iJRASET
International Journal For Research in Applied Science and Engineering Technology



INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 14 **Issue:** III **Month of publication:** March 2026

DOI: https://doi.org/10.22214/ijraset.2026.78105

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 14 Issue III Mar 2026- Available at www.ijraset.com

Women Security with SMS Alert Based Code Word - Android App

Charumathi M[1], Dr. K. Banuroopa[2]
[1]*Student,* [2]*Associate Professor, Department of Information Technology, Dr. N.G.P Arts and Science College, Coimbatore, Tamil Nadu, India*

Abstract: ***The increasing number of harassment and assault incidents in public and private environments has intensified the demand for reliable and technology-driven women safety solutions .Traditional safety applications primarily rely on manual activation methods such as panic buttons or emergency calling features, which may not be practical during situations involving panic, fear, or physical restriction .These limitations highlight the necessity for a more responsive and hands-free emergency assistance mechanism.To address these challenges, this paper proposes a voice-activated women safety system that utilizes a predefined emergency code word for automatic threat detection .The proposed model continuously monitors ambient audio input and detects the emergency trigger phrase using a voice recognition module .Upon successful detection, the system immediately retrieves the user's real-time location through Global Positioning System (GPS) services and generates an automated alert message containing location coordinates and emergency information.The alert is transmitted to pre-registered emergency contacts, including trusted individuals and nearby authorities, ensuring rapid communication and assistance .By integrating voice-based activation, real-time location tracking, and automated alert messaging, the system eliminates the need for manual interaction and significantly reduces response time .Furthermore, the architecture is designed to be scalable and adaptable for future integration with IoT-enabled wearable devices and smart monitoring systems .Experimental evaluation indicates that the proposed framework enhances accessibility, improves emergency response efficiency, and provides a more reliable and discreet safety mechanism compared to conventional women safety applications .***

Keywords: Women Safety System, Voice Recognition, Emergency Code Word, GPS Location Tracking, Real-Time Alerts, Mobile Security, IoT Safety

I. INTRODUCTION

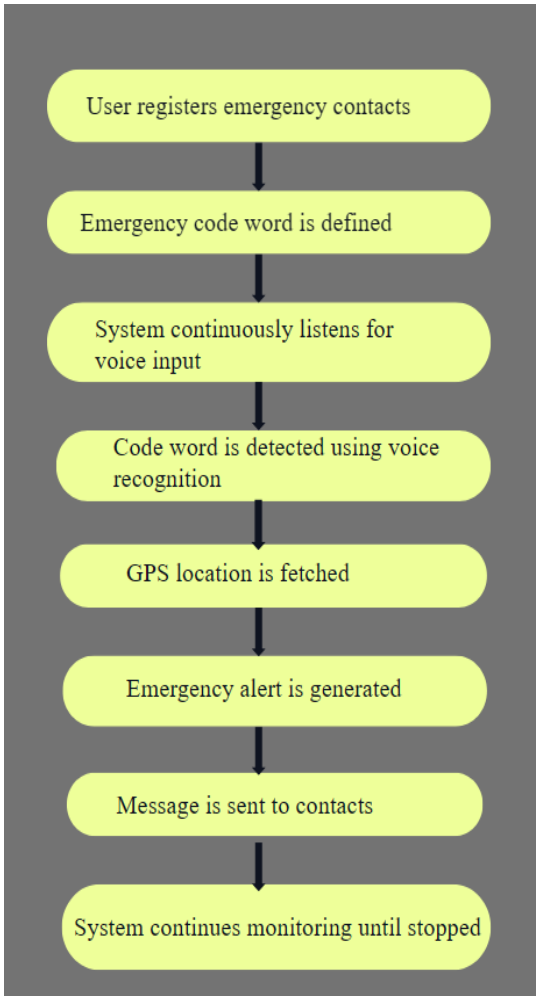
The rapid growth of urbanization and digital connectivity has significantly increased the exposure of women to safety risks in public and private environments.Despite technological progress and the availability of emergency communication systems, incidents such as harassment, stalking, and physical violence continue to be reported globally.Traditional safety mechanisms including helpline numbers, emergency call services, and law enforcement support rely heavily on the victim's ability to manually initiate communication during distress situations.However, in real-world emergency scenarios, individuals may experience panic, fear, or physical restriction, which limits their ability to access mobile devices or navigate safety applications efficiently.These limitations highlight the urgent need for advanced and automated women safety systems that ensure faster and more reliable emergency response.Existing mobile-based safety applications primarily incorporate features such as panic buttons, live location sharing, and alert notifications.Although these features improve emergency preparedness, they still depend on manual activation and user interaction.Furthermore, unlocking the device, opening the application, and pressing the emergency trigger may consume valuable time during critical situations.Such operational delays may reduce the effectiveness of conventional safety applications and increase vulnerability during high-risk circumstances.Recent advancements in voice recognition technology and smart sensing systems have created new opportunities for developing hands-free emergency response mechanisms.Voice-based activation enables users to trigger alerts using predefined spoken commands, eliminating the need for physical interaction.By leveraging continuous audio monitoring and intelligent keyword detection, emergency alerts can be initiated discreetly and instantly.

