Women Safety Wearable Device Using IOT

Dr.D.Kumutha1 ,Adhiyamaan N S2 ,Gugan R3, Gokulnath V4

*1\*Department of ECE, Jeppiaar Institute of Technology, Kunnam, Sriperumbudur, TN, India*

*2\*Department of ECE, Jeppiaar Institute of Technology, Kunnam, Sriperumbudur, TN, India*

*3\*Department of ECE, Jeppiaar Institute of Technology, Kunnam, Sriperumbudur, TN, India 4\*Department of ECE, Jeppiaar Institute of Technology, Kunnam, Sriperumbudur, TN, India*

1skvijaykumugmail.com,  2adhiyamaan2003@gmail.com, 3guganramesh716@gmail.com,

4gokulreigns04@gmail.com

**ABSTRACT**

This project aims the development of devices and systems that leverage the connectivity and data processing capabilities of IoT to enhance the safety of women in various scenarios. Women’s safety is a pressing concern in today’s society and the advancement of IoT technology offers a promising solution. The project is to design a system to detect potential threats, alert emergency services, measure blood pressure and temperature , provide real-time tracking for loved ones. It employs IoT sensors for environmental monitoring and wearable devices for individual tracking. A secure cloud infrastructure collects, stores and processes data, emphasizing data integrity and security. Machine learning algorithms analyse the data, identifying potential safety risks and detecting unusual patterns. The device features a versatile alert system communicating through SMS or email, ensuring swift responses in emergencies. The system is designed for scalability, integrating with existing safety structures, and undergoes rigorous testing for reliability. The wearable device offers a holistic safety solution and the integration of machine learning ensures proactive threat detection. A user-friendly interface enables easy monitoring and settings management. By combining IoT, cloud technology and machine learning, it aims to create a robust and adaptable safety system, fostering a safer environment for women in various scenarios.

**Keywords:**

Wearable, Women safety, Threat Detection, IoT, Real time tracking, Alert system.

LITERATURE REVIEW

[1] The paper introduces a smart wearable device for women's safety utilizing IoT technology, addressing the global concern of violence against women. The device, programmed using Arduino IDE, includes GPS tracking, a camera module, SOS alerts, and SMS notifications to authorities and family members. It provides real-time tracking and assistance to women in danger, empowering them to travel safely and receive immediate help when needed. Overall, the project offers a promising solution to enhance women's safety and combat crimes against them through technological innovation.

[2] The paper reviews IoT-based devices aimed at improving women's safety by addressing issues like harassment, molestation, and abuse. It covers research articles from 2016 to 2022 and identifies common features, sensors, technologies, and machine learning algorithms used in these devices. Key findings include the prevalent use of pulse-rate and pressure sensors, technologies like GPS and GSM for alert transmission, and algorithms such as logistic regression for threat identification. The study proposes a taxonomy for categorizing these devices and highlights challenges like the need for improved accuracy and auto-activation of alerts. It suggests an architectural model for future development. Methodologically, 34 research articles were reviewed, and disagreements among reviewers were resolved for reliability. Overall, the paper provides insights into current devices, areas for improvement, and a framework for future research and development in this area, beneficial for both researchers and practitioners.

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[3] The paper introduces a safety device designed specifically for women to address the increasing concerns of personal safety and the prevalence of abuse and violence. The device takes the form of a smart band or watch, equipped with various sensors for swift response and reporting in dangerous situations. When activated by pressing a button, the device sends vital information such as location, body posture, and pulse rate to a predefined contact via GSM through Raspberry Pi. Additionally, GPS capabilities allow for the exact location of the victim to be transmitted, aiding authorities in locating and assisting the victim promptly. The integration of IoT technology enables remote tracking of women's information, ultimately contributing to the reduction of crimes against women. Overall, the device aims to empower women by providing them with a means to quickly alert their guardians and authorities in times of distress, thereby enhancing their safety and security.

[4 The paper proposes leveraging Internet of Things (IoT) technology to enhance women's safety, particularly addressing concerns such as workplace challenges and instances of sexual harassment. It introduces a smart security system with alarm functionality, utilizing Arduino technology. The system aims to send SMS alerts to the victim's relatives during critical situations and includes a robber alert feature for unauthorized intrusion detection. Key components involve Arduino UNO, GSM, GPS, and various sensors. While offering reliability and user-friendliness, potential limitations include failure in closed areas. Future work could explore real-time GPS tracking and broadcasting danger messages to communities. Overall, the system aims to contribute to smart city concepts and address women's safety concerns effectively.

