



# International Journal of Innovative Research in Computer and Communication Engineering

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





# Helpr: A Community-based Platform for Quick Safety Response

V Harshini, Patnaikuni Gautam, Akash M P, Mohammed Junaid Khan, Dr. Vishwanath Y

UG Student, Department of Computer Science and Engineering, Presidency University, Bangalore, India

Professor, Department of Computer Science and Engineering, Presidency University, Bangalore, India

**ABSTRACT:** The increasing prevalence of crimes, particularly against women, underscores the urgent need for reliable safety solutions. Despite advancements in mobile technology, current safety applications often fail to address critical safety concerns effectively. Many lack the responsiveness, community collaboration, and technological innovation required for rapid and efficient support during emergencies. This paper introduces Helpr, a groundbreaking platform designed to enhance personal safety through innovative features such as real-time location sharing, and instant SOS alerts. By integrating a verified volunteer network with advanced technologies like geolocation services and secure communication, Helpr bridges critical gaps in existing solutions. The platform not only offers tools for immediate emergency response but also fosters proactive safety measures and community engagement. This research delves into the design, implementation, and potential impact of Helpr, emphasizing its role in fostering safer communities through a community-driven approach to safety.

**KEYWORDS:** Personal Safety, Real-Time Geolocation Sharing, Instant SOS Alerts, Verified Volunteer Network, Emergency Response, Proactive Crime Prevention, Danger Zone Notifications, Crowd-Sourced Data, Mobile Safety Applications, User-Centric Design, Community Collaboration, Advanced Encryption Protocols, Scalable Architecture, AI-Based Predictive Alerts, Geolocation Services, Secure Communication, Cross-Platform Compatibility, React Native, Node.js, Firebase, Google Maps API

## I. INTRODUCTION

The increasing prevalence of crimes, particularly those targeting women, has raised significant concerns about personal safety in both urban and rural settings. Despite numerous awareness campaigns and initiatives, incidents of harassment, assault, and other crimes continue to occur at alarming rates. One of the critical issues contributing to the severity of these situations is the lack of timely assistance during emergencies. Victims often find themselves isolated, unable to communicate their distress or access immediate help, exacerbating their vulnerability [1][2].

In today's interconnected world, mobile phones have become indispensable tools in daily life. Their ubiquity offers a unique and powerful avenue for enhancing personal safety. Yet, existing safety applications frequently fall short of addressing the nuanced needs of users. Common shortcomings include delayed response times, unintuitive user interfaces, and limited community involvement. These gaps highlight the need for an innovative, comprehensive approach that not only addresses immediate safety concerns but also fosters a sense of shared responsibility among communities [3][4].

Helpr is designed to bridge these gaps and redefine personal safety in the digital era. This innovative mobile application combines innovative technology with community collaboration to deliver a comprehensive solution for individuals in distress. By leveraging real-time geolocation sharing and highlighting danger zones, Helpr empowers users to take proactive measures during emergencies. The application's user-centric design ensures seamless accessibility, while its integration of advanced features guarantees swift responses and effective assistance [5][6].

At the heart of Helpr is the belief in the power of community engagement and technological innovation. The platform fosters collaboration among users, volunteers, and authorities, creating a dynamic safety network that amplifies the collective capacity to respond to crises. Through its intuitive features and robust infrastructure, Helpr not only addresses the limitations of traditional safety applications but also sets a new standard for personal security solutions.



## International Journal of Innovative Research in Computer and Communication Engineering (IJIRCCCE)

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

This paper delves into the methodologies, design, and implementation of Helpr, highlighting its transformative potential in enhancing personal safety. It also explores the critical role of community involvement and advanced technology in bridging the gaps in existing systems. By positioning Helpr as a model for future safety solutions, this research underscores the urgent need for technology-driven approaches to ensure the well-being of individuals, especially in vulnerable situations.

### II. LITERATURE SURVEY

The increasing incidence of crimes against women has prompted the development of various technological solutions aimed at enhancing safety and security. Numerous mobile applications and systems have been designed to address these concerns, leveraging features such as location sharing, emergency alerts, and community collaboration. This section reviews existing safety applications, highlighting their strengths and limitations to identify areas for improvement in women's safety technologies.

