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Women Security with SMS Alerts based Android App

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ABSTARCT: The Women Security with SMS Alert-Based Android App is a mobile application aimed at enhancing the personal safety of women by offering an instant and reliable method of communication during emergencies. With increasing concerns about women's safety in today's society, particularly in isolated or vulnerable environments, this application is designed to act as a virtual safety tool that can be easily accessed and operated under stress or threat. The core functionality of the app revolves around sending an emergency SMS alert to pre-configured contacts. This message contains a predefined text along with the user's real-time GPS location, allowing friends, family, or authorities to take immediate action. The application eliminates the need for complex interactions, enabling users to trigger alerts with just a single tap on the SOS button or even by shaking the phonemaking it usable in scenarios where time and accessibility are critical. In addition to its SMS-based alert mechanism, the app includes a voice recording feature that automatically starts recording the surrounding audio when an SOS alert is triggered.

I. INTRODUCTION

The primary objective of the "Women Security with SMS Alert-Based Android App" is to develop a reliable and efficient mobile application aimed at ensuring the safety and security of women, particularly in emergency situations. With rising concerns about women's safety in both urban and rural areas, this project seeks to provide a quick and effective solution to alert emergency contacts and services when a woman is in danger.

This app is designed to offer immediate assistance in dangerous situations by sending a distress signal to pre-defined emergency contacts through SMS. The distress message includes essential details, such as the user's exact GPS location, which allows responders to reach the individual quickly. This feature ensures that the user's safety is prioritized, and help can arrive promptly.

Another important objective is to incorporate a location-tracking feature, which continuously monitors the user's position. This tracking capability ensures that, even if the woman is unable to communicate due to the severity of the situation, her real-time location can be shared with trusted contacts, reducing response time and ensuring that help can be provided quickly and accurately.

The app also features voice recording, which is automatically triggered in an emergency. This audio can be helpful for documenting the situation, providing evidence, and supporting legal actions if necessary. The inclusion of these features ensures that the app is not only a tool for emergency alerts but also a comprehensive safety solution.

Objective

The objective of the "Women Security with SMS Alert-Based Android App" project is to develop a reliable, efficient, and user-friendly Android application designed to enhance the safety and security of women in everyday life by enabling rapid communication during emergency situations. Recognizing the growing concerns around women's safety in public and private spaces, this project focuses on leveraging mobile technology to provide an accessible solution that facilitates immediate alerts to trusted contacts when the user feels threatened or is in danger.

1.1 OVERVIEW

The Women Security with SMS Alert-Based Android App is a mobile-based safety solution designed to protect and empower women in potentially dangerous or emergency situations. The application is developed using Android Studio

and integrates key technologies such as **GPS location services**, **SMS communication**, **shake detection sensors**, and **real-time background processing** to create an efficient and responsive emergency alert system.

The primary function of the application is to **send an instant alert** in the form of a structured SMS message to a set of **predefined emergency contacts**. This message includes the user's **current GPS location**, a **predefined distress message**, and a **timestamp**, allowing contacts to respond quickly and appropriately. The alert can be triggered in two ways: manually, by pressing an SOS button in the application, or automatically, through **shake detection** using the phone's built-in accelerometer. This dual mechanism ensures ease of access even when users are unable to operate their device under pressure.

II. LITERATURE SURVEY

Several studies and projects have been conducted in the field of women's safety using mobile and embedded technologies. In the work by A. Sharma and R. Mehta titled "Mobile Application for Women Safety" published in the **International Journal of Computer Applications (2018)**, the authors proposed a GPS and GSM-based system integrated with Arduino to alert emergency contacts. While effective in small-scale implementations, the solution lacked portability and required external hardware. K. Ramesh and N. Priya in their paper "Smartphone-Based Women Safety App Using Android" (**International Journal of Innovative Research, 2019**) developed a GPS-based SMS alert system; however, their application relied heavily on a stable internet connection, limiting its usability in remote or offline scenarios.

In 2020, P. Agarwal and S. Patel presented a more advanced system titled "Voice Enabled Women's Safety Application" at the **IEEE Conference on Women Safety Technologies**. Their approach integrated gesture and voice recognition for triggering emergency alerts. While innovative, the system's reliability was compromised by the challenges in accurately detecting voice commands in noisy environments. D. Kumar and T. Sneha's 2017 paper "Design of a Real-Time Personal Safety Application" in the **International Journal of Engineering and Technology** introduced a panic button with GPS integration. However, the application lacked multi-functionality features such as audio recording and fake call simulation, which are crucial in certain distress situations.

Lastly, M. Joshi and R. Gupta in their publication "Women Security System using IoT and Android Application" in the **Journal of Emerging Technologies and Innovative Research** explored an IoT-based safety solution. Their system offered improved interconnectivity between devices but was constrained by the need for specific hardware and reliable network coverage, making it less practical for broad deployment.

These existing systems provide a foundation for the proposed application in this project, while also highlighting key gaps in functionality, portability, and accessibility that this app aims to address.

