JETIR.ORG ISSN: 2349-5162 | ESTD Year : 2014 | Monthly Issue
JOURNAL OF EMERGING TECHNOLOGIES AND INNOVATIVE RESEARCH (JETIR)
An International Scholarly Open Access, Peer-reviewed, Refereed Journal

SecureWings: Personal Safety Application

Kaveri Mahake
Savitribai Phule Pune University
G H Raisoni College of Engineering and Management
Pune, India
kaveri.mahake.it@ghrcem.raisoni.net

Muskan Shaikh
Savitribai Phule Pune University
G H Raisoni College of Engineering and Management
Pune, India
muskan.shaikh.it@ghrcem.raisoni.net

Akash J Awasthi
Savitribai Phule Pune University
G H Raisoni College of Engineering and Management
Pune, India
akash.awasthi.it@ghrcem.raisoni.net

Dr. Vijaya Choudhary
Savitribai Phule Pune University
G H Raisoni College of Engineering and Management
Pune, India
vijaya.choudhary@raisoni.net

***Abstract*- Women's safety remains a pressing global issue, with many women encountering situations where immediate help is vital but not readily accessible. This work addresses this problem by developing an Android application specifically designed to enhance the personal safety of women. The app features an SMS alert system that allows users to send a distress message along with real-time location data to pre-selected emergency contacts with a single tap. Key components includes real-time location tracking, a simple user interface, and an SMS alert system that functions even in areas with poor internet connectivity. By ensuring that help can be summoned quickly and efficiently, this app improves emergency response times and provide women with a greater sense of security.**

***Keywords*—Personal safety, location Sharing, Emergency Alert , SOS Alert , Real Time Tracking .**

I. INTRODUCTION

Women's safety has become a critical concern worldwide, as incidents of harassment and violence against women continue to occur despite significant advancements in technology. In many cases, immediate assistance is essential, but not always easily accessible. With the increasing prevalence of smartphones, mobile technology can serve as a powerful tool to enhance personal safety.

This project focuses on developing an Android application designed to improve women's safety by offering a quick and reliable emergency communication system. The core feature of the app is an SMS alert system, allowing users to send a distress message along with their real-time location to pre-selected emergency contacts with a single tap. This functionality ensures that users can call for help even in areas with poor or no internet connectivity, making the app particularly robust in critical situations.

The significance of this project lies in its ability to empower women with an accessible and effective tool for personal safety. By providing a user-friendly interface and a simple method for sending emergency alerts, the app aims to reduce response times during emergencies, increase security, and contribute to building a safer society for women.

II. RELATED WORK

Women's safety is a critical issue that has been addressed through various technological innovations over the years. Several solutions involving mobile applications, wearable devices, and IoT-based technologies have been proposed and developed to provide real-time emergency assistance and security for women. This literature survey reviews existing technologies and their contributions to enhancing women's safety, focusing on mobile applications, smart wearables, and integrated IoT systems.

Smart band combined with a companion CWS app is proposed [1] The chapter *"Swayam Rakshak: Smart-Safety Device for Women"* explores the development of a technology designed to enhance women's safety. The authors discuss the creation of a smart safety device, likely incorporating sensors, GPS, and communication tools to provide immediate alerts during emergencies. The device aims to empower women by offering a means of protection, enabling them to send distress signals to family members or authorities when needed. This work was presented at the ERCICA 2023 conference and is part of the *Advances in Computing and Information* book series, focusing on innovations in computing and engineering. [2] The *17th International Conference on Electrical Engineering/Electronics, Computer, Telecommunications, and Information Technology* (ECTI-CON) focuses on advancements in electrical engineering, telecommunications, and IT. The 2020 paper presented a safety solution for women, using a smart band and CWS app, showcasing innovative technology for enhancing personal security. [3] The *1st International Conference on*

