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SMART SECURITY DEVICE FOR WOMEN SAFETY BASED ON IOT USING ATMEGA 328

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1. ABSTRACT:

The world is becoming unsafe for women in all aspects. The crime against women are increasing at a higher rate. The employed women are feeling unsafe due to increasing crimes.
According to the reports of WHO, NCRB-social-government organization 35%Women all over the world are facing a lot of unethical physical harassment in public places such as railway-bus stands, foot paths etc. Thus this project proposes the intelligent safety system for women to provides the safety measure in public places as well as travelling alone through public transports (school buses, company vehicle etc.). This project proposed a new model for the women security in public places which aims to provide the safety environment.

Keywords: Women safety, IoT Monitoring, emergency situation, security Device, real-time monitoring.

2. INTRODUCTION:

The Intelligent Safety System for Women Security using the ATmega328 microcontroller represents a crucial advancement in leveraging technology to address the safety concerns of women. Designed as a proactive solution, this system integrates cutting-edge features and the robust capabilities of the ATmega328 microcontroller to enhance personal security. Through a combination of sensors, communication modules, and smart algorithms, the system can detect potential threats and activate timely responses, providing women with an added layer of protection in various environments.

This innovative application of technology aims to empower women by fostering a sense of security and promoting their well-being in today's dynamic and diverse society. To address these issues, the automotive industry is exploring new technological solutions that can proactively detect and prevent such hazards.

The issue of women's safety has increasingly become a significant concern in contemporary society, particularly due to the rise in incidents of harassment and assault. To tackle this challenge, technology can serve a crucial role in enhancing safety and facilitating rapid responses during emergencies. This initiative introduces a Smart Security Device for Women, leveraging IoT (Internet of Things) technology and utilizing the ATmega328 microcontroller.

This device is engineered to be compact, portable, and wearable—available in forms such as a wristband or keychain—and can be activated in emergency situations. It features

range of sensors, including GPS, GSM, an accelerometer, and a heartbeat sensor, to monitor the user's location, identify unusual physical activities, and send immediate alerts to designated contacts or authorities. When
activated, the device transmits the user's location coordinates via SMS or through an IoT dashboard and can also activate an alarm or buzzer to draw attention from those nearby.

By employing the ATmega328, which is frequently found in Arduino UNO boards, the system remains cost-effective, efficient, and user-friendly for programming. The integration with IoT further enhances the device's functionality, allowing it to connect with mobile applications or cloud services for real-time monitoring and data logging. Consequently, this project aspires to deliver a dependable, accessible, and effective solution to enhance women's safety in both urban and rural settings

3. LITERATURE SURVEY:

1.Wearable Women Safety Device by Gautam C., Patil A., Podutwar A., Agarwal M., Patil P., and Apurva Abhijit Naik (2022)
This research introduces a safety device designed for women that utilizes the ESP32 microcontroller. It allows users to transmit their location to specified contacts in emergency situations while also tracking various health metrics, functioning similarly to a fitness band.

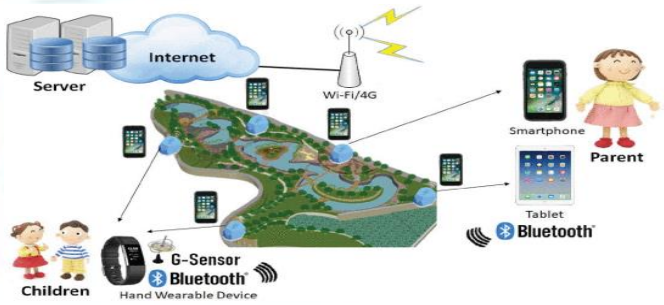
2.Design and Development of IoT-Based Women Auspice System Using NodeMCU by V. Voorwashi, T. Anuradha, and S. V. S. Prasad (2022)
This investigation presents a wearable device that leverages the NodeMCU microcontroller for monitoring health and ensuring women's safety. It incorporates sensors such as flex, pulse, and temperature sensors to identify emergencies and send alerts through the Blynk IoT application.

3.IoT-Based Wrist Band for Women Safety by V. Ebenezer, J. Uvaana Falicica, M. Roshni Thanka, Rithika Baskaran, Agatha Celesty, and Sejal R. Eden (2023)

This study centers on a wristband specifically designed for women's safety, featuring sensors that monitor pulse, temperature, and vibrations. The device transmits real-time updates to selected contacts via the Blynk app, thereby enhancing personal security.
4.IoT-Based Women Safety Gadgets (WSG): Vision, Architecture, and Design Trends by Saxena et al. (2023)
This article explores the architecture and design trends associated with IoT-based safety gadgets for women. It suggests a model for a wearable safety device that combines IoT and cloud technology to identify hazardous situations and promptly alert emergency contacts.