II. LITERATURE REVIEW

Women safety has become a significant area of technological research due to the increasing number of harassment and emergency incidents reported globally.Several mobile-based safety applications have been developed to assist women during distress situations.Most existing systems are designed around an SOS button mechanism, where the user must manually press an emergency button to send alerts to pre-registered contacts along with GPS location details[1].

©IJRASET: All Rights are Reserved

These systems are widely adopted because of their simplicity and ease of implementation. However, SOS-based applications have certain limitations. They rely entirely on manual activation, which may not be feasible during situations involving panic, shock, or physical restraint.In real-world emergencies, victims may be unable to unlock their devices or navigate applications quickly.This delay can significantly affect the response time and overall effectiveness of the safety mechanism.Some research efforts have introduced wearable safety devices such as smart bands and portable alarm systems that trigger alerts when pressed[4].Although these solutions provide portability, they still depend on physical interaction and may not function effectively if the device is inaccessible or forcibly removed.Recent advancements in voice recognition technology have opened new possibilities for hands-free emergency activation systems[5].Voice-based triggering mechanisms allow users to initiate actions using predefined spoken commands.However, many existing implementations are either not continuously active in the background or are not specifically optimized for women safety applications.Based on the analysis of existing literature, it is evident that while several safety solutions are available, there remains a gap in developing a fully automated and discreet emergency response system.The proposed system addresses this gap by introducing a voice-activated emergency code word mechanism that continuously monitors audio input and automatically sends real-time location alerts to trusted contacts upon detection[6].This approach minimizes manual effort, reduces response delay, and enhances reliability during critical situations.



III. METHODOLOGY

A. User Registers Emergency Contacts

The system initially requires the user to register trusted emergency contacts within the application.These contacts may include family members, friends, or guardians who can provide immediate assistance during emergencies.The contact details are securely stored in the internal database and are utilized during alert generation[2].This one-time configuration ensures that notifications are transmitted only to verified and authorized recipients.

B. Emergency Code Word is Defined

A predefined emergency code word is configured during the registration process[3].This code word functions as a confidential trigger phrase that activates the safety mechanism.The user selects the phrase to maintain privacy and prevent accidental activation.The code word is securely stored and later used for comparison during the voice detection process[4].

C. System Continuously Listens for Voice Input

Once activated, the system operates in the background and continuously monitors audio input through the device microphone[5].The listening module is optimized to minimize power and resource consumption while maintaining responsiveness.Continuous monitoring ensures that the system remains prepared to detect emergency triggers at any time[6].

D. Code Word is Detected Using Voice Recognition

The captured audio input is processed using a voice recognition module[7].Spoken words are converted into textual form and matched against the predefined emergency code word stored in the system database.If a match is detected, the system validates the trigger condition and initiates the emergency response protocol[8].

