

“SafeSteps” A Flutter -Based Application to Provide Security to Women’s

Tejas Tathe¹, Harshal Wadne², Pranav Patil³, Dheeraj Waydande⁴

Abstract - With women’s safety being one of the most serious and pressing issues worldwide, rapid technological advancements have created new opportunities to enhance personal security. This paper presents an improved mobile application that prioritizes women’s safety through a SIM card-based location tracking approach instead of relying on GPS services that require an internet connection. This feature ensures consistent and reliable location tracking even in areas with weak or no internet access. Inspired by existing platforms like bSafe and My Safetipin, the app includes an emergency alert system that allows users to trigger SOS signals to authorities and nearby registered users by pressing the power button, volume button, or using specific gestures. The involvement of nearby users aims to provide immediate assistance before law enforcement arrives, potentially preventing harm or saving lives. The paper features a survey and technical analysis detailing the app’s architecture, usability, and the benefits of SIM-based tracking for improved response times during emergencies.

Key Words: Women’s safety, SIM card location tracking, emergency alert system, SOS message, offline tracking, mobile safety app, user assistance network.

1. INTRODUCTION

Ensuring women’s safety is a critical global issue, with incidents occurring daily that highlight the need for effective personal security measures. The proliferation of smartphones and advancements in mobile technology have paved the way for innovative safety-focused applications. However, many existing apps rely heavily on GPS-based internet tracking, which can be unreliable or unavailable in certain locations. This limitation can delay emergency responses and reduce the efficacy of safety protocols, putting users at risk.

To address these issues, this paper introduces a comprehensive mobile app that places user safety at the forefront by using SIM card-based location tracking. Unlike conventional apps that require continuous internet access for GPS services, our solution leverages cellular networks for location tracking. This ensures consistent monitoring even in areas with limited or no internet connectivity. A standout feature of the app is its discreet and accessible SOS alert capability, which can be triggered by pressing the power or volume buttons or

using pre-set gestures. These alerts are sent via SMS to law enforcement and nearby registered users, creating a network of responders who can assist the user before the arrival of police.

The development of this app draws inspiration from platforms like bSafe and My Safetipin but incorporates enhancements that address their limitations. The main innovation is the integration of SIM-based location tracking and offline alert features, which together enhance reliability and responsiveness during emergencies. This paper explores the app’s design, architecture, testing phases, and practical applications, alongside a survey of user feedback and challenges in implementation.

This research contributes to the field of mobile safety applications by demonstrating that SIM-based technology can serve as a robust alternative for location tracking in safety solutions. The findings aim to inform future developments and encourage wider adoption of offline-capable safety mechanisms.

2. OBJECTIVE

The objectives of the project ‘SafeSteps’ Its intent is to come up with a better and user-friendly mobile app that is focused on women’s safety. This work seeks to assist with the growing global concern for the online violence directed toward women wherein most safety applications are limited to GPS internet tracking. Such older application are not viable in places where there is little or no Internet coverage and this hinders timely responses and puts users in jeopardy. This application minimizes the reliance on the internet by utilizing a SIM card based location tracking system, hence enabling tracking and communication in remote or network poor areas. The method employs cellular approximations to locations to avoid GPS-enabled locating. This function can prove useful in rural, low satellite areas giving assurance to women that they can always get network help when required regardless of coverage area.

The main feature of this application is the SOS notification system, which is very discreet and easy to distinguish. Users can activate this emergency function by pressing the power button or volume button. or make a specific gesture This makes it possible to send urgent notifications in the event of a crisis. These alerts can also be sent via SMS. This instant alert system aims to promote a faster response. Because messages reach local responders and law enforcement simultaneously, the participation of nearby registered users creates a community support network. This may bring help to the user before the authorities arrive. This idea has inspired existing apps like bSafe and My Safetipin, but also tailored enhancements to address the limitations of those platforms.

Besides emergency alerts, the application is also endowed with functionalities such as real-time location sharing with trusted contacts alongside a "fake call" option that can be triggered to create a diversion or deter a potential threat. Besides, the app is a community-driven alert system, which enables users to communicate safety-sensitive information or issue warnings about high-risk areas to others. The app gives the chance to the users to choose between multiple options for the management and the response to the threats that may occur. This way it helps the users to be proactive.



Fig -1: Figure

3. CONCLUSIONS

SafeSteps represents a significant step toward providing an end-to-end solution for all users concerning their safety, offering comprehensive technical support and reaching a broad audience. By integrating features such as real-time location sharing, an SOS alert system, fake call options, and a community-based safety alert platform, the application delivers a complete solution tailored to address critical safety concerns. We aim to continue enhancing the application's capabilities to serve as a reliable, accessible, and trusted companion for women worldwide.

ACKNOWLEDGEMENT

We would like to express our heartfelt gratitude to everyone who supported and guided us in the development of the SafeSteps application. Our sincere thanks go to our project advisors and mentors, whose invaluable insights and encouragement have been instrumental in bringing this project to fruition. We are

also grateful to the faculty and staff of Zeal College of Engineering and Research for providing the resources and environment necessary for this research and development. Finally, we express our appreciation to our families, friends, and colleagues for their continuous encouragement and support, and for believing in the significance of this project.

REFERENCES

1. Stark, L., Robinson, M. V., Seff, I., Gillespie, A., Colarelli, J., & Landis, D. (2021). The Effectiveness of Women and Girls Safe Spaces: A Systematic Review of Evidence to Address Violence Against Women and Girls in Humanitarian Contexts. Trauma, Violence, & Abuse.
2. Parikh, D., Kapoor, P., Karnani, S., & Kadam, S. (2020). IoT Based Wearable Safety Device for Women. International Journal of Engineering Research & Technology (IJERT), Vol. 9, Issue 05.
3. Juhitha, S., Pavithra, M., & Archana, E. (2020). Design and Implementation of Women Safety System Using Mobile Application in Real-Time Environment. International Journal of Research in Engineering, Science and Management (IJRESM), Vol. 3, Issue 4.

BOOK REFERENCES

1. **"Ending Violence Against Women: A Challenge for Development and Humanitarian Work"** by Francine Pickup This book offers an in-depth exploration of violence against women, including the societal and cultural factors that contribute to it. It also covers interventions and initiatives worldwide, providing context for understanding the larger scope of women's safety issues. [Book Link](#)
2. **"Empowering Women: A Guide to Personal Safety"** by Michaela Miller A practical guide that focuses on everyday personal safety tips for women. It addresses various scenarios and suggests preventive measures that could be incorporated into educational sections of a safety app. [Book Link](#)
3. **"Location-Based Services and Navigation"** by A. R. Norizan and E. S. Azani A detailed exploration of location-based services, this book includes discussions on GPS, cellular network tracking, and indoor positioning technologies. It addresses some technical challenges you may face when using SIM-based location tracking. [Book Link](#)
4. **"Flutter in Action"** By Eric Windmill This book provides insights into Flutter's features and best practices for building mobile applications. [Book Link](#)