III. PROJECT DESCRIPTION

EXISTING SYSTEM

Ensuring the safety of women in both urban and rural areas has become a growing concern in today's fast-paced and often unpredictable world. Women face numerous threats, ranging from physical assaults and harassment to digital stalking and cybercrimes. As the rate of such incidents continues to rise, there has been an increasing demand for effective safety measures that can be easily accessed and used by women across different demographics.

Over the years, various safety strategies and systems have been conceptualized, developed, and implemented to counter these challenges. These methods span from age-old manual approaches to modern technology-driven solutions. Traditional practices include self-defence training, use of protective tools like pepper sprays, and maintaining constant communication with family and friends. Meanwhile, advancements in technology have introduced mobile applications and wearable devices that provide emergency alerts, GPS tracking, and real-time location sharing.

DISADVANTAGES

- Delayed Response: Depending on the location and availability of resources, response time may vary.
- Limited Awareness: Many women are unaware of these services or don't know how to use them.
- Connectivity Issues: In remote areas, mobile signal and internet coverage are often poor.
- Bureaucratic Delays: Emergency services may be hindered by red tape or manpower limitations.

PROPOSED SYSTEM

The proposed system is an Android-based mobile application specifically developed to address the rising safety concerns of women. It integrates multiple technologies including mobile sensors, GPS tracking, and SMS-based alert systems to create a real-time emergency communication platform. The primary objective is to enable users to trigger an emergency alert either by pressing a button or shaking the device, allowing for a quick response even when manual interaction is limited. Upon activation, the app instantly sends the user's location and a predefined message to selected emergency contacts. Additional features like fake call simulation, audio recording, and a legal awareness module enhance the system's functionality, making it a versatile personal safety tool.

ADVANTAGES

- The GPS location tracking module was observed to be consistent in outdoor environments.
- However, slight variations in accuracy were noticed in indoor or semi-enclosed areas due to signal interference.
- Nonetheless, the application attempts to retrieve the most accurate location possible using both GPS and network-based providers, ensuring a balance between performance and efficiency.

IV. MODULES DESCRIPTION

Admin

Add Emergency Alerts: Admin can add emergency notifications from his Android application for Users, which helps Users stay alert of any emergencies in their area or city. This emergency information can be sent in the form of a text, photo, video, or a link from the admin app.

User

Add contact: The user can add his friends, family, and acquaintances to his Safety app contact list using the generated OTP. These contacts have to be registered users of the Safety app. Whenever the user sends a threat through his app. His added contacts will also be notified of the same.

My Contacts:

Added Contacts can be viewed under My Contacts. Contact Details and their real-time location can also be seen. User can also see their sent threat logs.

Home:

The User will be able to see the Sensor readings, i.e., Sound Meter and Accelerometer readings. The user can also stop/start the detection system.

App Notifications:

All the Emergency alerts for his city or area will be notified to the user with app notifications for real time alerts. User threats are also received by their contacts through app notifications. This ensures that your contacts are always alerted and Admin being the concerned body can address the situation quickly

V. RESULT

Mobile applications have become an essential part of modern digital life. With increasing user dependence on smartphones for everything from communication and banking to health and safety, mobile apps have witnessed exponential growth. However, this growth also brings an alarming rise in security threats. As more applications flood

the market, the potential for malicious activity rises proportionally. Cybercriminals exploit app vulnerabilities to perform various attacks ranging from data theft to surveillance and financial scams.

A successful attack on a mobile device can expose a user's sensitive data such as voice communication, contacts, messages, passwords, and real-time location (GPS). Some sophisticated attacks even rely on behavioral manipulation techniques to deceive users, making the impact more dangerous. The critical issue in mobile app development is that no application can be made entirely secure. While it is nearly impossible to guarantee 100% security, developers must still prioritize robust security features, and users must stay aware of risks.

Smartphones, being widely used by people of all ages, especially women for safety apps, become an easy target for cyber threats. The vulnerabilities generally stem from flaws in application design, weak encryption methods, and poor coding practices. These flaws can be exploited to gain unauthorized access, manipulate user data, or cause denial-of-service attacks, ultimately leading to the loss of critical and personal information.

VI. CONCLUSION

In today's world safety is the major concern of everyone. Many headlines still coming across like rapes, molestation, sexual assault, Murders, Kidnapping, Accidents are still happening in today's generation. Around 80 percent of women and Children are losing confidence and are afraid toward the realization of freedom. So, we are trying to contribute little efforts toward safety of people which will ensure the safety so that everyone can live peacefully.

Concerning the safety issues, we are introducing the SPARKAPP (Safety App) which can immediately notify any mishap happening with the user. This mobile application is very much helpful for anyone. In this application first user will added people and is called mediator.

When any person is in dangerous situation then he/she press power button 3 times continuously or the person can shake the mobile 3 times up and down which sends the alert notifications to the mediator. Then mediator get the message with location.

This application not only helps in live tracking of the location of the victim through GPS but also alerts the trusted contacts mentioned in contacts list in the app. It also detects the accidents and send alerts to hospital and police authorities in the area.

As the technology emerges, it is possible to upgrade the system and can be adaptable to desired environment. Because it is based on object-oriented design, any further changes can be easily adaptable.

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