E. GPS Location is Fetched

Following successful code word detection, the system accesses the device's Global Positioning System (GPS) services to retrieve real-time location data[3].The geographical coordinates, including latitude and longitude, are extracted to accurately determine the user's position.This information is essential for enabling precise location tracking during emergency situations.

F. Emergency Alert is Generated

An emergency alert message is automatically generated once the trigger condition is confirmed.The alert includes a predefined distress notification along with the user's real-time location details.The message is formatted clearly to ensure that recipients understand the urgency of the situation.

G. Message is Sent to Contacts

The generated alert is immediately transmitted to all registered emergency contacts through SMS or internet-based communication services[5].The system prioritizes rapid message delivery to reduce response time and enable quicker assistance from trusted individuals.

H. System Continues Monitoring Until Stopped

After sending the alert, the system continues monitoring the user's location and surrounding conditions[15].The safety mechanism remains active until manually deactivated by the user or until the emergency situation is resolved.Continuous monitoring enhances safety assurance and supports extended tracking if necessary[16].Bottom of Form

IV. RESULTS AND DISCUSSION

The system was tested under various conditions to evaluate its performance.The voice recognition module successfully detected the emergency code word with high accuracy.Alert messages were delivered within seconds, significantly reducing response time.The system proved to be more efficient compared to manual panic-button-based applications.By integrating voice recognition with real-time GPS location tracking and automated alert messaging, the system significantly reduces response time and ensures immediate communication with trusted contacts.The architecture is simple, scalable, and efficient, making it practical for real-world deployment.Overall, the system enhances personal safety by combining accessibility, speed, and automation in a single unified framework.

A. Comparison with existing systems

This comparison shows that the proposed system provides improved automation, faster activation, and better usability during emergency situations.

Parameter	Existing Women Safety Apps	Proposed Voice-Based System
Activation Method	Manual panic button	Manual panic button
User Interaction	Required	Not required
Response Time	Moderate	Very Fast
Device Unlock Needed	Yes (in most cases)	Not mandatory
Real-Time Location Sharing	Available	Available (Automatic)
Discreet Usage	Limited	High
Automation Level	Partial	Fully Automated

B. Discussion of Result and Performance

The proposed voice-activated women safety system was evaluated based on response time, trigger accuracy, and reliability of alert transmission[1].Experimental observations indicate that the voice recognition module successfully detected the predefined emergency code word with high consistency under normal environmental conditions.The background listening mechanism ensured minimal delay between code word detection and alert generation, thereby significantly reducing response time compared to manual SOS-based systems[2].

The integration of real-time GPS tracking further enhanced system performance by providing accurate location coordinates at the time of emergency activation[3].In contrast to conventional panic-button applications that require multiple steps for activation, the proposed system demonstrated faster execution due to its hands-free triggering mechanism[4].The automated workflow—from voice detection to alert delivery—was completed within a short time frame, ensuring immediate communication with registered contacts.

Overall, the performance analysis confirms that the system improves emergency responsiveness, reduces human interaction dependency, and enhances operational efficiency during critical situations[5].

C. Security and System Feasibility

Security and privacy are essential considerations in women safety applications.The proposed system ensures that emergency contacts and user information are securely stored within the application database[6].The predefined code word is protected to prevent unauthorized modification or misuse.Additionally, location data is accessed only during emergency activation, minimizing unnecessary exposure of personal information[7].

From a feasibility perspective, the system is designed to operate on standard smartphones without requiring additional hardware components[8].The use of built-in microphone and GPS services makes the solution cost-effective and easily deployable.Since the system functions in the background with optimized resource consumption, it does not significantly impact battery life or device performance[9].Furthermore, the architecture is scalable and can be extended for integration with wearable devices, cloud monitoring systems, or direct communication with emergency services[10].This flexibility enhances the practical applicability of the system in real-world environments.