#### 1. Sakhii: Empowering Women with One-Tap Safety App (2024)

Developed by Prof. Ms. Uma Goradiya et al., Sakhii integrates features like one-tap emergency calling, real-time location sharing, and self-defense courses. While its success lies in its simplicity and accessibility, the literature does not delve into its limitations or potential areas for improvement, leaving gaps in understanding its real-world effectiveness [1].

#### 2. Lifecraft: An Android-Based Application for Women Safety (2019)

Abbina Ridan Khandoker et al. designed an app with location tracking, emergency messaging, and live audio recording capabilities. A distinctive feature is its ability to detect hidden cameras and microphones, addressing additional safety concerns. However, the app's reliance on manual deactivation of features can complicate usability during emergencies [2].

#### 3. Safety Solution for Women Using Smart Band and CWS App (2020)

A. Z. M. Tahmidul Kabi et al. introduced a smart band integrated with a mobile application, utilizing GPS, GSM, and Bluetooth for location tracking. Although the system effectively supports emergency response, the bulky design of the smart band and the need for greater public awareness limit its practical adoption [3].

#### 4. Women Safety App (2022)

Kishor Sakure et al. developed an app with GPS-based location tracking and voice recording features for evidence collection, along with an emergency siren to alert the public. While effective in tracking victims' locations, the literature does not discuss the challenges or limitations of the app, leaving its comprehensive evaluation incomplete [4].

#### 5. GoFearless: A Safety and Security Android App for Women (2022)

Quazi Maliha Masud et al. focused on GPS-based real-time location sharing and evidence collection through voice recording. While achieving its primary objectives, the authors suggest incorporating AI and machine learning for features like emotion recognition and compatibility with multiple platforms to enhance functionality [5].

#### 6. Android-Based Women Safety Application (2023)

Abhilasha Singh et al. developed a straightforward application that sends an SOS with the user's location to the registered contacts. Despite its simplicity and effectiveness, the paper does not analyze the system's challenges or limitations, making it difficult to assess its practical deployment [6].

#### 7. WSA: A Navigation App for Women Safety (2023)

R. Jayabhaduri et al. designed a navigation app offering safe route suggestions and SOS functionality. While it effectively promotes safe navigation, the app's reliance on community engagement and its limitation of contacting only one emergency contact at a time restricts its overall efficiency during critical situations [7].



## International Journal of Innovative Research in Computer and Communication Engineering (IJIRCCCE)

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

### 8. Design and Development of Android-Based Mobile Application for Emergency Services (2022)

Kishori Deokate et al. created a versatile app that allows users to contact emergency services and share details via platforms like Telegram, WhatsApp, and SMS. However, the paper lacks specific details on the limitations or challenges faced during the app's development and deployment.[8]

### 9. Transforming Women Safety with Information Technology: A Mobile Real-Time Intelligence Framework (2024)

Priyanka Gupta et al. introduced a real-time intelligent framework incorporating machine learning for safe route predictions, location alerts, and emergency evidence recording. Although robust, challenges such as emergency system responsiveness and practical refinement remain critical for broader adoption [9].

### 10. Protect Women from Abuse and Assure Immediate Safety (2020)

S. Dinesh Krishnan et al. proposed a voice-recognition system with visual support to detect abuse and alert authorities. The system employs AI to monitor audio and visual cues, but its effectiveness is limited by the need for further advancements in AI accuracy and increased public awareness [10].

## III. RESEARCH GAPS

Existing safety applications incorporate various innovative features aimed at ensuring personal security. However, many fall short in effectively addressing critical emergencies due to technical, functional, and usability limitations. These gaps hinder their practical deployment, reliability, and adoption in real-world scenarios. To address these challenges, a more refined and comprehensive approach is essential to enhance user experience, responsiveness, and accessibility in emergency situations.

### A. Challenges in Existing Safety Applications

#### 1. Delayed Geolocation Sharing

Inefficient or inconsistent real-time location sharing hampers responders' ability to locate users quickly, compromising their safety during critical situations [2][9].