[5] The paper addresses the escalating issue of women's safety, particularly in India, proposing a solution through a smart wearable device called Smart Wearable Equipment (SWD). This device utilizes Internet of Things (IoT) technology, incorporating features like a piezo buzzer and GPS sensor, along with machine learning strategies. When activated, the SWD sends the user's location to contacts, initiates calls to family and authorities, and emits a high-frequency sound to alert nearby individuals. It leverages real-time datasets for accuracy and aims to further enhance its effectiveness through deep learning processes. Ultimately, the SWD aims to provide women with enhanced safety measures in challenging situations.

[6] The paper introduces Blink Talk, a novel machine learning-based approach for women's safety. It utilizes EEG signals and blink detection algorithms to detect emotions, particularly fear. The system sends alerts to contacts and police stations when fear is detected. Experimental results show 98.04% accuracy, outperforming traditional methods. The approach suggests potential for further development using deep learning techniques. Overall, Blink Talk offers a promising solution for enhancing women's safety.

[7] The paper addresses the pressing issue of women's safety in public spaces by proposing a smart security wearable device based on the Internet of Things (IoT). Named SMARISA, the device takes the form of a smart ring and includes components such as Raspberry Pi Zero, a Raspberry Pi camera, a buzzer, and a button for activation. When activated by the victim, typically in response to an assault, the device swiftly captures the attacker's image and retrieves the victim's current location. This information is then sent to predefined emergency contacts or law enforcement personnel via the victim's smartphone. Importantly, the device is designed to be compact and portable, utilizing existing smartphone technology to transmit alerts and images, thereby minimizing the need for additional hardware modules. Overall, SMARISA offers a practical solution to enhance women's safety in public spaces by leveraging IoT technology for swift response and reporting of incidents.

[8] The paper addresses the pressing issue of women's safety by proposing a wearable smart device integrated with various sensors and a microcontroller, coupled with an Android-based phone app. This system aims to provide real-time alerts and location-based intelligence to users in distress. The smart wearable device includes sensors such as temperature and pulse sensors, which send signals to the microcontroller connected to GPS and GSM modules. When distress signals are detected, the GSM module alerts relatives and contacts the nearest police station via a dedicated mobile app. Simultaneously, the GPS module sends location details through the mobile app. The primary objective of the proposed model is to enhance women's safety in public spaces, with the key advantage being its compact and portable design, allowing users to wear it anywhere.

[9] The paper addresses the pressing issue of women's safety, particularly in light of rising incidents of harassment, assault, and kidnapping. It highlights the prevalence of these crimes and the need for comprehensive protection frameworks for women. Recognizing the potential of the Internet of Things (IoT) to enhance living standards, the paper explores its application in women's safety, leveraging low-cost sensors and connectivity. The study compares various women safety devices incorporating sensors and microcontrollers, detailing their inputs, outputs, advantages, and disadvantages. The primary focus is to ensure maximum security for women through a range of parameters and safety devices. Overall, the paper contributes to the understanding of how IoT technology can be utilized effectively to address the safety concerns of women.

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[10] This paper introduces a women's safety device designed for application in India to address the prevalent issue of attacks against women. The device serves as an emergency tool, activated by pressing a panic button when the woman is in danger. Upon activation, it sends an SMS to pre-set mobile numbers containing the woman's coordinates, allowing recipients to locate her using Google Maps and provide appropriate assistance. The concept arose from the alarming rates of crimes against women in India, aiming to mitigate such incidents. The device is touted as a cost-effective solution, providing real-time location to trusted contacts, thereby enabling swift preventive measures. The paper suggests downsizing the device by replacing the Arduino Uno with an Arduino Lilypad, allowing it to be seamlessly integrated into fabrics, and enhancing portability through the use of rechargeable batteries due to its low power consumption.

[11] This paper presents the development of a reliable and robust safety device aimed at notifying both the police and family members whenever the user senses a crisis. Leveraging connectivity technologies, such as GPS and GSM modules, the system tracks the user's current location and sends it to authorities via text message. Additionally, an RF module is incorporated to enhance the compactness of the control circuitry. The main objective of this project is to create a user-friendly personal security system to address critical safety issues faced by women. Unlike existing systems that rely on internet-connected apps or vehicle tracking, this proposed system offers a simpler and more accessible solution. By providing latitude and longitude coordinates of the user's location, which can be tracked using Google Maps, the system aims to reduce crime rates against women through real-time implementation.

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