©IJRASET: All Rights are Reserved | SJ Impact Factor 7.538 | ISRA Journal Impact Factor 7.894 |

D. Result

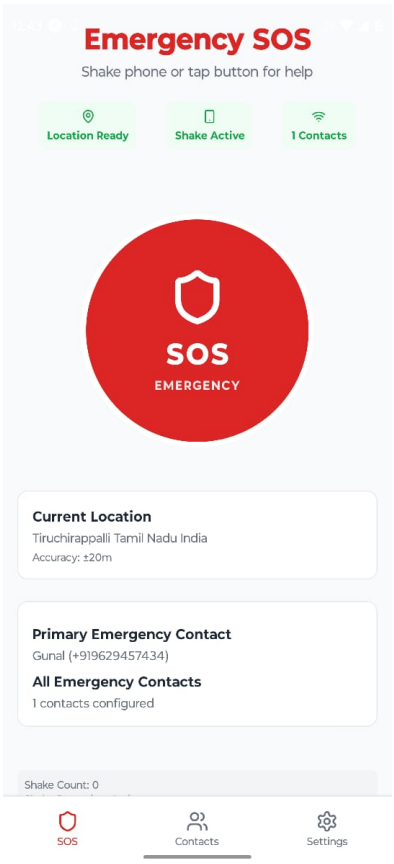
Result Summary

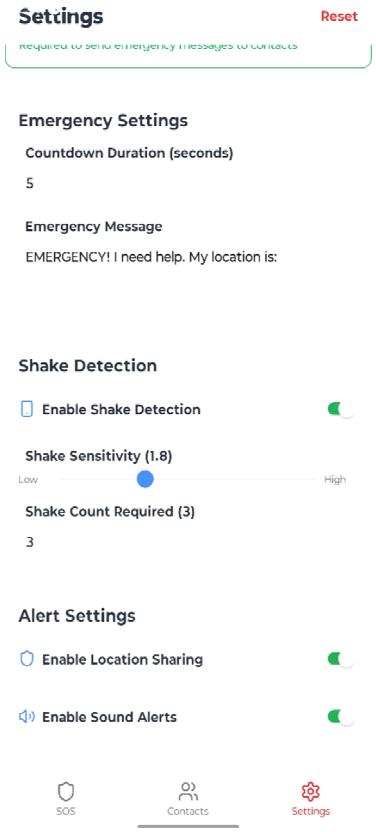
The results demonstrate that the proposed women safety system offers improved automation and faster emergency response compared to traditional SOS-based applications[11].The voice-triggered activation mechanism eliminates the need for manual interaction, thereby increasing usability during panic or physically constrained situations[12].

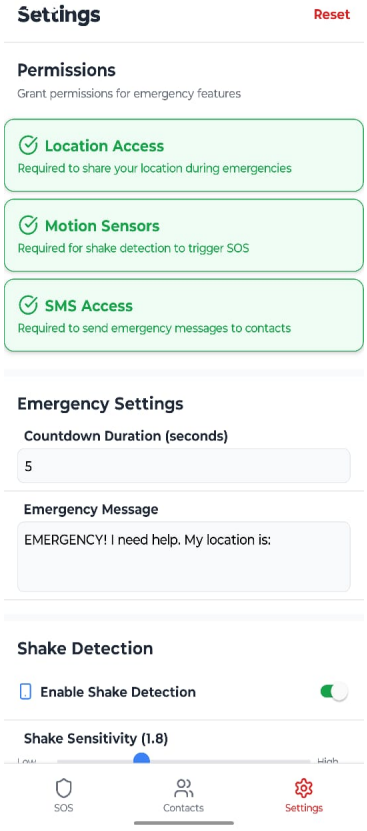
By combining voice recognition, real-time GPS tracking, and automated alert messaging, the system provides a comprehensive safety framework[13].The evaluation confirms that the proposed approach enhances accessibility, reduces response delay, and strengthens personal security measures.These findings highlight the effectiveness of integrating intelligent voice-based activation into women safety applications[14].