Advances in Information Technology (ICAIT) focuses on cutting-edge research and innovations in information technology. The 2019 paper presented an IoT-based smart security gadget for women's safety, demonstrating technology's role in enhancing personal security.[4] The *International Conference on Inventive Research in Computing Applications* (ICIRCA) focuses on innovations in computing technologies. The 2018 paper presented SMARISA, a Raspberry Pi-based smart ring for women's safety, utilizing IoT to enhance personal security through wearable technology. [5] The *International Conference on Communication, Computing and Power Technology* (ICCPCT) focuses on advancements in communication, computing, and power technologies. The 2017 paper developed a mobile-based women's safety app with real-time database and data-stream network. [6] The paper, published in *Indian Journal of Science and Technology*, presents FEMME, a women's safety device and application. It focuses on innovative technology to enhance women's security through wearable devices and mobile apps. [7] The *INDICON 2015* conference, organized by IEEE, focuses on innovations in electrical engineering and technology. The 2015 paper presented an Android app designed to improve women's safety through real-time emergency assistance.[8] The *INDICON 2015* conference, organized by IEEE, focuses on innovations in electrical engineering and technology. The 2015 paper presented an Android app designed to improve women's safety through real-time emergency assistance.

III. PROPOSED SYSTEM

The proposed system is an emergency alert mobile application designed to enhance personal safety by enabling quick communication with trusted contacts during dangerous situations. The primary goal of the system is to provide users with a streamlined and efficient method to send emergency alerts with minimal user interaction, especially in situations where time and effort are crucial. The core functionality of the system revolves around a HELP button that can be triggered in case of an emergency. The user configures the application in advance by adding emergency contact numbers and storing a pre-defined emergency message. In the event of danger, the user can send this message with the press of a button, allowing their selected contacts to receive immediate notifications, including critical information like the user's location, the time the alert was triggered, and the phone's battery status. The system architecture includes a database that stores the emergency contact numbers, pre-defined messages, and location data. The database also tracks the user's location, sending real-time coordinates to the registered contacts. The architecture ensures efficient communication between mobile devices and contacts, facilitating immediate assistance. The user interface features a large, easily accessible **HELP** button that triggers the system to send an emergency SMS with predefined content to the selected contacts. The button's design ensures that it can be quickly accessed and activated under stress, minimizing the time needed to request help. Users can add up to three emergency contacts. These contacts are saved within the application, and the system will automatically send emergency messages to them upon activation. Users can pre-compose an emergency message describing their situation. This message is stored within the app and sent to contacts in case of an emergency, ensuring that critical information is shared even if the user cannot communicate verbally. Upon activation, the app sends the user's current GPS location along with the emergency message. The location is provided in the form of a map link, allowing emergency contacts to quickly find the user's whereabouts. This functionality is particularly useful in cases where the user is in an unfamiliar or remote location. Along with the emergency alert and location, the system sends the current battery level of the user's device. This feature helps emergency contacts assess the urgency of the situation, as a low battery could indicate limited time for further communication. The system monitors areas with frequent emergency alerts and marks them as "danger zones." This feature uses data analytics to identify locations where multiple users have triggered alerts, offering insights into potentially hazardous areas and informing public safety efforts. To help users protect themselves in threatening situations, the system includes access to self-defense video tutorials. These videos offer practical tips and techniques to remain safe until help arrives. If the user's location services are disabled when the HELP button is pressed, the system will prompt the user to activate it, ensuring that their location can be accurately shared with emergency contacts.

System Architecture

The architecture of the proposed system consists of a client-server model where the mobile device serves as the client and the central database acts as the server. The database stores the user's emergency contacts and pre-defined messages, as well as continuously updated location data. The mobile app is responsible for user interaction, including adding contacts, storing emergency messages, and triggering the emergency alert. When the HELP button is pressed, the client sends a request to the server to deliver the emergency message, along with the user's GPS coordinates and battery status, to the registered contacts. The server stores all emergency data and is responsible for continuously monitoring and updating the user's location when an emergency is triggered. The location is shared in real-time with emergency contacts via SMS. In cases where multiple emergency alerts are triggered in the same area, the server marks the region as a potential danger zone, enabling further analysis of high-risk areas.