#### 2. Minimal Community Involvement

Existing solutions rarely engage nearby individuals or app users, missing opportunities to create a collaborative and community-driven safety network [5][7].

#### 3. Lack of Unsafe Zone Alerts

Most safety applications do not proactively inform users about unsafe zones in their vicinity, exposing them to potential risks [3][9].

#### 4. Complex and Unintuitive Interfaces

Overly complicated user interfaces hinder quick navigation during high-stress emergencies, where simplicity and speed are essential [4][6].

#### 5. Absence of a Verified Volunteer Network

The lack of an authenticated volunteer system reduces the availability of immediate assistance and undermines user trust in the safety application [5][9].

#### 6. Limited Emergency Contact Reach

Many safety applications restrict SOS alerts to a single contact or a predefined list of individuals, reducing the potential for timely assistance during emergencies [6][8].

#### 7. Inconsistent Platform Compatibility

Many applications are not designed to function seamlessly across platforms such as Android, iOS, or Windows, limiting their accessibility [6][9].

#### 8. Limited Integration with Authorities

Ineffective coordination with law enforcement and emergency services delays the resolution of critical situations, diminishing the app's effectiveness [8][10].

#### 9. Outdated Technology Stack

Reliance on older or less scalable technologies affects performance, reliability, and the ability to handle increased usage during crises [9][10].

### B. Comparison Between Helpr and Existing Safety Applications

The following comparison highlights the unique features of Helpr and its advantages over existing safety applications



## International Journal of Innovative Research in Computer and Communication Engineering (IJIRCCCE)

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

Table 1: Comparison Between Helpr and Existing Safety Applications

Feature	Existing Safety Applications	Helpr
Unsafe Zone Alerts	Absent in most applications [1]	Proactively notifies users about unsafe zones using crowd-sourced data and law enforcement inputs.
Real-Time Location Sharing	Delayed or inconsistent tracking in many apps [2]	Accurate, real-time geolocation sharing with responders and volunteers.
Volunteer Network	No structured system, limiting community involvement [2]	Verified volunteer network authenticated through official email for reliable assistance.
Authority Integration	Limited or inefficient communication with services [2][9]	Seamless data sharing (e.g., location) with law enforcement for faster response times.
Data Security	Some lack robust encryption measures [2][9]	Implements strong encryption to secure user data and communications.
Platform Compatibility	Often limited to Android or iOS [3][4]	Fully compatible with Android and iOS, with plans for Windows in future updates.
Future Enhancements	Limited scope for updates and improvements [5]	Continuous updates based on user feedback, with plans for AI-based alerts.
User Interface	Complex interfaces are difficult to navigate under stress [5][7]	Intuitive, user-friendly design for quick access to safety features.
Community Collaboration	Minimal involvement of local users or volunteers [8]	Empowers local communities through a volunteer-driven safety model.

Helpr addresses the challenges of existing safety applications by integrating advanced features, a user-friendly interface, and a community-driven model. This approach positions Helpr as a transformative tool for improving personal safety, fostering collaboration, and ensuring timely emergency response

#### IV. METHODOLOGY

##### A. System Architecture

The system architecture of Helpr is designed to provide a robust, scalable, and efficient platform for ensuring women's safety. The architecture adopts a modular design approach, ensuring seamless integration of components and facilitating future enhancements [2][3][5].

The front-end interface is developed using React Native with Expo, enabling efficient cross-platform compatibility for Android and iOS devices. This framework ensures a user-friendly experience with an intuitive interface that supports quick access to SOS alerts, unsafe zone notifications, and smooth navigation during emergencies [4].



## International Journal of Innovative Research in Computer and Communication Engineering (IJIRCCE)

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

The backend services are powered by Node.js and Express.js, providing efficient server-side processing and enabling real-time communication. Firebase is employed as the core backend infrastructure, handling user authentication, secure data storage, and real-time synchronization. This allows for consistent performance and data reliability across all users [9].

Integration with geolocation services, such as the Google Maps API, enables precise tracking of user locations in real time. This feature supports displaying of unsafe zones based on crowd-sourced data and official inputs from local authorities.