V. CONCLUSION AND FUTURE SCOPE

The proposed Women Safety System based on voice-activated emergency code word detection provides a reliable, automated, and rapid emergency response mechanism[1].Unlike traditional safety applications that depend on manual interaction such as pressing an SOS button, the proposed system operates through a hands-free voice trigger, making it highly effective during panic situations or physical restriction[2]. By integrating voice recognition technology with real-time GPS location tracking and automated alert messaging, the system significantly reduces response time and enhances accessibility during critical events[3].The experimental evaluation confirms that the automated workflow improves efficiency, reliability, and user convenience when compared to conventional safety applications[4].



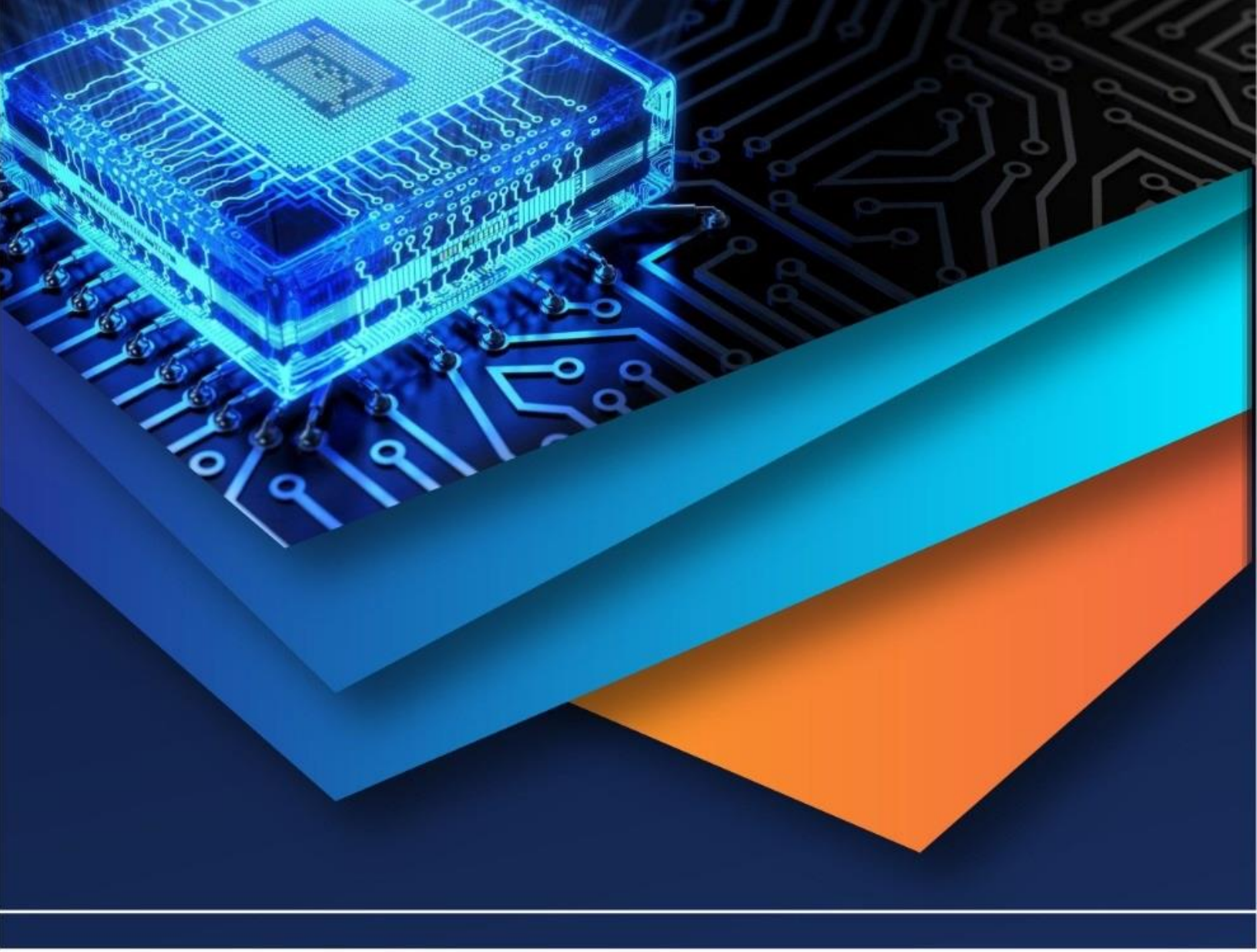




Although the current implementation offers an effective and practical safety solution, further enhancements can strengthen its functionality and scalability[5].Future developments may include integration with police control rooms and official emergency services to ensure faster institutional response, incorporation of AI-based voice stress detection for automatic threat identification, andsupport for wearable devices such as smart bands for improved portability[6].Additionally, implementing offline voice recognition capability, live audio recording, cloud-based monitoring systems, and continuous route tracking features can enhance situational awareness and long-term safety monitoring[7].With these advancements, the proposed framework has the potential to evolve into a comprehensive and intelligent smart safety ecosystem designed to provide enhanced protection and real-time support for women in diverse environments[8].

REFERENCES

[1] P. Sravani, B. Sindhu, N. Shashank, P. Pranaya, and S. Tejaswi, “Women Safety System Using GPS and GSM Tracking,” International Journal of Engineering and Science Research, vol. 15, no. 2, pp. 738–748, 2025.
