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# WOMEN SAFETY DEVICE WITH GPS TRACKING

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**ABSTRACT:** Nowadays, the amount of violence against women has increased by many fold due to the greater exposure of women in every field of life. It has now become a major issue. The crime rate is on the spike. The recent spate of crimes against women, particularly rape instances, has been terrifying. Women's safety in India has become a contentious issue as a result of such crimes. Despite international agreements, new legislation, and gender movement, women continue to be particularly susceptible to assault. Looking towards all these issues, we proposed a device which will be really very helpful to women. The system serves three main purposes, first to send the victim's location to the preprogrammed contact numbers with the help of GPS and GSM. For this, here we are using an ESP8266 which can be interfaced with GSM and GPS module for sending SMS alerts and getting the location coordinates. Secondly it can generate emergency alarm. Along with this the third main purpose is that she can give a shock to the abuser just by turning the other shock sensor on and touching the device to the abuser's body so that current will pass through him. That shock will not kill the abuser but women will get a chance to escape from the location.

## INTRODUCTION

In an era where safety and security are paramount concerns, technology has emerged as a powerful ally in addressing the issue of women's safety. Women's safety devices equipped with GPS tracking have become an essential tool to provide an added layer of security for women of all ages. These innovative gadgets are designed to empower women by offering real-time location tracking, quick emergency response capabilities, and peace of mind when navigating various environments. Women's safety devices with GPS tracking are compact and discreet companions designed to

enhance personal security. They typically come in the form of small, portable gadgets that can be easily carried in a purse, pocket, or worn as a discreet accessory. These devices are designed to blend seamlessly into daily life, ensuring that women have access to safety features whenever and wherever they are needed.

One of the key features of these devices is their GPS tracking capability. GPS (Global Positioning System) technology allows these devices to accurately pinpoint the user's location in real-time. This information can be

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crucial in emergencies, as it enables quick response and assistance from authorities or loved ones. Whether a woman is walking alone at night, traveling to an unfamiliar place, or simply going about her daily routine, having the ability to share her location with trusted contacts is a significant safety asset.

Moreover, women's safety devices often come equipped with panic buttons or distress signals. In times of trouble, a simple press of a button can trigger an alert, notifying predefined contacts or a monitoring service. This immediate response capability can be a lifeline in situations such as harassment, assault, or medical emergencies, providing reassurance that help is just a button press away.

These devices are not limited to GPS tracking and panic buttons alone. Many models also offer additional safety features like audio and video recording, connectivity to smartphone apps, and even self-defense tools. These multifunctional devices are designed to cater to a wide range of safety needs, ensuring that women can choose the features that best suit their requirements.

## I. LITERATURE SURVEY

G. Bharathi, Z. Ramurthy, have proposed a microcontroller (LPC 2148), Global positioning system (GPS), and Global system for mobile Communication (GSM), and the receiver module includes mobile phone device in parent's hand. Finally, implementation results for the proposed system are provided in this paper. Main objective of this project is to find out the location of the person who was missed. Tracking system is one of the hot topics in embedded systems industry. By using this project a person or vehicle can be tracked anywhere on the globe. In this ARM controller controls the modules like LCD, GPS module and

GSM modem. The ARM controller will poll GPS module sends the vehicle location information (Latitude & Longitude) to any person over GSM network. One more best feature is when ever any authorized person or parent sends message to GSM Modem placed in the transmitter which is with the missed person. The location is tracked by the GPS module and these values are send to the parent or authorized person through the GSM at the transmitter. The whole system is integrated in a small chip and attached to the person body.[1]

D.G. Monisha , M. Monisha, G. Pavithra, R. Subhashini, have proposed a device. The ARM control is used by a security device and an application called FEMME, according to paper. It is a true security device created specifically for ladies. Devices can also be purchased or applications can be put on smart phones for emergency access. When someone is depressed, FEMME provides a fast and easy option to reach out for help. The programme is started when pushing the volume up key while simultaneously hitting the power button When the app is first launched, it displays four advanced icons: an audiorecorder, an SOS message, a video recorder, and a hidden camera detection. Sending messages and recording to contacts are set or hidden cameras are found depending on which option is now pressed. Although activate the device by pressing a button on it, it is connected to a smart phone and has two buttons, one of which is an emergency button and the other of which unlocks a concealed camera adoption.[2]