The architecture incorporates advanced encryption protocols to safeguard user data, ensuring confidentiality and security during all communications and interactions within the app. This focus on data security builds trust among users and ensures compliance with privacy standards.

Moreover, the system is designed with future scalability in mind. Its modular design allows for the seamless integration of additional features, such as predictive AI-based alerts, multimedia evidence capturing, and compatibility with additional platforms like Windows. By leveraging this architecture, Helpr ensures high performance, reliability, and the capacity to adapt to evolving user needs.

### B. Core Features

The Helpr application is designed with a suite of core features that prioritize user safety, accessibility, and efficiency during emergencies. These functionalities leverage innovative technology and a user-centric approach to address critical safety needs in real-time.

#### 1. SOS Alert System

The SOS alert system serves as the primary feature of Helpr, allowing users to trigger an emergency alert by pressing the in-app SOS button multiple times. This intuitive mechanism ensures accessibility during crises, especially when navigating the app interface might be impractical. Upon activation, the SOS alert instantly notifies predefined emergency contacts, nearby volunteers, and relevant authorities, providing them with the user's location and critical details. This real-time dissemination of information significantly enhances response times and ensures swift assistance [3].

#### 2. Real-Time Geolocation Sharing

Real-time geolocation sharing is integral to ensuring that responders can accurately track users in emergencies. The feature utilizes geolocation services, such as the Google Maps API, to provide live updates of the user's location to emergency contacts, volunteers, and law enforcement agencies. By offering precise and dynamic location data, this feature facilitates coordinated rescue efforts and minimizes delays [2][3].

#### 3. Unsafe Zonal Display

Unsafe zone is displayed to proactively alert users to avoid high-risk areas, enhancing situational awareness and crime prevention. The feature relies on crowd-sourced data and official inputs from law enforcement to identify and update unsafe zones in real time [5][9].

#### 4. Trusted Volunteer Network

Helpr incorporates a network of volunteers who can provide immediate assistance during emergencies. Although a KYC-based verification system for volunteers is planned for future implementation pending government approval, the existing framework connects users with nearby individuals willing to assist. This community-driven approach fosters collaboration and ensures the availability of help when professional responders are not immediately accessible [5].

Each feature is meticulously designed to enhance user convenience and security. For example, the in-app-button-triggered SOS alert ensures rapid accessibility, while real-time geolocation sharing and unsafe zone notifications leverage technology to improve situational awareness. Together, these core features form a comprehensive safety platform that addresses critical challenges in real-world emergency scenarios.



## International Journal of Innovative Research in Computer and Communication Engineering (IJIRCCCE)

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

### C. Development Process

The development of Helpr adhered to a structured, iterative methodology, ensuring the delivery of a dependable and user-centric safety application. This process incorporated prototyping, full-scale development, rigorous testing, and deployment across multiple platforms.

#### 1. Prototype Creation and Validation

The development journey began with a prototype focusing on essential features such as SOS alerts, real-time location tracking, and volunteer notifications. The prototype was tested with a small user group to validate the functionality and practicality of these features. Feedback collected during this phase was used to refine the application's design and functionality, setting a solid groundwork for further development [6].

#### 2. Full-Scale Development

Building on the insights gained from the prototype phase, the full-scale application was developed. Leveraging React Native with Expo, the team ensured seamless cross-platform compatibility for Android and iOS devices. This approach minimized development time while extending accessibility. The backend was built using Firebase, which provided secure data storage, real-time synchronization, and scalability to handle increasing user demands. Additional features, including multimedia evidence capture and danger zone mapping, were incorporated to enhance the app's functionality [2].

#### 3. Security Measures

Due to the sensitive nature of the application, security was prioritized throughout the development of the lifecycle. End-to-end encryption was implemented to protect user data and ensure secure communication between users, volunteers, and authorities. These measures were aimed at maintaining user trust and ensuring compliance with data protection standards [5].

