HERORBIT: SAFETY IN EVERY SPHERE

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ABSTRACT

Throughout history, women's contributions have been essential to societal stability, progress, and sustainable growth. However, harassment and abuse hinder their full societal inclusion. With the recent rise in alarming incidents involving women and children, a robust infrastructure is crucial to provide swift assistance. As smartphone usage continues to grow rapidly, utilizing mobile devices effectively for safety and defence has become more feasible. This application aims to address these pressing safety concerns by helping reduce crimes against women. Our Android app, designed primarily for women's protection, is also suitable for anyone in an emergency, including men. [1] Operable through voice commands or an SOS (Save Our Souls) button, the app sends an alert message with location details to user-defined contacts in every five minutes. To address cases where evidence is lacking, we included an audio recording feature to gather vital proof. Other features include continuous location tracking, guidance to the nearest safe zones, and an offline mode, making this app a comprehensive safety tool.

Keywords: Women Safety And Protection, Android Application , Voice Command Identification , GPS Tracking, Available Offline, Safe Zone Monitoring.

I.   INTRODUCTION

In today's world, even though India has made significant strides in development and women have gained independence, the issue of women's safety remains a pressing concern [3]. Despite the progress, women in our country still face dangers, making their safety a major issue. Problems such as harassment at workplaces, educational institutions, and other public spaces, along with the need for reliable distress communication, highlight the urgency for technological solutions.

To address this, various mobile applications have been developed to assist women in distress. We are also introducing an Android application aimed at ensuring women's safety. The app's core functionalities include an SOS feature, location alerts to registered contacts and the nearest police station, and the ability to call a helpline number. Additionally, the app supports live streaming, allowing registered contacts to view the victim's current location in real-time.

Despite these technological advances, insecurities persist even at home. Many women remain fearful of stepping outside their comfort zones. While the police work to address these issues, they are often unable to respond quickly enough in every situation.

II.   RELATED WORK

It has been observed that crimes against women are on the rise, with 731 cases of rape reported in the last six months alone. To address this alarming situation, we have decided to develop an application aimed at enhancing women's safety. In preparation for this, we have gained relevant knowledge and reviewed several research papers on the subject.

One such app we studied is [5] "Raksha – Women Safety Alert," which sends alert messages to designated contacts in emergency situations. Another app, [6] "I Go Safely," captures and sends a 30-second audio recording and video clip to registered contacts. Similarly,[7] "Safety Pin" includes features like emergency contact numbers storage and GPS tracking system. In dangerous situations, it even suggests the safest routes to the user.

While these existing applications serve a similar purpose to ours, we identified certain limitations. For instance, some apps send locations via URL but do not provide the safest routes. Others offer live streaming but lack the ability to store recordings for future evidence. These observations motivated us to develop an Android application that integrates all these features and adds new, unique functionalities.

We also examined [8] "Abhaya" another app focused on women's safety. Its functionality includes GPS-based location tracking and sending messages to registered contacts, while also making a call to the first contact to assist the user. The app continues to send updates every five minutes until the user stops the alert.

By learning from these existing tools, we aim to create an application that combines all essential safety features while introducing additional elements for more comprehensive protection.

III. PROPOSED SYSTEM

Our system is designed to stand apart from existing solutions by combining key features from current applications while introducing unique functionalities.

To begin, the user initializes the app by registering an email address and password. They must manually register three contact numbers, which will be stored in a Firebase database. When the app is needed, the user activates it by turning on an On/Off button. Once activated, the app remains functional until turned off. In the event of an emergency, pressing the SOS key or using a voice command (such as a scream) will trigger the app's emergency services, sending an alert message to the registered contacts.

The system sends the user's location to these contacts every five minutes, enabling them to track any location changes and making it easier to reach the user. Additionally, the app features live streaming that continuously updates the contacts with the user's changing location using Geofire.

An audio recording feature is enabled in the system, which is activated after the SOS command is given. This records the surrounding environment for five minutes, providing evidence that could assist the user later. The "safe zone" option helps the user locate nearby police stations via a map.

Recognizing that network issues could prevent the use of data services during critical situations, the app includes an offline mode. While offline, the app can still send alert messages (without location data), make calls to a helpline number, and record audio. Along with emergency contacts, there is an option to manually enter a toll-free helpline number, which the app will call automatically when it receives the SOS command.

