

Rakshak: A Women Safety App

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Abstract—Women’s safety remains a critical concern in many public and private spaces, where women often feel insecure due to the risk of harassment, stalking, or physical abuse. Situations such as being followed, threatened, or subjected to inappropriate behavior on streets and secluded areas highlight the urgent need for reliable technological solutions. In response to this issue, this research presents Rakshak: A Women Safety App, a software-based solution designed to enhance personal security for women. The proposed system integrates continuous location tracking, an SOS alert mechanism, and emergency contact notifications to ensure immediate assistance during unsafe situations. The application aims to provide a quick and accessible way for users to seek help, thereby reducing response time in emergencies. By leveraging mobile technology and location-based services, Rakshak empowers women with a sense of safety and confidence while moving independently. The proposed solution has the potential to significantly improve women’s security and can be further enhanced in the future through advanced features such as intelligent threat detection and integration with law enforcement systems.

Keywords: women safety app, SOS alert system, continuous location tracking, emergency response, mobile application, personal security.

I. INTRODUCTION

In India, crimes against women have been a serious social issue for decades. In earlier years, a large number of cases involved severe physical harm, including rape and violent assault, which created widespread fear and insecurity among women. Although awareness, stricter laws, and improved enforcement have contributed to a reduction in certain types of crimes compared to the past, incidents such as harassment, stalking, kidnapping, and threats by unknown individuals still occur frequently. These ongoing issues highlight that women’s safety remains a significant challenge in both urban and rural environments.

In the present time, this problem is especially important due to increased mobility and independence of women in education, employment, and daily activities. Women often travel alone for work, study, or personal reasons, which increases their exposure to unsafe situations, particularly in isolated areas or during late hours. Fear of being followed or harassed not only affects physical safety but also has a serious impact on mental well-being and freedom of movement. Therefore, ensuring women’s safety has become a critical concern in modern society.

Several solutions have been introduced to address this problem, including helpline numbers, self-defense tools, CCTV surveillance, and existing women safety applications. However, many of these solutions have limitations such as delayed response time, dependency on manual intervention, lack of continuous location sharing, limited accessibility during emergencies, or poor user adoption due to complex interfaces. In emergency situations, women may not always be able to make a phone call or explain their location clearly, which reduces the effectiveness of traditional safety mechanisms.

The objective of this research is to design and develop Rakshak: A Women Safety App that provides a reliable, quick, and user-friendly safety solution for women. The proposed system focuses on instant SOS alerts, continuous location tracking, and automatic notification to trusted contacts in emergency situations. The aim is to enhance personal security, reduce response time, and empower women with greater confidence and control over their safety. In the future, the application can be further improved by integrating advanced technologies to make women safety systems more intelligent and effective.

II. LITERATURE REVIEW

Earlier women safety applications primarily focused on basic features such as SOS alert generation and location sharing with predefined contacts or nearby police stations [6][8]. These systems were designed to provide initial emergency support; however, they lacked continuous location tracking capabilities. In many cases, the shared location was static and did not update continuously, making it difficult for responders to accurately trace the victim's movement during an emergency situation. Another major limitation identified in existing systems is related to emergency response infrastructure [1]. Many police stations still rely on landline-based communication systems with limited display capabilities. Even if an SOS alert is successfully received, notifications may not gain immediate attention due to small display interfaces or lack of continuous alert monitoring systems. This delay significantly affects response time, reducing the effectiveness of earlier women safety applications.

To overcome these challenges, recent studies have highlighted the necessity of intelligent, continuous, and user-friendly safety solutions [11]. However, most existing mobile applications still depend mainly on manual interaction, which may not be feasible when the user is under stress or unable to access her phone. Additionally, features such as evidence collection through continuous recording, live location visualization, and proactive safety guidance are either missing or inadequately implemented [13].

Considering these limitations, the proposed system introduces an enhanced women safety solution that combines both manual and voice-based SOS activation mechanisms. The system ensures continuous location sharing with continuous updates and visual display, enabling trusted contacts to track the user's movement more accurately. Further more, the application provides safety tips to promote preventive awareness among users. Once the SOS is activated, the system automatically initiates background audio recording and image capture, generating potential evidence and storing it securely to database. By integrating these features, the proposed approach addresses the gaps found in earlier systems and offers a more effective, reliable, and practical women safety solution.