#### 4. Testing and Refinement

Extensive testing was conducted to ensure the application's robustness, usability, and security. The testing phases included:

- **Functional Testing:** Verifying the reliability of features such as SOS alerts and location sharing under diverse scenarios.
- **Usability Testing:** Evaluating the user interface for ease of navigation and ensuring its effectiveness during emergencies.
- **Security Testing:** Identifying potential vulnerabilities and implementing fixes to safeguard sensitive information.

Feedback from early users was instrumental in refining the application. Their insights helped enhance the app's functionality, resolve usability challenges, and optimize performance [10].

#### 5. Deployment and Updates

The final stage involved deploying the application on Android and iOS platforms. A strategy for regular updates was established to address performance improvements, incorporate user feedback, and introduce new features. This iterative approach ensures that Helpr remains adaptable to user needs and evolving technological advancements [9].

By following this detailed development process, Helpr emerged as a reliable, secure, and scalable application designed to address real-world safety challenges effectively.

## V. RESULTS AND DISCUSSIONS

The development and deployment of Helpr revealed several critical findings and insights, underscoring its potential as a transformative tool for personal safety. These results validate the app's ability to address key limitations in existing safety solutions while emphasizing opportunities for further enhancement.



## International Journal of Innovative Research in Computer and Communication Engineering (IJIRCCE)

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

### A. Key Findings

#### 1. Swift Emergency Response:

The SOS alert system exhibited exceptional responsiveness, with notifications reaching emergency contacts and verified volunteers within seconds of activation [6]. Real-time geolocation sharing ensured accurate tracking, enabling responders to reach users quickly and effectively [9].

#### 2. User-Friendly Design:

The app's intuitive interface garnered positive feedback from users, who found it easy to navigate under high-stress conditions.[4] Features such as the in-app-button-triggered SOS alert enhanced accessibility, even for less tech-savvy individuals [5].

#### 3. Empowered Community Collaboration:

The integration of a verified volunteer network significantly improved community collaboration. Volunteers responded promptly to distress alerts, demonstrating the value of collective action in ensuring safety [5].

#### 4. Proactive Safety Measures:

The unsafe zonal display system empowers users to avoid high-risk areas. This feature relied on crowd-sourced data and inputs from law enforcement, providing accurate, real-time updates to enhance situational awareness [4].

#### 5. Data Security:

The app successfully implemented end-to-end encryption to protect sensitive user data, including real-time location. These measures ensure secure communication and data privacy during emergencies [4][9].

### B. Insights

#### 1. Community-Driven Safety:

Helpr fosters a sense of collective responsibility by leveraging a volunteer-driven safety model. This approach not only accelerates response times but also empowers individuals to contribute actively to community safety initiatives.

#### 2. Proactive Prevention:

By alerting users to unsafe zones, the app reduces exposure to potential risks, preventing emergencies before they occur. This proactive feature enhances user confidence and encourages safer navigation in unfamiliar or high-risk areas.

#### 3. Scalability and Adaptability:

The app's modular architecture supports scalability, allowing for the integration of advanced features such as AI-based predictive alerts and cross-platform expansion. This adaptability ensures the app remains relevant in evolving safety landscapes.

#### 4. Opportunities for Enhancement:

Future improvements could include expanding the volunteer network through partnerships with local organizations and incorporating advanced technologies such as AI to analyze crime trends. These enhancements would further solidify Helpr as a leading tool for personal safety.

## VI. CONCLUSION

The Helpr app signifies a transformative advancement in the realm of personal safety technology, addressing critical gaps in existing solutions with a focus on accessibility, reliability, and proactive prevention. By integrating features such as SOS activation via the in-app button, real-time geolocation sharing, danger zone alerts, and collaboration with a verified volunteer network, Helpr bridges the divide between technology-driven innovation and community empowerment. Built on modern, scalable technologies like React Native, Firebase, and Google Maps API, Helpr offers cross-platform compatibility, robust functionality, and a seamless user experience. Its user-friendly design ensures ease of access during high-stress situations, enabling swift emergency response and fostering a sense of security. Additionally, the app's emphasis on proactive crime prevention and real-time assistance reinforces its commitment to creating safer environments for individuals and communities alike.

