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Women Safety SOS Application Using Android Technology

Mrs. M. Vasuki[1], Dr. T. Amalraj Victoire[2], B. Madhusri[3*]

Associate Professor, Department of Master of Computer Applications, Sri Manakula Vinayagar Engineering College, Pondicherry-605 107[1]

Professor, Department of Master of Computer Applications, Sri Manakula Vinayagar Engineering College, Pondicherry-605 107[2]

PG Student, Department of Master of Computer Applications, Sri Manakula Vinayagar Engineering College, Pondicherry-605 107[3]

Abstract: Women's safety has become an important concern due to the increasing number of crimes and emergency situations faced by women in society. Immediate communication and location sharing are essential during dangerous situations. This paper presents a Women Safety SOS Application developed using Android Studio. The application enables users to send emergency SMS alerts along with their current GPS location to pre-selected emergency contacts. The proposed system provides one-touch SOS activation, live location sharing, emergency calling, and quick communication services. The application is designed to be simple, reliable, and easy to use during emergencies. Experimental testing shows that the system can effectively transmit emergency alerts and location details within a short period, thereby improving personal safety and reducing response time.

Keywords: Women Safety, Android Application, SOS Alert, GPS Tracking, Emergency SMS, Mobile Security.

I. INTRODUCTION

Women frequently encounter safety challenges while traveling, studying, working, or staying alone. During emergency situations, contacting family members, friends, or authorities may become difficult because of panic, fear, or lack of immediate support. Modern smartphones provide several technologies such as GPS, SMS services, and mobile communication that can be utilized to develop safety solutions.

The Women Safety SOS Application is designed to provide immediate assistance during emergency situations. By pressing a single SOS button, users can instantly send their location and alert messages to registered emergency contacts. The application utilizes Android mobile technology to ensure quick communication and effective emergency response.

II. LITERATURE SURVEY

Several researchers have developed Android-based women safety applications using GPS tracking and emergency communication systems. Existing studies demonstrate that emergency alert applications help improve women's personal security through location sharing and SMS notifications.

Many applications provide emergency calling, voice activation, and GPS monitoring features. However, some systems depend heavily on internet connectivity or complex user interactions. Recent research suggests that simple and efficient SOS applications can significantly improve emergency response and user safety.

III. EXISTING SYSTEM AND DRAWBACKS

A. Manual Emergency Communication

Users must manually call or message contacts during emergencies, which consumes valuable time.

B. Delayed Location Sharing

Traditional communication methods do not provide instant location information.

C. Lack of Immediate Assistance

Many users cannot quickly communicate their situation during panic conditions.

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D. Internet Dependency

Several existing applications require internet connectivity for operation.

E. Complex User Interfaces

Some emergency applications contain multiple steps that delay emergency activation.

IV. PROPOSED SYSTEM

The proposed Women Safety SOS Application provides an Android-based emergency assistance platform that allows users to send emergency alerts and location information with a single click.

Main Features

1. One-Touch SOS Activation
2. GPS Location Tracking
3. Emergency SMS Alerts
4. Emergency Calling
5. Real-Time Location Sharing
6. User-Friendly Interface
7. Fast Emergency Communication

System Overview

The user activates the SOS button during an emergency. The application fetches the current GPS location and automatically sends SMS alerts containing the user's location details to emergency contacts. The system also provides direct functionality.

V. SYSTEM ARCHITECTURE

The proposed system consists of three major components:

User Layer

- User Interface
- SOS Activation

Application Layer

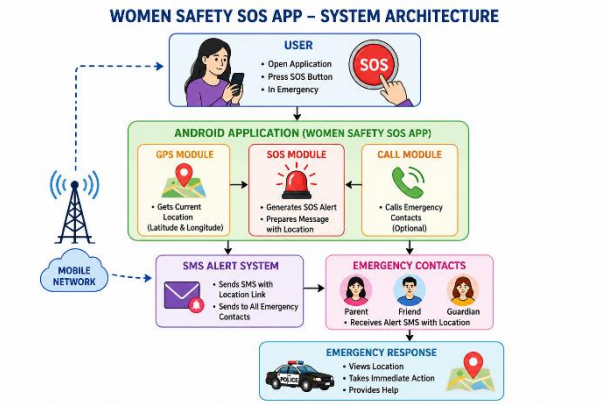
- GPS Location Module
- SMS Alert Module
- Emergency Call Module

Communication Layer

- Mobile Network
- Emergency Contacts

Architecture Flow:

User → SOS Button → GPS Module → SMS Alert System → Emergency Contacts



VI. METHODOLOGY

A. Requirement Analysis

Identify emergency communication and safety requirements.

B. System Design

Design the user interface and emergency workflow.

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C. Application Development
Develop the application using Android Studio, Java, and XML.
D. GPS Integration
Integrate location services to obtain real-time coordinates.
E. SMS Integration
Implement SMS functionality to send emergency alerts.
F. Testing
Perform functional and performance testing.
G. Deployment
Install and evaluate the application on Android devices.

VII. MODULES DESCRIPTION

A. User Module
Allows users to access safety features and emergency services.
B. SOS Alert Module
Generates emergency alerts and activates safety procedures.
C. GPS Tracking Module
Obtains the user's current location using GPS technology.
D. SMS Notification Module
Sends emergency messages containing location details.
E. Emergency Calling Module
Allows direct calling to emergency contacts.
F. Location Sharing Module
Shares live location coordinates for quick assistance.

VIII. RESULTS AND DISCUSSION

The developed Women Safety SOS Application was tested on Android devices under different emergency scenarios. The application successfully transmitted emergency SMS alerts along with GPS location information to registered contacts. The SOS button responded quickly and location tracking operated accurately. Emergency contacts were able to receive alert messages and identify the user's location effectively.
The testing results demonstrate that the proposed application provides reliable emergency communication and improves user safety during critical situations.

IX. ADVANTAGES

- Quick emergency response.
- Real-time location sharing.
- Easy to use.
- Fast SMS communication.
- Low-cost implementation.
- Increased personal security.
- Reliable operation.

X. CONCLUSION AND FUTURE WORK

A. Conclusion
The Women Safety SOS Application provides an effective mobile-based safety solution for women. By integrating GPS location tracking, emergency SMS alerts, and direct calling functionality, the system ensures rapid communication during emergencies. The application improves personal safety and reduces response time, making it a practical solution for real-world situations.

B. Future Enhancements
1. Voice Command SOS Activation.
2. Shake Detection Emergency Alert.
3. AI-Based Threat Detection.
4. Audio Recording During Emergencies.

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5. Police Station Integration.
6. Smart Wearable Device Support.
7. Cloud-Based Emergency Monitoring.

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