Naeemul Islam, Md. Anisuzzaman, Sikder Sunbeam Islam, Mohammed Rabiul Hossain and Abu Jafar Mohammed, have proposed a device which has the aim to develop a device for the safety and protection of women and girls. Indeed, even today, an evil break is made when ladies venture

out with a niggling apprehension in their brains about their safety. We regularly find out about rape cases that make our blood run cold. It is a lamentable perception <sup>3</sup> that there has been a significant increment in crimes against women in the previous decade. The reason can be credited to the time gap between the real time of the crime and its time of reporting to the ascendancy. In the event that by one way or another the unfortunate casualties could pass on their situation progressively, the issue can be repressed. In this project, we propose a device that sends SMS and area directions of the client to the relatives of the client or helpline number. In this system, we have used a GPS module to access location of user instantly. Three push buttons are implemented to define the types of an accident victim is facing. When the user faces any hassles in any place, it can push any of these three buttons. Then microcontroller will receive it and send an SMS to the specific phone number. The location of the user will be continuously traced until user switch off the system when rescued. In addition, to control the whole system we have used a PIC16F887A microcontroller powered by four AA batteries.[3]

A. Ranganadh, have proposed a device that Women's safety is a very important issue due to rising crimes against women these days. To help resolve this issue we propose a GPS based women's safety system that has dual security feature. This device consists of a system that ensures dual alerts in case a woman is harassed or she thinks she is in trouble. This system can be turned on by a woman in case she even thinks she would be in trouble. It is useful because once an incident occurs with a woman she may or may not get the chance to press the emergency button. In a button press alerting system, in case a woman is hit on the head from behind, she may never get the chance to press panic button and no one will know

she is in trouble. Our system solves this problem. This device is to be turned on in advance by a woman in case she is walking on a lonely road or some dark alley or any remote area. Only the woman authenticated to the devices can start the system by fingerprint scan. Once started the devices requires the woman to constantly scar her finger on the system every 1 minute, else the system now sends her location to the authorized personnel number through SMS message as a security measure and also sounds a buzzer continuously so that nearby people may realize the situation. In this case even if someone hits the woman or the woman falls down and get unconscious, she does not need to do anything, the system does not get her finger scan in 1 minute and it automatically starts the dual security feature. This device will prove to be very useful in saving lives as well as preventing atrocities against women. The device uses GPS sensor along with a GSM modem, LCD display, LEDs and microcontroller based circuit to achieve this system.[4]

## II. WOMEN SAFETY DEVICES

Women's safety devices have evolved to provide enhanced security and peace of mind. Personal alarms, compact and easily concealable, emit loud sirens when activated, drawing attention to potential threats. Pepper spray remains a popular choice, offering a non-lethal means of self-defense by temporarily incapacitating attackers. Wearable devices, like smart jewelry or wristbands, often equipped with GPS tracking and panic buttons, enable realtime communication with emergency contacts.

Innovative apps designed for personal safety allow users to share their real-time location with trusted contacts, and some even integrate features like virtual escorts and distress signals. Self-defense keychains equipped with tools like stun guns or

striking edges provide a discreet yet effective means of protection. Additionally, smart whistles with location tracking capabilities serve as audible alerts while pinpointing the user's whereabouts.

These devices empower women to navigate their surroundings confidently, fostering a sense of security and deterrence. As technology advances, the landscape of women's safety devices continues to evolve, offering a diverse range of solutions to address varying safety concerns.

### III. KEY TECHNOLOGIES

**GPS Technology:** Women safety devices often incorporate GPS to track and share the user's location in real-time, enabling quick response in case of emergencies.

**Mobile Connectivity:** Integration with smartphones allows for easy communication and alerts. Devices may use mobile networks or Bluetooth to connect with phones.

**Panic Alarms:** Many devices include a panic button or alarm system that, when activated, triggers a loud sound or alert to attract attention and deter potential threats.

**SOS Features:** Emergency SOS functions can be programmed to send distress signals to pre-set contacts, law enforcement, or dedicated monitoring services.

**Wearable Technology:** Wearable devices like smartwatches or discreet jewelry with safety features provide a convenient and accessible way for women to carry and use these safety tools.

**Audio and Video Recording:** Some devices offer audio or video recording capabilities to capture evidence in case of an incident, aiding in legal proceedings.

**Bluetooth and IoT Integration:** Integration with Bluetooth or other Internet of Things (IoT)

technologies enhances the connectivity and functionality of these devices.

