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WOMEN SAFETY SOS SYSTEM WITH AUDIO ALERT AND LOCATION

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ABSTRACT: In recent decades, the escalates of crimes against women has emerged as a significant socio technological concern that necessitiates immediate and intelligent intervention mechanism.Traditional safety approaches, including manual emergency calls and dependent physical assistance. Often fail to provide rapid and context -aware responses during critical situations. This research presents the design and implemention of an Android – based Women Safety Application integrated with an SOS emergency trigger,real-time GPS location tracking, and automatic audio recording transmission to predefined emergency contacts and authorities .The proposed system leveragesmobile computing,geolocation services, and cloud-based communication frameworks to ensure swift response and digital evidence preservation .The application enables users to activate emergency alerts through a single tap or power- button trigger ,thereby reducing interaction delay during distress situations. Upon activation, the system transmits the user's live location. continuously updates tracking coordinates, records ambient audio, and sends alert notification via SMS and internet services, Additionally, the recorded audio is securely stored to provide potential legal evidence. The research methodology involves requirement analysis, system modelling, Android Studio development using Java/Kotlin, Firebase cloud integration, and performance evaluation through simulated emergency scenerios. Experimental results demonstrate reduced response latency, accurate GPS tracking, and reliable data transmission under varying network conditions. The study concludes that integrating intelligent mobile technologies can significantly enhance womens personal security and emergency responsiveness while contributing to a safer digital ecosystem.

Keywords: Women Safety, SOS Application, GPS Tracking, Real- Time Location Sharing, Emergency Alert System, Android Application, Audio Recording, Firebase Cloud.

I. INTRODUCTION:

Recent years, ensuring the safety of women has become a significant challenge due to the increasing number of crimes and unsafe situations faced in daily life. Women often encounter emergencies where immediate help is required, but traditional methods of seeking assistance, such as phone calls or manual messaging, may not be fast or reliable enough .In critical situations ,even a few seconds of delay can make a major difference . Therefore, there is a strong need for a quick , efficient, and automated safety system that can instantly alert others and provide necessary information with the advancement of technology , various digital solutions have been developed to improve personal safety . However,many existing systems require continuous user interaction or depend heavily on mobile applications and internet connectivity.In some cases,users may not be able to operate complex applications during emergencies.Hence, a simple and user- friendly system is essential to ensure quick response without confusion .This project proposes a women Safety SOS system thst is designed to provide immediate assistance at the press of a single button, The system integrates multiple functionalities such as audio alert, real-time location tracking, and automated email notification .When the user activates the SOS button , an alarm sound is generated to attract nearby attention .At the same time, the system captures the users current location using IP-based tracking and converts it into a Google Maps link.This link is then sent to predefined emergency contacts through email,enabling them to quickly identify the users position and respond accordingly.The system is implemented using Python programming language and utilizes various modules such as Tkinter for the graphical user interface ,Geocoder for obtaining location data,SMTP for sending email alerts, and Pygame for playing the emerging audio.The integration of these technologies makes the system efficient ,lightweight ,and easy to deploy on a desktop environment.The main objective of this project is to develop a reliable and cost-effective solution that enhances womens safety by providing instant alerts and real-time locations information .This system can be particularly useful in situations where immediate help is required and can significantly reduce response time during emergencies .In the future this system can be furtherimproved by integrating additional features such as live audio recording ,mobile application support ,and cloud-based monitoring systems

II. LITERATURE REVIEW:

Several research works have been carried out in the field of women safety systems using modern technologies.Many existing solutions focus on mobile -based application that provide emergency alert features such as sending SMS, making calls, and sharing GPS location. Some systems utilize wearable devices equipped with panic buttons , which trigger alerts when pressed.Other studies have explored the use of internet of things(IOT) devices,GPS modules,and GSM communication to send real-time location and notification to emergency contacts .these systems aim to reduce response time and provide immediate assistance during criticalsituations. However , most of the existing solutions have certain limitations, such as dependency on smartphones,high implementation cost ,or complex usage .In some cases ,continuous internet connectivity or additional hardware components are required,which may not always be available .To overcome these issues, the proposed system focuses on a simple ,cost-effective desktop-based solution using python.It integrates audio alert and location tracking with email communication ,making it easy to use and accessible,Compared to traditional systems, this approach provides a lightweight and efficient alternative for enhanching women safety in emergency situations.

III. PROPOSED SYSTEM

The proposed Women safety SOS system is designed to provide immediate assistance during emergency situations through a simple and user- friendly interface.The system consists of a graphical user interface with a single SOS button that can be activated insantly. When the user presses the SOS button,multiple safety actions are triggered simultaneously .An emergency audio alert is played to attract nearby attention,while the system capturs the users current location using ip-based geolocation techniques .The location is then converted into a Google Maps link for easy access and navigation In addition to the audio alert and location tracking ,the system automatically sends an email to predefined emergency contacts containing the users location and captured information. The integration of these features ensures quick communication and faster response during critical situations.The system is developed using python and incorporates modules for GUI, location tracking ,email communication ,and multimedia handling .This approach makes the system efficient, cost-effective, and easy to deploy without requiring additional hardware components.