5.Microcontroller Based Women Safety Tracker Device by E. Swarnalatha, Rithesh Donthoju, Sekhar Rentapala, and Palakurla Bhumika (2024)
This paper introduces a tracker device based on a microcontroller, aimed at improving women's personal safety. The device integrates multiple sensors and communication modules to offer tracking and alert capabilities, providing a dependable and effective safety solution.

4. EXISTING SYSTEM



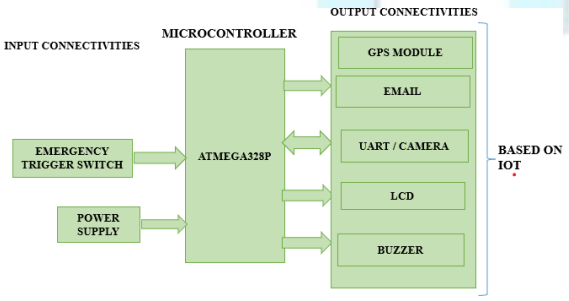
In this project, A crowdsourced children monitoring and finding (CCMF) framework to detect holding-up behaviors and find missing children using wearable devices and surrounding smartphones based on Internet of Things(IoT) technologies. In the CCMF framework can prevent young children from taking away by strangers/people with bad intentions. The CCMF framework can cooperatively find missing children

equipped with wearable devices consisting of mobile iBeacon and 3-axis

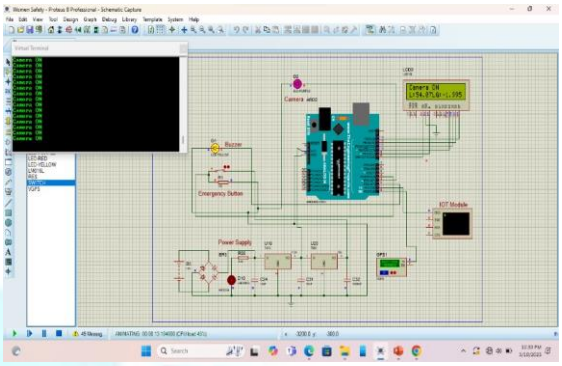
accelerometer modules through crowdsourced sensing networks formed by smartphone user with outdoor GPS and indoor IoT location. A target child and provide the guiding path to a lost child through crowdsourced sensing networks. An iOS-based prototype with Arduino wearable devices and mobile/static iBeacon nodes is implemented to verify the feasibility and superiority of our framework. The results that CCMF outperforms existing methods and can significantly increase recognition success rates and efficiently reduce false alarm rates of holding up detection.

5. PROPOSED SYSTEM:

In the event of a dangerous situation for women, the Intelligent Safety System employs a user- friendly switch for immediate activation. Once triggered, the system orchestrates a coordinated response: the camera captures real-time footage, and GPS coordinates are relayed for accurate location tracking. The information is then promptly displayed on the LCD screen, providing a quick visual alert. The Internet of Things (IoT) connectivity facilitates the transmission of data to a centralized monitoring system, ensuring real-time updates on the user's safety status, a buzzer is activated to attract attention and garner assistance swiftly. This integrated approach ensures a rapid and comprehensive response to enhance women's safety in critical situations.



6.RESULT:



7. CONCLUSION:

The proposed Smart Security Device for Women based on IoT and the ATmega328 microcontroller presents an effective, low-cost, and portable solution to address the increasing concerns around women's safety. By integrating essential components such as GPS, GSM, pulse and motion sensors, and connecting to IoT platforms, the device ensures real-time tracking and instant alerting to predefined contacts or emergency services in case of danger.

This proposed design will help to solve critical issues faced by women in the near past with technologically sound equipment's and ideas. While the society may or may not change for the enhanced, the power to be autonomous, self-assured and truly free can come with arming oneself with the best possible device.

The system leverages the capabilities of the ATmega328 for efficient control and processing, while IoT integration provides enhanced functionality like remote monitoring, cloud storage, and app-based alert systems. The compact and wearable nature of the device makes it user-friendly and practical for real-life applications.

Overall, this project contributes a significant step toward creating a reliable, accessible, and technologically advanced safety tool for women, with the potential for large-scale deployment and future enhancements such as voice commands, smart cameras, or AI-based threat detection.

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