**Self-Defense Mechanisms:** Certain devices may include built-in self-defense tools such as pepper spray dispensers, tasers, or other non-lethal deterrents.

**Smartphone Apps:** Companion apps can enhance the functionality of safety devices, offering additional features like community alerts, safe route planning, and real-time monitoring.

**Biometric Security:** To prevent unauthorized use, some devices incorporate biometric features like fingerprint or voice recognition.

**Community Support Systems:** Some safety devices connect users to local or online communities, fostering a support network for women to share information and assist each other in times of need.

**Battery Efficiency:** Long-lasting battery life is crucial for ensuring the reliability of these devices, especially in emergency situations where extended use may be necessary.

**Compact and Discreet Design:** Many women safety devices prioritize a discreet and inconspicuous design to avoid drawing attention and to encourage regular use.

**Real-Time Monitoring Services:** Subscription-based services may offer continuous monitoring, allowing professionals to intervene in emergency situations.

**Integration with Public Services:** Collaboration with law enforcement and emergency services can enable a quicker response when a distress signal is activated.

### IV. BLOCK DIAGRAM

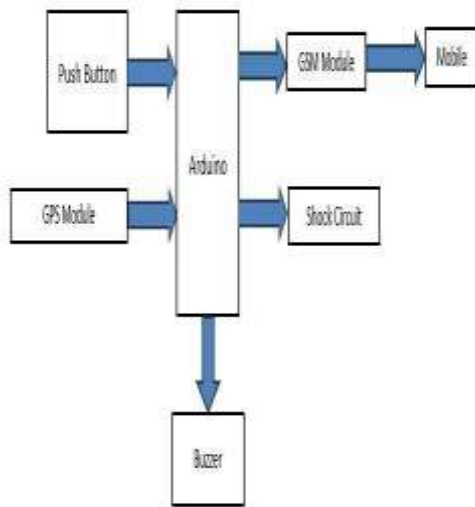


Figure 2.1 Blockdiagram

## V. TESTING AND RESULTS

### HARDWARE MODULE

The project “Women Safety Device with GPS Tracking” was designed. And when we press the push button the device will turn ON. The device incorporates a GPS module that allows tracking of the user’s location, ensuring their safety. It is equipped with a shock sensor which can apply controlled shocks as a defense mechanism, which provide an added layer of protection for women.

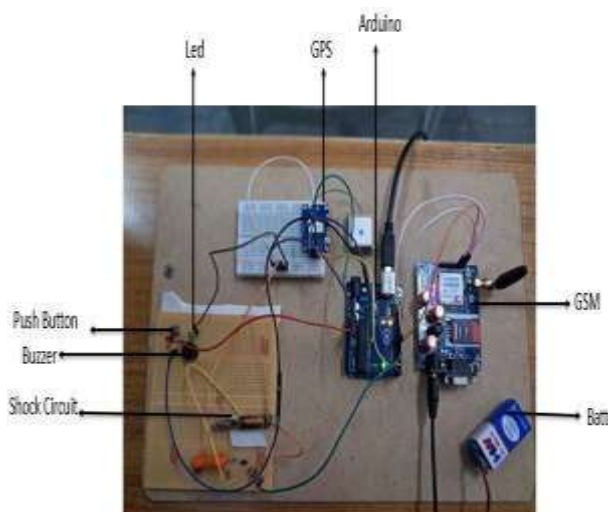


Figure 6.1: Hardware Module

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Fig. 6.1: Hardware Module

Arduino UNO Board, Neo-6M GPS Module, GSM 900A Module Micro Sim Card module are the components utilized. A push button is a simple mechanical switch that is typically used to control or activate an electrical circuit shown in fig.2. A GPS (Global Positioning System) module plays a pivotal role in determining accurate geographic positioning and time synchronization. A GSM (Global System for Mobile Communications) module is a crucial component in many modern communication systems. The shock circuit in a women's safety device with GPS tracking is typically designed to detect sudden and forceful movements or shocks. The shock circuit in a women's safety device with GPS tracking is typically designed to detect sudden and forceful movements or shocks.