III. GAPS IN EXISTING SYSTEM

The fundamental issue with the way the police handles these situations is that they can't always react quickly to cries for help. These restrictions include the victim's inability to contact the police discreetly and with confidence, as well as their ignorance of the crime's location. An application for smartphones that offers women a dependable means of contacting the police in an emergency would help to eliminate these bans. Since most people now take cell phones with them everywhere they go, the goal of this initiative was to use smartphones to create a secure atmosphere. The user's location and the phone numbers of a preselected list of emergency contacts are included in a message that is instantly forwarded to the police. The application, its creation, and its technological implementation are all covered on this page. The current system has a number of issues. There is no safety device to shield females from misbehaving activities and no monitoring system in place for them, which should cause them a lot of troubles. Furthermore, the girl's safety is not monitored by any alarm mechanism in the current system; all operations must be completed manually.

Negative aspects: Since all of the current systems depend on the GPRS service to function, they cannot be utilized in an emergency if internet access is unavailable. There isn't a portable concealed camera detector to protect our privacy. The monitoring was tiresome. Error in the arrival rate. Previous studies have explored various aspects of women's safety applications and safety literacy initiatives. Research works such as [7] and [12] provide insightful survey based data; however, their findings are limited due to small sample sizes that may not represent all Indian women. Studies like [10] and [4] suggest that women's safety literacy training programs can be effective, yet they fail to evaluate the long-term impact and overall system efficiency. Similarly, [5] highlights the role of social media in promoting women's safety awareness but does not address the challenges involved in implementing safety literacy programs on such platforms. Applications such as [2], [3], and [15] offer useful overviews of women's safety applications, though they do not assess application effectiveness or examine safety literacy initiatives in depth. Earlier works like [14] and [9] emphasize women's empowerment, but their results may not be entirely representative due to limited samples. Overall, while existing research provides valuable insights into women's safety applications and awareness, there remains a

research gap in evaluating system efficiency, long-term impact, and the challenges of promoting women’s safety literacy through digital and social media platforms—issues that are addressed in this research paper.

IV. PROPOSED SYSTEM

The proposed system, Rakshak: A Women Safety App, is designed to provide immediate assistance to women during emergency situations through both manual and voice-activated mechanisms. The system operates using a combination of continuous location services, background audio recording, and secure alert notifications to trusted contacts.

A. Manual SOS Activation

In the manual mode, the user can activate the SOS feature by pressing the SOS button provided in the application interface, as shown in Fig.9. Once the SOS is activated, an emergency alert is instantly sent to the user’s predefined trusted contacts. Along with the alert, the user’s current geographical location is shared and updated in the database at regular intervals of time to ensure continuous location tracking.

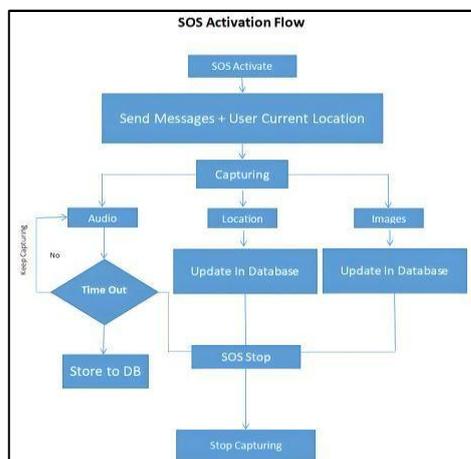


Fig. 1. SOS Services Flow

Simultaneously, the system automatically starts background audio recording to capture surrounding sounds and potential evidence. Although image capture may not always be effective in scenarios where the phone camera is obstructed (such as when the device is inside a pocket or covered by clothing), audio recording continues without interruption, ensuring reliable data collection. All recorded data, including audio files and captured images, are securely stored in the database, as illustrated in Fig.1. The SOS mode remains active until the user manually deactivates it through the application.

