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Smart Protective System for Women Safety

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Abstract -The number of incidents of violence against women has grown significantly in the modern era as a result of women's increasing exposure to all facets of society. It's become a significant problem. The rate of crime is rising. It has been horrifying to witness the rise in crimes against women, especially rape cases. Because of these assaults, women's protection in India has become a sensitive subject. Even with new laws, international accords, and the gender movement, women are still disproportionately vulnerable to attack. In light of all these problems, we suggested a gadget that would be really beneficial to ladies. The first of the system's four primary functions is to use GPS and GSM to broadcast the victim's position to re-programmed contact numbers.Second, she has the option to activate the buzzer, allowing anyone in the area to assist her in escaping her situation.The fourth major goal is that she can shock the abuser by simply flipping the other switch on and putting the gadget to his body, causing electricity to flow through him. The abuser won't die from the shock, but the ladies will have a chance to flee the scene.

***Key Words*:** Safety, Location, Alert, Technology, GSM, GPS.

1. INTRODUCTION

The idea that has been put up is to create a safety gadget that can sound an emergency alert and notify friends, family, or law enforcement. This will keep people vigilant and assist ladies or those who are worried throughout their difficulties. Tracking a place is made simple by this approach.

Statistics Show That 848 Indian Women Are Killed, Raped, and Harassed Every Day!." In order to effectively counter this, we created a strategy that allows women to independently handle any difficult situation. When women's accomplishments are more widely reported in the media than instances of harassment, it will be a noteworthy day!

Self-defense has become essential for a well-groomed 21st-century individual, and it may be accomplished with the aid of an easy-to-use safety gadget that has GPS tracking and alert.
We include a main switch in our emergency kit because when you press it, the battery will provide the necessary voltage to the preprogrammed controller, causing the components that are directly connected to the Atmega328 like the GSM, GPS, and shock circuit to function as intended.

2. LITERATURE SURVEY

This paper proposes a security system designed to enhance women's safety and provide essential security measures. The system incorporates various colorful modules such as GPS guard (SIM900A), Atmega328 board, Arduino Board, GPS module (GYGPS6MV2), Screaming alarm (ADR 9600), Pressure detector, and power force unit [1].

In this paper [2], an attempt is made to design a device named "Suraksha" to immediately alert the cops near the location from where the device is activated. This indeed provides worthy evidence against the crime.

In this paper, the authors have made advancement in the present existing device which could send an emergency message to the contacts feed by the user. When the attacker or the culprit touches the watch a shock is induced which tends the attacker to let go of the victim [3].

This paper presents wearable detector bumps that incorporate solar energy harvesting. It provides information on various detectors utilized for monitoring the health data of individuals. Additionally, the authors have developed an online platform to manage the collected data from the detectors [4].

In this paper, the authors uniquely try to develop a wearable smart band with an additional secret webcam to record important information and it is connected to Bluetooth [5].

Along with that the device also tracks the health of the person wearing it and monitors it using the device that's been connected. when the SOS button is pressed continuously having less or no delay, a message goes to the authorized person stating the person is in danger In this paper, the author describes their endeavor to create an Android application that triggers a vibrate detector upon launching the app. Additionally, whenever the user interacts with the phone's screen, the GPS and GPS module become active and capture the latitude and longitude coordinates, which are then transmitted to the application. The application forwards these values to the registered contacts specified by the user, ensuring the safety of women [6].

The proposed work focuses on designing and developing an electronic device that can automatically record instances of chain snatching, a criminal offense. However, it should be noted that this system has a limitation as it is only effective within a specific range [7].

Ensuring the safety of women has become an increasingly crucial issue in today's world. With the rise in night shifts for women in the IT industry, there is a pressing need for security solutions. This research paper presents a model that addresses the security concerns faced by women working during nighttime by incorporating features such as location tracking, self-defense mechanisms, and instant alerts. Additionally, the proposed system includes a health monitoring component to keep track of vital signs like heart rate and body temperature [8].