To develop the Android application, we will use Android Studio 3.3.2 and Java JDK 11.0. The app is compatible with any Android phone, provided the device has GPS functionality. No external hardware is required. A use case diagram and flowchart of the system are provided to simplify understanding of the app's operations.
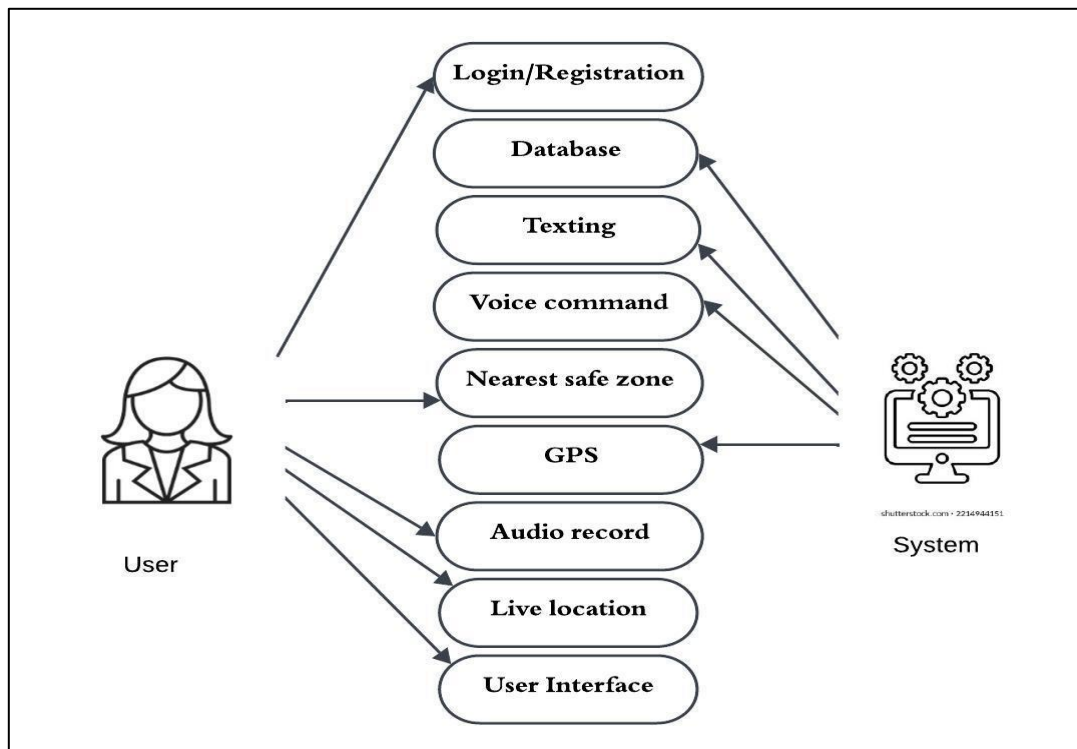

Figure 1. Use Case model

Figure 1 illustrates the use case model for our application. It depicts that the user must first register or log in to access the app's features, such as initiating audio recording. The user interface can also be activated using a

voice command or the SOS button. The system utilizes various components, including the database, GPS, and audio recordings, to support its functionality.
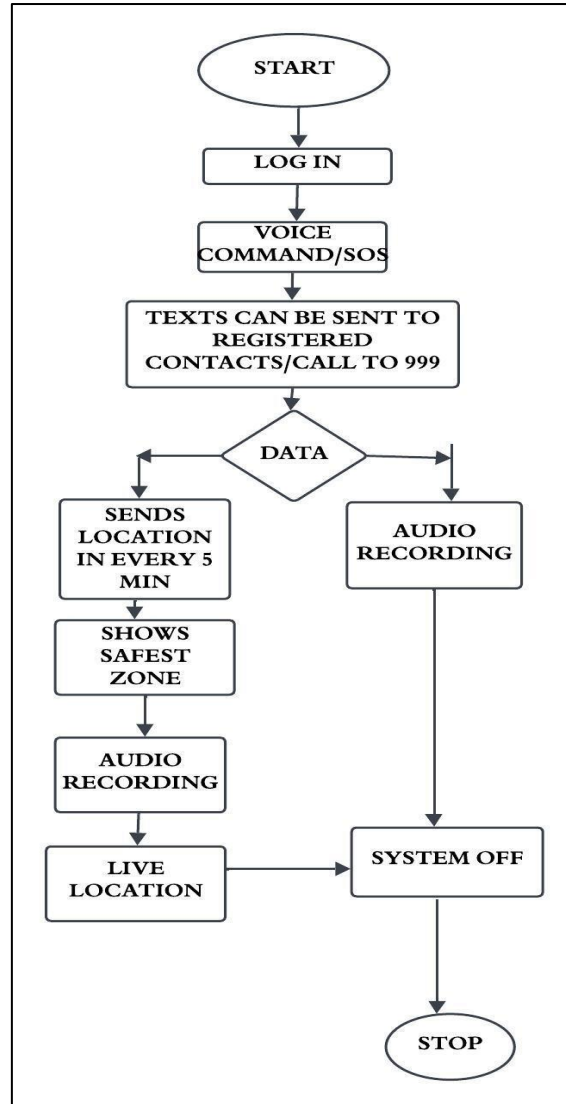
System Flowchart:

