CATALYZING WOMEN SAFETY: THE IMPACT OF IOT

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ABSTRACT:

The safety and security of women in today's society is a pressing concern, and technology plays a crucial role in addressing these issues. This abstract introduces a comprehensive approach to improving women's safety using the Internet of Things (IoT). IoT offers a versatile platform for developing innovative solutions that can significantly contribute to women's security. This paper discusses the design and implementation of an IoT-based system that integrates various sensors, devices, and data Analytics to create a robust women's safety ecosystem. The proposed system includes features such as real-time location tracking, emergency alerts, smart lighting, and predictive Analytics for identifying potentially unsafe areas. By leveraging the power of IoT, this system aims to empower women with a proactive and responsive safety solution, ultimately contributing to a safer and more secure environment for women. This research seeks to address the critical issue of women's safety by harnessing the potential of IoT, offering a scalable and effective approach to enhance security in both urban and rural settings.

INTRODUCTION:

Women's safety has emerged as a paramount concern in today's world, demanding immediate attention and innovative solutions. Gender-based violence, harassment, and the fear of unsafe environments often limit women's freedom and access to various opportunities. In this context, the fusion of Internet of Things (IoT) technology and women's safety presents a promising avenue for addressing these challenges. IoT, a network of interconnected devices and sensors, offers a platform for real-time data collection, analysis, and response. It has the potential to create safer environments for women by enabling smart solutions that enhance personal security and contribute to a broader societal change. This introduction delves into the significance of using IoT in the context of women's safety, shedding light on the opportunities and challenges that lie ahead.

1.The Significance of Women's Safety: Women's safety is not just a women's issue; it's a societal issue. Ensuring the safety and security of women is fundamental for the progress and well-being of any community. Empowered women contribute significantly to economic growth, social development, and the overall quality of life. However, the persistent threat of violence, harassment, and discrimination undermines this empowerment, making it imperative to find innovative ways to address these issues.

2 The Promise of IoT: IoT technology has permeated various aspects of our daily lives, from smart homes to industrial automation. In the realm of safety and security, IoT offers real-time monitoring and data-driven decision-making capabilities. This technology can be harnessed to create a more secure environment for women by enabling features such as location tracking, alert systems, and predictive Analytics.

3.Challenges to Women's Safety: The challenges to women's safety are multifaceted, ranging from physical assaults to cyberbully. Conventional safety measures are often insufficient, and women need more dynamic and responsive solutions. IoT can bridge this gap by providing a versatile and adaptive framework for enhancing safety.
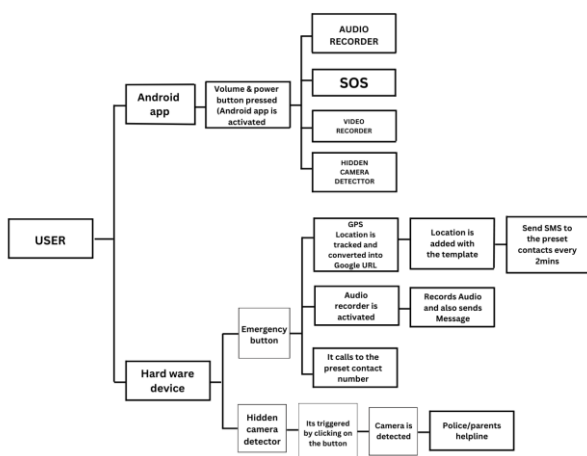
4.IoT for Women's Safety: The integration of IoT in women's safety solutions holds tremendous potential. Through this technology, personal safety devices, mobile applications, and public infrastructure can be interconnected to provide a holistic safety ecosystem. Real-time tracking, emergency alerts, and smart city initiatives can all play a role in creating a safer environment for women.

5.The Road Ahead: This paper explores the application of IoT technology in addressing women's safety concerns. It aims to highlight the various aspects of IoT-based safety solutions, such as device integration, data Analytics, and the role of public and private sectors in implementing these technologies. By examining the current state of IoT in women's safety and the challenges that lie ahead, this research seeks to pave the way for a safer, more inclusive world for women.
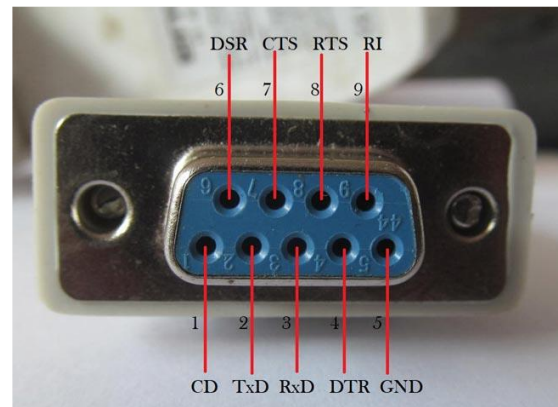
In conclusion, the introduction sets the stage for understanding the critical intersection of women's safety and IoT technology. It emphasizes the significance of addressing this issue and the potential of IoT in creating innovative, effective, and responsive solutions to empower and protect women in today's society

METHODOLOGY:

- **Hard Ware Device:** In our paper, we explain how our device can be turned on with a single press of the emergency button.

➢ This device is designed to activate itself when needed and immediately send your location and a distress message to preset police numbers using a GSM module

➢ The button that starts the device and what the device looks like are explained in our paper. When you quickly press the emergency button twice, the device not only sends a distress message with your location but also records the audio of the incident.