Every single day, women of all ages and backgrounds face the daunting challenge of ensuring their own safety and shielding themselves from the unwelcome attention of insensitive individuals who engage in acts of molestation, assault, and the violation of their dignity. Unfortunately, public spaces, including streets and transportation systems, have become hunting grounds for these predators. Given the prevailing circumstances of these distressing offenses against women, a proposal is put forth for a smart wearable device based on the Internet of Things (IoT) that aims to enhance women's security. This device takes the form of a compact and portable smart ring, referred to as SMARISA, and consists of components such as Raspberry Pi Zero, a Raspberry Pi camera, a buzzer, and an activation button. In the event of an assault, the victim can simply press the button on the ring, immediately capturing the assailant's image using the Raspberry Pi camera and retrieving the victim's current location. The captured image and location data are then transmitted to predetermined emergency contact numbers or the police via the victim's Smartphone. This innovative approach eliminates the need for additional hardware devices or modules, ensuring a compact and efficient security solution. [9].

In this paper “An Energy Harvesting Modeling and Profiling Platform for Body Sensor Networks” to monitor, record, analyze the person psychology, the behavior characteristics of a person and environment change in indoor and outdoor actions are analyze by wireless sensor device [10].

A social-government organization, a distressing 35% of women worldwide endure various forms of physical harassment in public spaces such as train stations, bus stops, sidewalks, and schools. Our collective aspiration is for a future where every woman can freely navigate the world without any fear. With this goal in mind, our focus shifts to personal security. This research paper primarily delves into the design and implementation of a prototype electronic device that holds the potential to serve as a safety wearable in the coming years. The device incorporates a pulse sensor to monitor abnormal health conditions and utilizes GPS technology to periodically send the user's location to emergency services, such as an ambulance, via SMS every 15 seconds. The GPS receiver retrieves location data, including latitude and longitude, from satellite signals. [11].

3. PROPOSED SYSTEM

The proposed device will build a circuit (an emergency kit) that can easily be carried by the victim, using which location tracking as well as alert will be issued whenever and wherever required.

Main components used are Atmega328 interface with GSM and GPS module for sending messages and getting the location coord inates respectively. So, the person associated with the device can ensure security, by switching the circuit on.

A circuit is provided with two more features namely, shock circu it and a buzzer. Both the components are provided with separate buttons for instantaneous shielding.

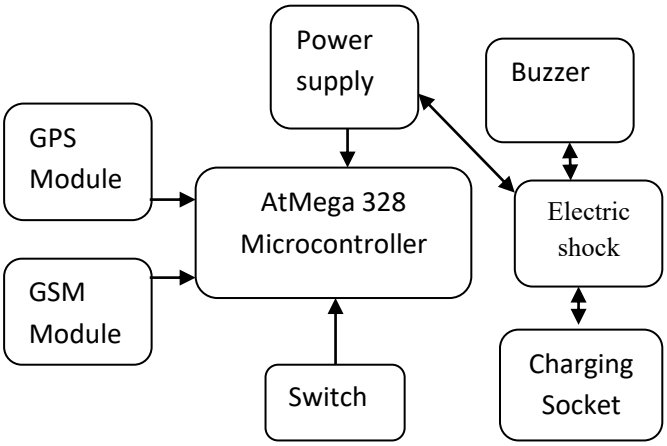

Fig 3.1 Block Diagram of Proposed System

4. SYSTEM DESIGN

The proposed device has an emergency alert system that notifies family members in real time in the case of an emergency and provides security. The device gives 2400V stun current for security and continuous location tracking as soon as the emergency button is touched.

The atmega328 controller is directly attached to the emergency key. By doing this, the controller is turned on and alerts other devices that have interfaced with it.

The GPS module will be used to gather the position coordinates at that precise moment, and the AT instructions of the GSM module will be used to send them via text message mode.

While tracking the position and displaying the message "location sent," the LCD attached to the Atmegs328 will display after coordinates are sent.