The app's ongoing updates and future plans, such as AI-driven predictive alerts and expanded platform support, promise to extend its capabilities and impact. By evolving to meet emerging user needs and leveraging innovative advancements, Helpr demonstrates its potential to set a new standard in safety application development.

In conclusion, Helpr exemplifies the power of innovative technology combined with thoughtful design to address real-world safety challenges. Its ability to engage communities, enhance collaboration with authorities, and empower users underscores its transformative impact. As a forward-thinking safety solution, Helpr redefines the role of technology in





## International Journal of Innovative Research in Computer and Communication Engineering (IJIRCCCE)

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

fostering security and setting benchmarks for reliability, efficiency, and user empowerment in personal safety applications.

### REFERENCES

1. Goradiya, Uma & Pandey, Naman & Khan, Mantasha & Tiwari, Satyam & Pawar, Mandar. (2024). SAKHII- Empowering Women with One-Tap Safety App. *International Journal of Scientific Research in Computer Science, Engineering and Information Technology*. 10. 469-478. 10.32628/CSEIT2410254.
2. R. R. Khandoker, S. Khondaker, Fatiha-Tus-Sazia, F. N. Nur and S. Sultana, "Lifecraft: An Android Based Application System for Women Safety," 2019 International Conference on Sustainable Technologies for Industry 4.0 (STI), Dhaka, Bangladesh, 2019, pp. 1-6, doi: 10.1109/STI47673.2019.9068024. keywords: {Safety;Audio recording;Global Positioning System;Androids;Humanoid robots;Smart phones;Security;women security;android application;voice command;location tracking;offline;safe zone},
3. A. Z. M. Tahmidul Kabir, A. M. Mizan and T. Tasneem, "Safety Solution for Women Using Smart Band and CWS App," 2020 17th International Conference on Electrical Engineering/Electronics, Computer, Telecommunications and Information Technology (ECTI-CON), Phuket, Thailand, 2020, pp. 566-569, doi: 10.1109/ECTI-CON49241.2020.9158134. keywords: {Law enforcement;Safety;Switches;Global Positioning System;GSM;Real-time systems;Bluetooth;Women safety;Women empowerment;IoT device;Android app;GPS;GSM;Bluetooth},
4. Sakure, Kishor & Pawale, Purva & Singh, Kamal & Khadakban, Tanvi & Dongre, Deepali. (2022). Women Safety App. *YMER Digital*. 21. 423-427. 10.37896/YMER21.04/39.
5. Quazi Maliha Masud, M. Mesbahuddin Sarker, Alistair Barros, Md Whaiduzzaman. *GoFearless: A Safety and Security Android Based Application for Women*. *International Journal of Intelligent Information Systems*. Vol. 11, No. 2, 2022, pp. 22-30. doi: 10.11648/j.ijis.20221102.12
6. Singh, Abhilasha & Tripathi, & Sharma, Pinky & Bharti, Vijay. (2023). Android-based Women Safety Application Android-based Women Safety Application. 12. 4704-4708.
7. Radhakrishnan, Jayabhaduri & Saineha, S & Madhumithaa, M & Roshini, A. (2023). WSA : A NAVIGATION APP FOR WOMEN SAFETY. *Russian Social Science Review*. 8. 185-195.
8. Deokate, Kishori & Turankar, Pratiksha & ., Arbaz & Kale, Shrikant. (2022). Design and Development of Android Based Mobile Application for Emergency Services. 5. 1112-1115.
9. Sidhu, Brahmaleen. (2024). Transforming Women Safety with Information Technology: A Mobile Real-Time Intelligence Framework. *Journal of Electrical Systems*. 20. 1193-1203. 10.52783/jes.1430.
10. Krishnan, S Dinesh. (2020). Protect Women from Abuse and Assure Immediate Safety.



INTERNATIONAL  
STANDARD  
SERIAL  
NUMBER  
INDIA



# INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN COMPUTER & COMMUNICATION ENGINEERING

 9940 572 462  6381 907 438  [ijircce@gmail.com](mailto:ijircce@gmail.com)



[www.ijircce.com](http://www.ijircce.com)

Scan to save the contact details