➢ When you press and hold the same button for a while, it calls the police and sends them your location right away.

➢ The location is located using GPS (UBLOX). The audio is recorded using audio recorder and call is made from GSM modem respectively .

➢ We find your location using a GPS system from UBLOX. We record audio with an audio recorder, and the call is made using a GSM modem.

➢ One advantage of using this modem is that it has an RS232 port, which allows you to communicate and create embedded applications. You can also use it to send and receive text messages or make and receive phone calls.

- **Android Applications:** Here's how the app works in a nutshell: When you open the app, it starts a process, and then it takes you to the main page with a simple user interface.

➢ You can pick an icon based on the issue, and it will provide guidance to the user in emergency situations.

➢ If you click on these icons, it will open pages for the hidden camera detector, women's security, SOS messages, and video recording.

In our app, the user can provide input either by using the app's interface or by using the volume buttons. To begin, the user simply taps the app icon to enter it.

➢ Next, a 2-second delay occurs, during which the application's name is shown on the screen. Once this short process is finished, the user interface, where you can use and interact with the application, appears on the screen.

➢ This page allows the user to engage with our application. When the user taps on each icon.

➢ Our application has four different icons, each serving a specific purpose: woman safety, SOS messages, video recording, and hidden camera.

➢ When you press the emergency button (which is a combination of the volume and power buttons), the app opens by itself. It then sends an emergency message, records audio, and sends all of this to the contacts you've set in advance.
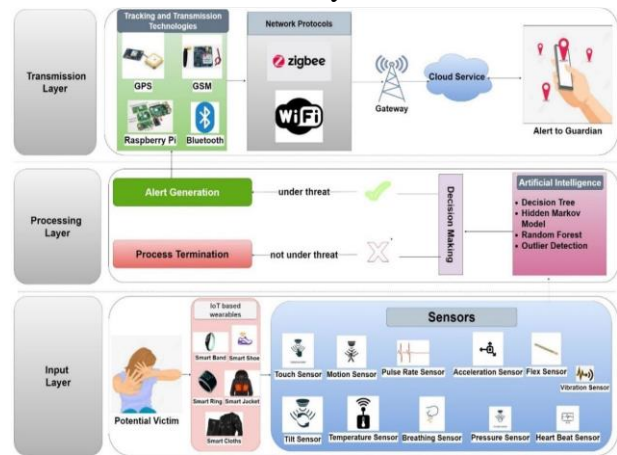
Figure: architectural model for IoT-based women's safety devices

The proposed system is designed to keep women safe by using wearable devices equipped with various sensors and technologies. These devices aim to detect if a woman is in danger. The architecture includes input, processing, and transmission layers.

- **Input Layer:**
➢ The wearable device has multiple sensors, like those measuring heartbeat, pulse-rate, motion, and temperature.

➢ These sensors are connected to the device worn by the woman and collect real-time data about her activities.

- **Processing Layer:**
➢ The collected data is sent to the cloud, where machine learning algorithms analyze it.

➢ The algorithms are trained to recognize patterns indicating whether the woman is under threat or not.

- **Transmission Layer:**
- ➢ If danger is detected, an alert is generated using tracking and communication technologies.
- ➢ GPS, GSM, Raspberry Pi, and Bluetooth are used to capture the victim's location and transmit the alert.
- **Alert Generation:**
- ➢ The system activates features like image capturing, location tracking, audio and video recording, and message sending.
- ➢ The alert is then sent to the guardian's device through the internet.
- **Additional Features:**
- ➢ The system includes shock generation as a defense mechanism
- ➢ It's designed to work without requiring constant human interaction.

CONCLUSION:

Researchers did a thorough review of 34 articles about IoT devices created for women's safety, focusing on issues like molestation, harassment, rape, and abuse. They collected these articles using various keywords and their alternatives.

To make sure they didn't miss anything, the researchers considered that some studies might use different words for the same thing. They sorted keywords into primary, secondary, and tertiary categories, combined them with Boolean operators, and had two independent reviewers classify the studies. If they disagreed, the authors discussed it until they reached a consensus, showing high agreement.

After looking closely at the chosen studies, the researchers found that IoT-based women's safety devices use different technologies, features, sensors, and machine learning. They organized these into categories to create a classification or "taxonomy" of these devices.

However, despite having unique features, these systems still have some flaws, making them not entirely effective against potential safety threats for women. The study highlights these gaps and challenges, suggesting an architectural model for future IoT-based women's safety devices as a recommendation. This information can be valuable for researchers to understand the latest developments in IoT-based women's safety devices and for practitioners to create more useful and effective devices in the future.

REFRENCE:

- B. R. Reddy, T. Sowjanya, N. B. Subrahmanayam, G. Mahantesh,S. Prudhvi, ''IOT based smart protective equipment for women,'' Mater. Today, Proc., vol. 80, pp. 2895–2900, 2023, doi:
- 10.1016/j.matpr.2021.07.058.
- N. R. Sogi, P. Chatterjee, U. Nethra, and V. Suma, ''SMARISA: A raspberry Pi based smart ring for women safety using IoT,'' in Proc. Int. Conf. Inventive Res. Compute. Appl. (ICIRCA), 2018, pp. 451–454.