B. Code Word–Based SOS Activation

To address situations where manual interaction with the phone is not possible, the proposed system also supports SOS activation through a voice-based code word. In this mode, the user speaks a predefined code word, which is processed using a speech recognition technique. The speech input is converted into text using a speech-to-text mechanism and then matched with the stored code word. If a successful match is detected, the SOS mode is automatically activated.

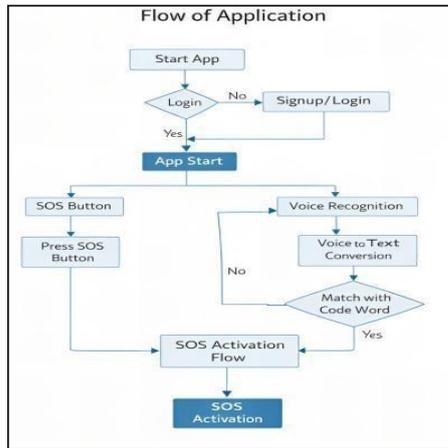


Fig. 2. App Control Flow

V.RESULTS OF THE APPLICATION

The Rakshak app was implemented and tested to verify the functionality of all proposed features. The following screenshots illustrate the application interface.

The sign in and sign up interface, shown in Fig.3 and Fig.4, allows users to sign in to an existing account or register a new account securely before accessing the application.

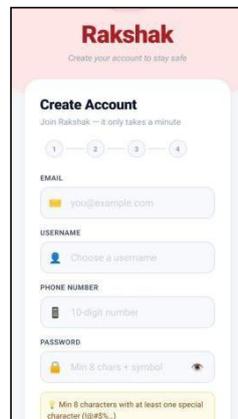
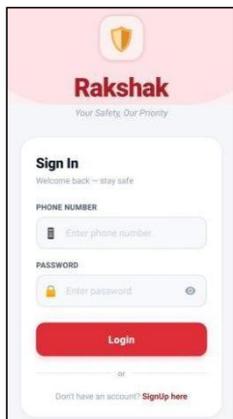


Fig. 3. Sign In Screen Fig. 4. Signup Screen

Upon successful login, the user is directed to the home page as shown in Fig.5, which provides quick access to all major features including the SOS button, safety tips, and contact management. The application also features a safety tips section shown in Fig.6, which provides preventive guidelines and awareness information to help users stay safe.

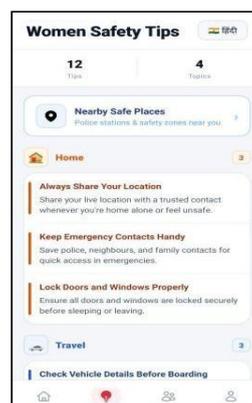


Fig. 5. Home Screen

Fig. 6. Safety Tips

Users can manage emergency contacts via the contact list screen as shown in Fig.7. These trusted contacts receive continuous location updates and alerts whenever SOS is activated. The profile screen shown in Fig.8, lets users update personal information.

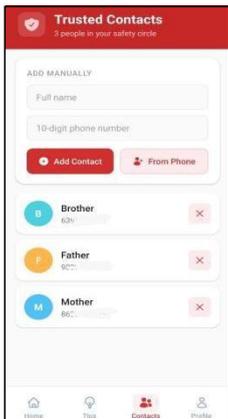


Fig. 7. Contact List

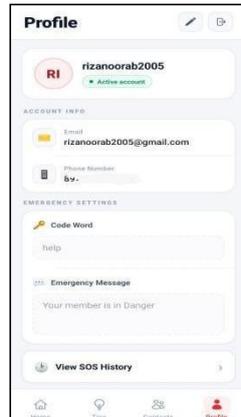


Fig. 8. Profile Screen

When the SOS button is pressed, the interface switches to active emergency mode as shown in Fig.9, triggering alerts and location sharing to all trusted contacts. The application also lets the user to send manual message as shown in Fig.10, allowing flexibility in sending message without starting alert



Fig. 9. SOS Activated

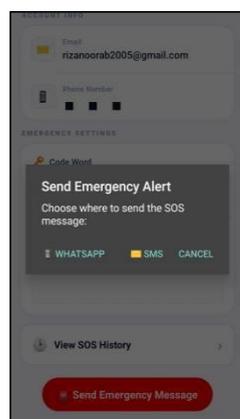


Fig. 10. Manual SMS

SOS history is securely stored as depicted in Fig.11 and Fig.12, allowing users and trusted contacts to review past incidents along with corresponding location, photos and audio data