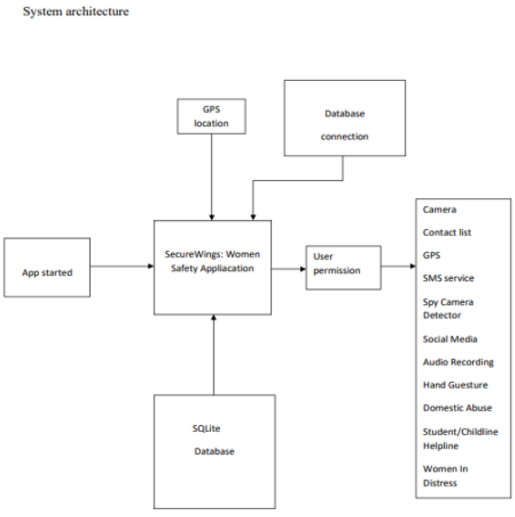

Figure1. System Architecture

IV. IMPLEMENTATION

An Android application is described that is designed to assist users during emergencies by sending pre-configured help messages and location details to selected contacts. Upon installation, the user is prompted to store a message and up to three contact numbers, such as those of family, friends, or local authorities. When the HELP button is pressed, the stored message and the user's location (obtained via GPS) are sent to the registered contacts. Continuous location updates are provided every five minutes to ensure tracking for rescue purposes. The application's functionality depends on the device being connected to a mobile network and having GPS enabled. Testing results and screenshots demonstrate the application's performance over different time intervals.

Design Module of Application:

1. User Login

Once the application has been installed on the mobile, first time, it will then display the following screen as shown in figure 1. User/login Custom-built tools supporting safety, such as Emergency SOS alerts and real-time location sharing, can be relied upon by the user, along with much more. User information is kept safe and private so that trusted contacts and the supportive Secure Wings community can be connected with. User are made to feel safe and empowered. Secure Wings can be joined by logging in.

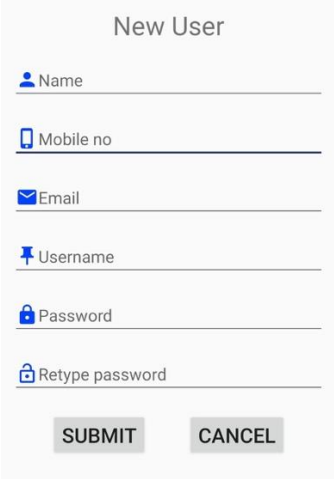

Figure 2. User/login

2. Home page

Homepage includes six tabs namely Emergency Call, Hidden Camera, Helpline Numbers, siren alert, app Tour and current Location.

Figure 3. Home page

3. Emergency service

Secure Wings is has one touch for an emergency button that directly connects the user to local authorities and dependable contacts in danger. Real-time location tracking allows users to share where they are discreetly so that help is always nearby by just a tap. But there are also safety tips, community alerts, and means of reporting incidents so that women can go about their lives with confidence.

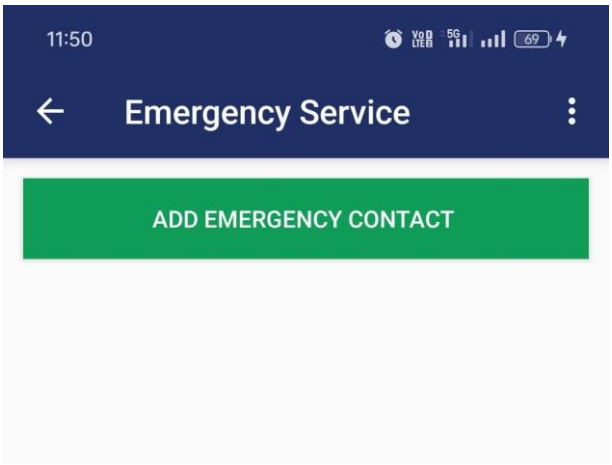

Figure 4. Emergency Service Page

4. Detect Spy Camera

The latest version of proposed Women Safety app features the innovative technology to detect hidden spy cameras, thereby ensuring greater security for user. This tool uses frontline technology and checks environment by picking signals that are coming from cameras by detecting those signals. This easy interface lets user view surroundings instantly, ending all kinds of suspicious activities and further protecting privacy. Whether user are visiting a hotel room, using a public restroom, or any other space unfamiliar to user, this feature will keep them alert and safe.