IV METHODOLOGY

The methodology of the proposed Women Safety SOS system focuses on providing a quick and efficient response during emergency situations through the integration of multiple functionalities.The system is developed using Python and follows a structured Process that begins with user interaction and ends with alert generation and communication .A graphical user interface(GUI) is created using Tkinter,which provides a simple SOS button for user activation .This ensures that the system can be easily operated even under stressful conditions.when the user presses the SOS button ,the system intiates a sequence of operations .First an emergency audio alert is generated using the pygame module to attract the attention of nearby individuals.Simultaneously ,the system captures the users current location using the geocoder module,which retrives latitude and longtitude based on IP tracking. These coordinates are then converted into a Google Maps link for easy identification of the users position.Next ,the system sends on automated email to predefined emergency contacts using the SMTP protocol.The email contains the generated Google Maps link and additional information to help responsers locate the user quickly.In some implementations,a webcam is activated using OpenCV to capture an image, which can be attached to the email as evidence.Additionally, the system may open WhatsApp wb with prefilled emergency message to enable faster communication.the entire process is executed within a few seconds, ensuring minimal delay in emergency response.The integration of audio alert, location tracking, and automated communication makes the system reliable and efficient.This metholodology emphasizes simplicity, speed,and effectiveness,making it suitable for real-time safety application.

V EXISTING SYSTEM

Existing women safety systems mainly rely on mobile applications,wearable devices,and manual communication methods such as phone calls and text messages.Many mobile-based safety application provide features SMS alerts,GPS location sharing, and panic button .Some advanced systems use wearable gadgets equipped with sensors and GPS modules to send alerts automatically.In addition,certain solutions integrate internet of Things(IOT) devices and GSM modules to provide real-time communication with emergency contacts.However,these existing systems have several limitations. Most of them depend heavily on smartphones,continuous internet connectivity,or additional hardware components,which may not always be available during emergency situations.Some applications require multiple steps to activate alerts,making them less effective in critical moments.High cost,complex setup,and dependency on external services also reduce their usability.Due to these challenges,there is a need for a simpler,cost-effective,and easily accessible solution that can provide quick emergency alerts without complicated operations.

VI OBJECTIVES

The main objectives of the proposed Womens Safety SOS systems are:

1. To develop a simple and user-friendly emergency alert system
2. To provide a one-click SOS activation for quick response
3. To generate and share real-time location using Google Maps
4. To send automatic email alerts to predefined emergency contacts
5. To trigger an audio alarm to attract nearby attention
6. To captures evidence (photo) during emergency situations
7. To reduce response time in critical conditions
8. To create a cost- effective and easily deployable safety solution.

VII RESULT AND DISCUSSION

The proposed Women Safety SOS system was successfully implemented and tested under different conditions.The system demonstrated its ability to provide immediate response when the SOS button was activated.Upon pressing the button, the alarm sound was triggered instantly, attracting nearby attention.At the same time, the system captured the users location accurately and generated a Google Maps link.The email alert,along with the location link and captured photo,was successfully sent to the predefined emergency contact within a few seconds.Additionally,the WhatsApp feature opened with a pre-filled emergency message, enabling quick communication.The results indicate that the system is efficient,reliable,and easy to use in real -time scenarios,The integration of multiple features such as audio alert,location tracking,and automated communication enhances the effectiveness of the system.However,certain limitions were observed,such as dependency on internet connectivity for sending emails and location accuracy based on network conditions.Despite these limitations the system performs well as a low-cost and pratical solution for improving women safety. The overall performance shows that the proposed system can significantly reduce response time and provide immediate assistance during emergency situations.

VIII CONCLUSION

The Women Safety SOS system provides an effective and reliable solution to address emergency situations faced by women.By integrating key features such as audio alert,real -time location tracking,photo capture,and automated email communication,the system ensures quick response and immediate assistance.The one-click SOS mechanism makes it easy to use even under stressful conditions,reducing the time required to seek help.The implemention using python technologies makes the system cost-effective and easy to deploy without the need for additional hardware.Although the system depends on internet connectivity for certain functionalities, it still proves to be a pratical and efficient safety solution.Overall,the proposed system enhances personal security and can play a significant role in improving women safety.Future improvements can further extend its capabilities by integrating mobile applications,live tracking. And advanced communication features.

IX FUTURE ENHANCEMENTS

The proposed Women Safety SOS system can be further improved by incorporating several advanced features to enhances its functionality and realiability.One major enhancement is the integration of a mobile application, which would allow direct phone calls,SMS alerts,and better access to device sensors such as GPS for more accurate location tracking.Additionally,real-time continuous location tracking can be implemented to provide live updates of a single location snapshot.Further improvements may include live audio recording and video capture during emergency situatios,which can be sent to emergency contacts as evidence. The system can also be enhanced with cloud storage to maintain SOS history and data logs for future reference.Integration with advanced communication services such as automated calling systems and direct WhatsApp messaging APIs can make the alert process fully automatic. Moreover,adding features like voice activation,hidden (stealth)mode,and AI-based threat detection can significantly improves th systems effectiveness.These enhancements will make the system more robust,intelligent,and suitable for real-world deployment.

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