Figure 2. System Flowchart

Figure 2 shows the system's flowchart. After the user logs in, the system must be activated, after which it will run in the background. Upon receiving a command, the system will begin functioning according to the methods previously described.

IV.   UNIQUENESS

In the related work section, we discussed various Android applications with functions similar to ours. However, our application introduces several unique features that set it apart from existing systems. These features include:

- **Safe Zone**: While other apps offer a safe zone feature, their functionality differs from ours. In those apps, a safe zone is marked by other users of the app who indicate themselves as safe locations. If no one marks themselves as safe during an emergency, the victim won't have access to this option. Moreover, only users of the app can designate safe zones. In contrast, our system identifies police stations as safe zones, making it more reliable and convenient for the victim, as these locations will be displayed on the map.

- **Offline Mode**: Our application allows users to seek help even when there is no availability of mobile network. In offline mode, an emergency message will be sent to registered contacts without sharing the location, and the app can still make a call to the helpline. This ensures that family members are informed of

the user's situation, and location, enabling them to take necessary action promptly. Additionally, our offline mode includes audio recording, a feature not found in similar apps like "Raksha."

- **Advanced System**: What sets our system apart is that it not only incorporates these two unique features but also integrates a comprehensive set of functionalities, making it more versatile in various situations. Other applications may offer only a subset of these features, but ours aims to combine all possible tools for maximum utility.

- **Hidden Device Detection**: Our app includes an option that allows the user to move their phone around a suspected area to detect hidden devices, such as those concealed within walls or objects. The app can detect strong fields from such devices or identify light reflecting from a lens using the phone's camera.

In the future, we plan to add a feature for marking risky areas. If a user encounters danger in a specific location, they can tag that spot as a danger zone. Other users will be notified if they approach this marked area, further enhancing their safety.

We believe that these features—voice command for emergencies, offline mode for sending alerts, calls, and recordings without data, and safe zones highlighting nearby police stations—make our application more effective and reliable. By combining these useful features, our system addresses the shortcomings of existing applications and offers a more comprehensive solution for women's safety.

V. COMPARISON WITH THE EXISTING SYSTEM

Features	Raksha	I Go Safely	Shake to Safety	Safety pin	Abhaya	Proposed system
Sending Alert message	Yes	Yes	Yes	Yes	Yes	Yes
Identification and sending of location	Yes	Yes	No	Yes	Yes	Yes
Live location tracking	No	No	No	Yes	Yes	Yes
Safe Zone identification	No	No	No	Yes	No	Yes
Automatic Audio recording	No	Yes	No	No	No	Yes
Available in Offline mode	**Yes**	No	No	No	No	Yes
Voice command	No	No	No	No	No	Yes

In this section, we are trying to highlight the main differences between the existing system and the proposed system [3,5,6,7].

VI. CONCLUSION

This paper introduces a new women's security and protection model designed to create a secure environment. Unfortunately, women often face dangerous situations from various sources. This paper examines the critical requirements of an intelligent security system, addressing both technological demands and system development challenges. Although predicting such incidents is difficult, our proposed mobile application can significantly reduce risks. It is not only beneficial for women but also for children, as its voice command feature makes it easy for them to use. Additionally, men can utilize it in cases of severe danger or emergencies. The app is not limited to incidents related to sexual assault; it can also be employed in situations like accidents, hijackings, or public attacks. Our system aims to reduce risks in dangerous situations and contribute to making the world a safer place for everyone.

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