In less than one minute, the location coordinates and pulse rate will be sent. However, by adding the necessary delay, these parameters can be reached in a gap of two or three minutes.

Our package has two additional parameters—a buzzer and a shock circuit—for further security. These two halves are pressing different buttons. In that scenario, a buzzer will emit a constant beeping sound and transmit the location when a button is pressed to inform those nearby.

The shock circuitry of a mosquito-repelling bat is utilized for shock circuitry. A secondary button is included for quick

protection, and it will provide a milliamp shock enough to cause separation.

And the entire circuit will function in unison as a result of this operation. A 12 volt main supply will be used to deliver the necessary power to each component as needed.

5. RESULTS

The section presents the results of proposed design considering performance of hardware as well as software.

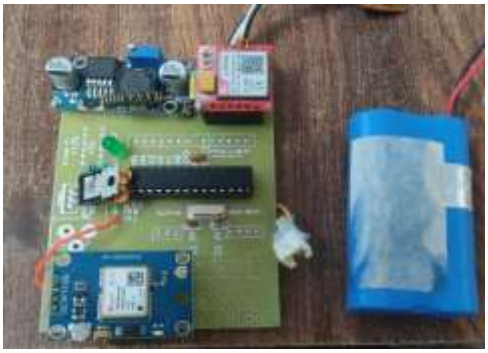

Fig 3.1 Hardware structure of Proposed System

Here, a complete hardware set is shown in the table below. To initiate the working it is required to connect the battery with a GPS module as it is a battery powered device. For configuring the device, the main switch is made on. The connection for the antenna of the GPS and GSM module is verified whether they are configured properly or not.

Fig 3.1 Electric Shock Circuit

As the black key is pressed, it will send location via SMS. The process begins and it will print “location sending” on LCD and “location sent” after completion of sending message for that interval. After that it will send the victim's location with the delay of one minute continuously, and will repeat the same process till the circuit is on.

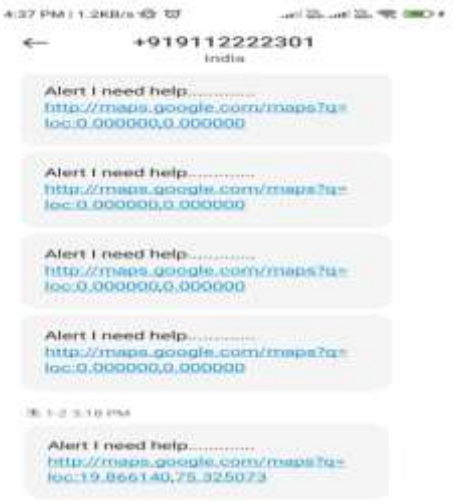

Fig 3.1 Alert Notification & Exact Location

By pressing the buzzer key it helps to keep others alert about pan ic situations by producing a beeping sound as soon as the key is pressed and at the same time location coordinates are getting sent .

Here for more protection, a shock circuit is provided which will generate a shock in milliamps , enough to move apart. It outputs the stun up to 2400v, 100mA

6. CONCLUSIONS

The Smart Protective System for Women Safety project successfully demonstrates how modern embedded technologies, IoT, and wireless communication can be integrated to provide an effective safety solution. By combining sensors, GPS, GSM modules, and microcontrollers, the system ensures real-time monitoring and immediate alert generation during emergency situations.

The prototype effectively tracks the user’s location, activates alerts at the press of a button or through automatic detection of abnormal conditions, and communicates with pre-registered contacts via SMS and/or cloud servers. This rapid response capability significantly enhances personal safety by enabling timely help from family members, authorities, or nearby individuals.

Overall, the system offers a **low-cost, portable, and reliable solution** that can empower women with an added layer of security in both urban and rural environments. With further advancements—such as integration with Smartphone applications, wearable designs, and AI-driven threat detection—the system can be scaled into a robust, real-time protective platform that contributes meaningfully toward ensuring women’s safety and independence.

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