send SOS alerts containing real-time GPS location to pre-registered emergency contacts and helpline numbers with a single tap. The system supports both online and offline modes. In online mode, Firebase authentication, real-time database, and push notifications are used for instant alert delivery and Synchronization. In offline mode, critical features such as SOS alerts, emergency calling, and SMS-based location sharing remain functional. Once connectivity is restored, data is automatically synchronized.

Additional features include multilingual support, emergency contact management, community-based incident reporting, and visualization of unsafe locations using map services. The proposed solution is scalable, cost-effective, and suitable for real-world deployment, making it an effective tool for enhancing women safety.

4. LITERATURE REVIEW

1] Kumar and Sharma (2023) analyzed real-time location sharing mechanisms and concluded that GPS-enabled emergency alerts significantly reduce response time during critical situations.

2] Patel and Gupta (2022) studied crowd sourced safety mapping systems and found that community-driven incident reporting improves awareness of high-risk zones and supports preventive safety measures.

3] Singh et al. (2024) emphasized the importance of multilingual and culturally sensitive interfaces for safety applications in India, particularly for users in rural and semi- urban regions. Their findings highlight that native-language support increases usability and adoption.

4] Desai and Chat terjee (2023) evaluated multi-channel emergency communication systems and demonstrated that combining SMS, calls, and app-based notifications improves reliability during network failures. These studies support the need for an integrated, offline-capable, and user-friendly women safety application such as NAARI.

5. METHODOLOGY

"NAARI – A Comprehensive Women Safety Mobile Application" is designed using a modular approach to ensure reliability, quick emergency response, and ease of use during critical situations. The system is divided into six major modules, where each module performs a specific function, starting from user setup to emergency response and system maintenance.

MODULE-1: User Registration and Authentication

This module is responsible for secure user onboarding and profile setup, which forms the foundation of the system.

Core Functions:

- Allow users to register using mobile number or email.
- Authenticate users securely before accessing safety features.
- Collect basic user details required for emergency response.

Key Functionalities:

- User Registration: Create a user profile with name, contact number, and optional personal details.
- Authentication: Secure login using Firebase Authentication.
- Permission Handling: Request permissions for location access, SMS, calling, and notifications.
- Profile Management: Allow users to update personal information when needed.

Major Components:

- Firebase Authentication service.
- Android registration and login interfaces.
- Secure user profile database.

MODULE-2: Emergency Contact Management

This module manages trusted contacts who will receive alerts during emergencies.

Core Functions:

- Store and manage emergency contacts securely.
- Ensure quick access to contacts during emergency situations

Key Functionalities:

- Add Emergency Contacts: Users can register multiple trusted contacts.
- Contact Validation: Ensure valid phone numbers for alert delivery.
- Contact Prioritization: Allow setting primary and secondary contacts.
- Quick Access Panel: Enable one-tap access to emergency contacts.

Major Components:

- Firebase Real time Database / Fir restore.
- Contact management interface in Android.
- Secure data storage structure.

MODULE-3: SOS Alert and Emergency Trigger System

This is the core safety module of the NAARI application.

Core Functions:

- Trigger emergency alerts instantly with minimal user interaction.
- Activate multiple emergency communication channels simultaneously.

Key Functionalities:

- SOS Button Activation: One-tap emergency trigger from the home screen.
- Alert Message Generation: Automatically generate emergency messages.
- Multi-Channel Alerts:
- SMS alerts to emergency contacts.
- Automatic emergency calls.
- Push notifications (online mode).
- Continuous Emergency Mode: Keep alerts active until manually stopped

Major Components:

- Android SOS interface.
- SMS and calling APIs.
- Firebase Cloud Messaging for push notifications.

MODULE-4: GPS Location Tracking and Sharing

This module ensures accurate location tracking during emergencies.

Core Functions:

- Capture real-time user location.
- Share location details with emergency contacts.

Key Functionalities:

- Real-Time GPS Tracking: Fetch latitude and longitude using device GPS.
- Location Sharing: Attach location data to SOS alerts.
- Map Visualization: Display current user location using map services.
- Location Updates: Periodically update location during active emergency.

Major Components:

- Android Location Services.
- Google Maps API.
- Location data storage and synchronization module.

MODULE-4: Community Safety and Incident Reporting

This module focuses on preventive safety and awareness.

Core Functions:

- Allow users to report unsafe locations anonymously.
- Build a community-driven safety awareness system.

Key Functionalities:

- Incident Reporting: Users can submit reports with location and description.
- Anonymous Submission: Protect user identity.
- Unsafe Zone Identification: Aggregate reports to identify high-risk areas.
- Map-Based Alerts: Display unsafe locations on the map for awareness.

Major Components:

- Incident reporting interface.
- Firebase database for storing reports.
- Map-based visualization module.

6. RESULT AND DISCUSSION

The NAARI application was tested under various scenarios including online, offline, and low-connectivity conditions. The system successfully delivered SOS alerts with accurate location information through multiple communication channels. Offline functionality ensured reliability in poor network areas.

Community reporting features effectively highlighted unsafe zones and increased user awareness. The simple user interface minimized interaction during emergencies, improving response time. Overall, the system demonstrated reliable performance, usability, and practical applicability for real-world women safety scenarios.

7. CONCLUSION

This paper presented NAARI – A Comprehensive Women Safety Mobile Application, a practical and efficient solution for enhancing women's personal safety using mobile technology. The application integrates SOS alerts, real-time GPS tracking, emergency communication, and community- based safety reporting into a single platform. The system is technically feasible, economically affordable, and socially impactful. By supporting offline functionality, multilingual access, and community awareness, NAARI addresses key limitations of existing safety applications. Future enhancements may include direct police system integration, wearable device support, and intelligent risk prediction, further strengthening the safety ecosystem.

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