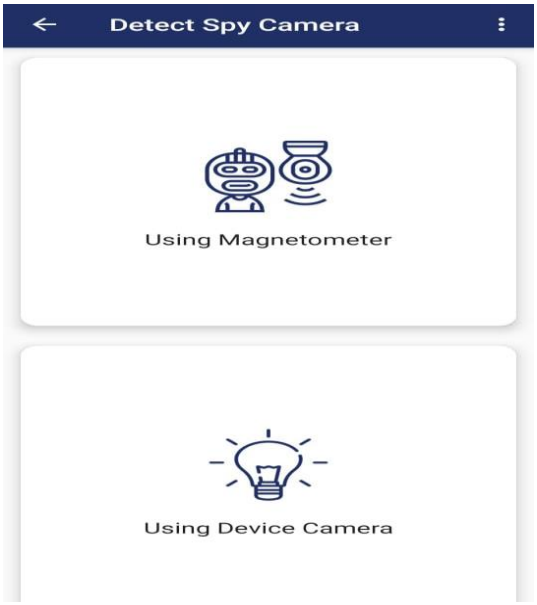

Figure 5. Detect Spy Camera page

5. Helpline Number

As part of involvement in women's safety, here attached a dedicated helpline number to application. In this way, user can quickly find support and resources. These professionals are available 24/7 and will be able to assist in any issues, emergencies, or questions pertaining to safety. And if user need advice, assistant in reporting an incident, or just need someone to talk to, then a tap away is ready for user on helpline.

Figure. 6 Helpline Number page

6. App Tour

It begins with dashboard, easy to use: press the emergency button, choose a helpline, or share location with safety professionals. User can find recommendations for safety tips to cover all situations of choice.

Figure 7 App Tour page

7.SMS Alert

This Women Safety app also enables users to activate an important SMS alert feature in case of an emergency. user can let safest contacts know of the situation just with a few taps on screen using the pre-set message with live location and request for help. This is one of the best uses in low connectivity areas, and it's an added safety feature user have when things are bad. What's great about this feature is that it keeps users support network in the loop to enhance safety and give more power to navigate any situation. Figure 8 shows message sending location updates

Figure 8. Location update SMS

V. CONCLUSION

In conclusion, the development of Secure Wings and its custom-built safety tools offers users a reliable and secure platform to enhance personal safety. With features like real-time SOS alerts, easy location sharing, and data privacy protection, the platform empowers individuals to stay connected with trusted contacts while ensuring their personal information remains secure. The emphasis on user privacy, combined with the community support of Secure Wings, creates an environment of safety and trust. By logging in and joining this network, users are equipped with tools that make them feel safe and empowered in today's dynamic world.

Secure Wings exemplifies the potential of technology to foster both security and empowerment in everyday life.

REFERENCES

[1] Rani, T.O.G., Chethan, M., Raj, G.G., Harshitha, M., Raju, K.S. (2024).Swayam Rakshak: Smart-Safety Device for Women. In: Shetty, N.R., Prasad, N.H., Nalini, N. (eds) Advances in Computing and Information. ERCICA 2023. Lecture Notes in Electrical Engineering, vol 1104. Springer, Singapore https://doi.org/10.1007/978-981-16-5655-2_23

[2] Tahmidul Kabir AZM, Mizan AM, Tasneem T (2020) Safety solution for women using smart band and CWS app. In: 17th international conference on electrical engineering/electronics, computer, telecommunications and information technology (ECTI-CON), India, pp 566–569 https://doi.org/10.1109/ECTI-CON49241.2020.9158134

[3] T. M. R. Aishwarya, C. K. S, D. M. K and N. H, "IoT Based Smart Security Gadget for Women's Safety", 2019 1st International Conference on Advances in Information Technology (ICAIT), pp. 348-352, 2019 https://doi.org/10.1109/ICAIT47043.2019.8987242

[4] Sogi NR, Chatterjee P, Nethra U, Suma V (2018) SMARISA: a raspberry Pi based smart ring for women safety using IoT. In: International conference on inventive research in computing applications ++ (ICIRCA), India, pp 451–454 https://doi.org/10.1109/ICIRCA.2018.8597424

[5] D.S. Prashanth, G. Patel, B. Bharathi, Research and development of a mobile based women safety application with real-time database and data-stream network, ICCPCT (2017) 10.1109/ICCPCT.2017.8074261

[6] D.G. Monisha1, M. Monisha, G. Pavithra, R. Subhashini, Women safety device and application-FEMME. Indian J. Sci. Technol. 9(10), (2016). https://doi.org/10.17485/ijst/2016/v9i10/88898

[7] R.S. Yarabothu, B. Thota, Abhaya, An android app for the safety of women. IEEE, December (2015). 978–1–4673–6540–6/15/$31.00©2015 https://doi.org/10.1109/INDICON.2015.7443652

[8] Yarrabothu RS, Thota B (2015) Abhaya: an android app for the safety of women, Annual IEEE India conference (INDICON), India, pp 1–4 https://doi.org/10.1109/INDICON.2015.7443652