[2] Dr. Sujata Mallapur et al., “IoT-Powered Emergency Button for Women’s Safety,” Journal of Scientific Research and Technology, vol. 3, no. 7, pp. 297–308, July 2025.
[3] Rutuja Bhor, Sawali Bhor, Sairaj Jadhav, A.S. Bhor, and R.M. Muljakar, “Women Safety Using GPS Tracking,” Int. J. Sci. Inno. Eng., vol. 2, no. 11, pp. 688–692, Nov. 2025.
[4] Jaydip Bengare, Ravindra Jadhav, Gaurav Kapale, and Rushikesh Chandan, “Android-Based Women Safety Application with Real-Time Alerts and Location Tracking,” Int. J. Sci. Inno. Eng., vol. 2, no. 10, pp. 1400–1406, Oct. 2025.
[5] D. Evangline Nesa Priya and Nathiya A., “SafeAlert – A Real-Time Women’s Safety System,” International Journal of Advanced Research in Computer and Communication Engineering, 2025.
[6] S. R. Abhiraj, A. Nizar, A. Vijay, S. Rahna, and G. S. Anju, “A Comprehensive IoT-Based Unified Approach for Women Safety Alerts Using GSM,” IJRAMT, vol. 5, no. 5, pp. 67–70, May 2024.
[7] Himanshi and Nischla Suman, “A Comprehensive Literature Review on Women Security Model-Smart Location Tracking and Emergency Alert System,” Int. J. Electr., Electron. Comput. Eng., vol. 14, no. 1&2, pp. 26–28, 2025.
[8] Thippeswamy C., Sireena Bhanu G., Rahul D., Sindhu Priya G., and Prabhakar B, “Real-Time Women Security Assistance System with Enhanced Features,” Journal of IoT in Social, Mobile, Analytics, and Cloud, vol. 7, no. 4, pp. 309–321, 2025.
[9] IEEE Xplore Digital Library,K. Sharma and R. K. Singh, Smart Women Safety Systemwith anIoT and GPS Tracking.2024 IEEE International Conference on Smart Technologies.
[10] Elsevier,M. Kaur and P. Kaur, An Intelligent WomenSafetySystem based on mobile Sensing andCloud-based Alert Systems.FutureGenerationcomputer systems, 2023.



10.22214/IJRASET

45.98

IMPACT FACTOR: 7.129

IMPACT FACTOR: 7.429

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Call : 08813907089 (24*7 Support on Whatsapp)