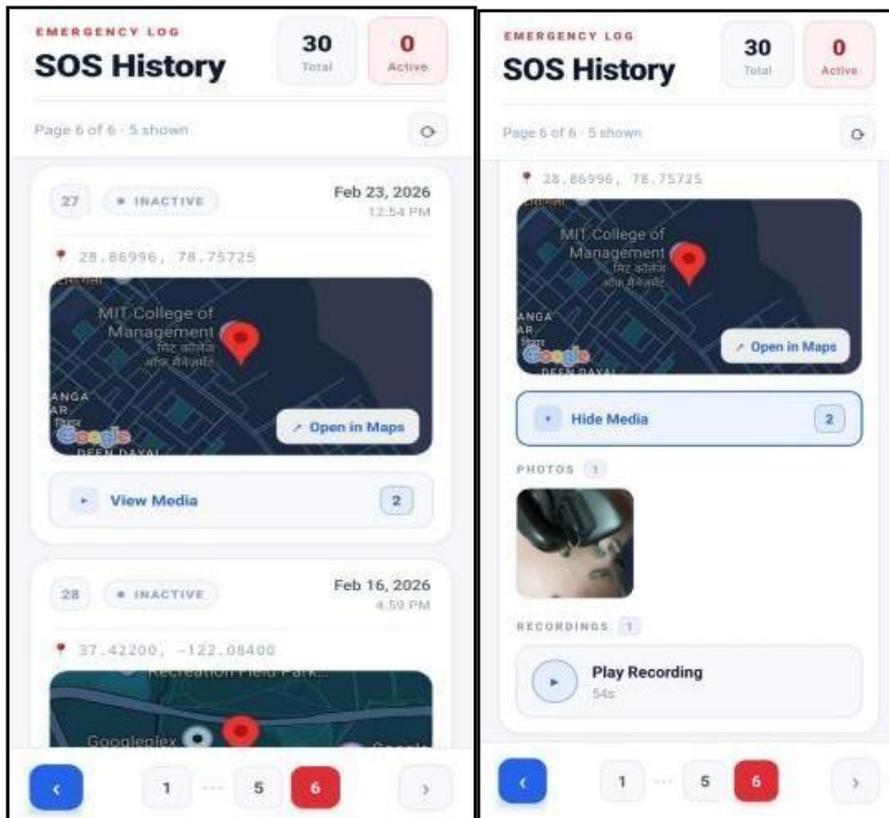


Fig. 11. SOS History (1)

Fig. 12. SOS History (2)

VI. FUTURE SCOPE

The proposed Rakshak: Women Safety App provides an effective safety solution through continuous location tracking, SOS alerts, voice activation, and background recording. However, there is significant scope for further enhancement to make the system more intelligent and widely applicable.

In the future, AI and machine learning techniques can be integrated to automatically detect suspicious behavior based on movement patterns, environmental sounds, or abnormal activity without requiring manual SOS activation. Additionally, direct integration with law enforcement systems can enable real-time alerts to nearby police stations, reducing response time and dependency on manual monitoring.

Future versions may also include multilingual support for broader accessibility, along with features like safe route suggestions, geofencing alerts, and community-based safety feedback to strengthen preventive safety measures.

VII. CONCLUSION

Women's safety continues to be a major concern, especially in situations where immediate help and timely response are critical. Existing safety mechanisms and applications provide basic support such as SOS alerts and location sharing, but they often lack continuous tracking, intelligent activation methods, and reliable evidence collection. To address these limitations, this research presented Rakshak: A Women Safety App, a software-based solution designed to enhance personal security through modern mobile technologies. The proposed system incorporates both manual and voice based SOS activation, continuous location sharing, continuous background recording, and secure data storage on the database, ensuring effective assistance during emergency situations. By offering an easy-to-use interface and reliable functionality, Rakshak empowers women with greater confidence and control over their safety.

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