#### Case 1: LED GLOWS AND BUZZER BLOWS

A women's safety device can incorporate a buzzer and LED alerts to enhance security. The buzzer serves as a loud, attention-grabbing alarm, deterring potential threats and signaling distress. Simultaneously, LEDs provide a discreet visual indicator, aiding in discreet communication or alerting bystanders. Combining these features ensures a multi-sensory approach to personal safety, offering immediate attention and assistance when needed. Integrating user-friendly controls allows seamless activation, empowering women with a practical and effective tool to enhance their sense of security in various situations. When the

victim press the push button the led will glow and buzzer will produce sound. She can turn the buzzer on so that nearby people can help her to get out of the situation. LED is also used for alert at night times.

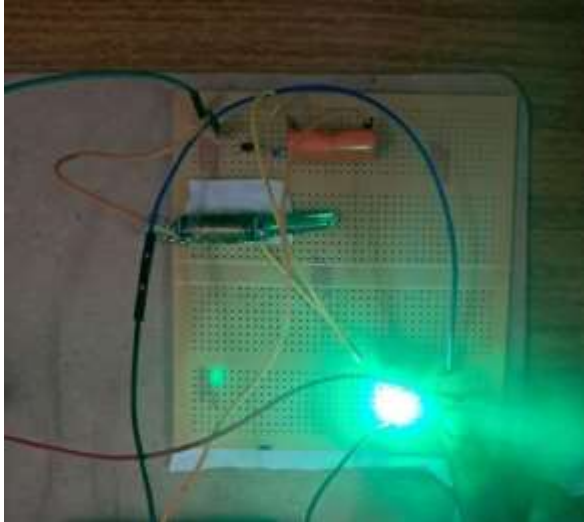


Fig. 6.2: Led glows and Buzzer blows

### Case 2: SHOCK DETECTED

When we press the push button the shock circuit will produces shock when we touch it. When we press the push button the shock circuit will produces shock when we touch it. It is equipped with a shock circuit which can apply controlled shocks as a defense mechanism, which provide an added layer of protection for women.

A shock circuit in a women's safety device serves as a deterrent and self-defense mechanism. Integrated discreetly, it activates upon user discretion or in response to potential threats. When activated, the circuit delivers a non-lethal electric shock, incapacitating an assailant temporarily and allowing the user to escape or seek help. This technology enhances personal safety by providing an effective tool for self-defense, particularly in situations where physical harm is imminent. The shock circuit acts as a powerful deterrent, empowering women to navigate their surroundings with an added layer of security, fostering a sense of

confidence and reassurance in potentially vulnerable situations.

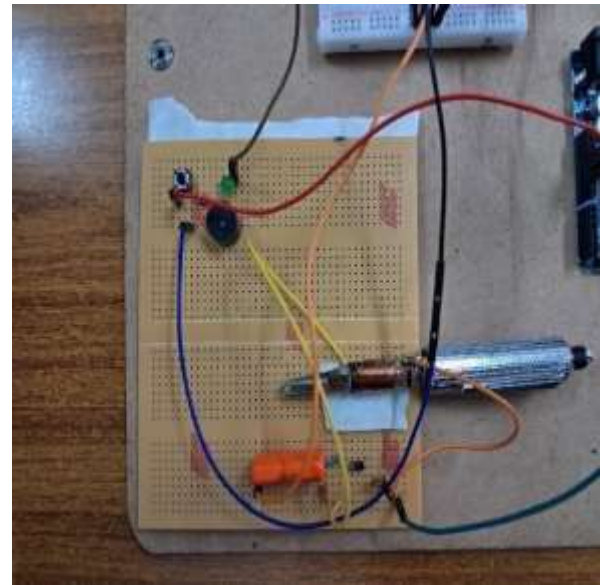


Fig. 6.3: Shock Circuit

### Case 3: LOCATION TRACKING AND ALERT MESSAGE

The location of the person is traced and alert the authorized mobile number as shown in the message is sent through the GSM module. A women's safety device with location tracking can enhance personal security. It allows real-time monitoring, and if the device detects potential danger, it can send alert messages to predefined contacts or authorities, providing crucial information like location and possibly activating emergency services.

A women's safety device with location tracking ensures real-time monitoring of the user's whereabouts, enhancing personal security. Integrated GPS technology allows quick response in emergencies, enabling authorities or designated contacts to pinpoint the exact location. In critical situations, the device can trigger an alert message to pre-set contacts, providing immediate notification. This dual functionality empowers women to navigate their surroundings confidently, knowing that help can swiftly reach them if needed. It serves as a proactive measure, leveraging

technology to promote safety and peace of mind for women, fostering a more secure environment for individuals on the move.

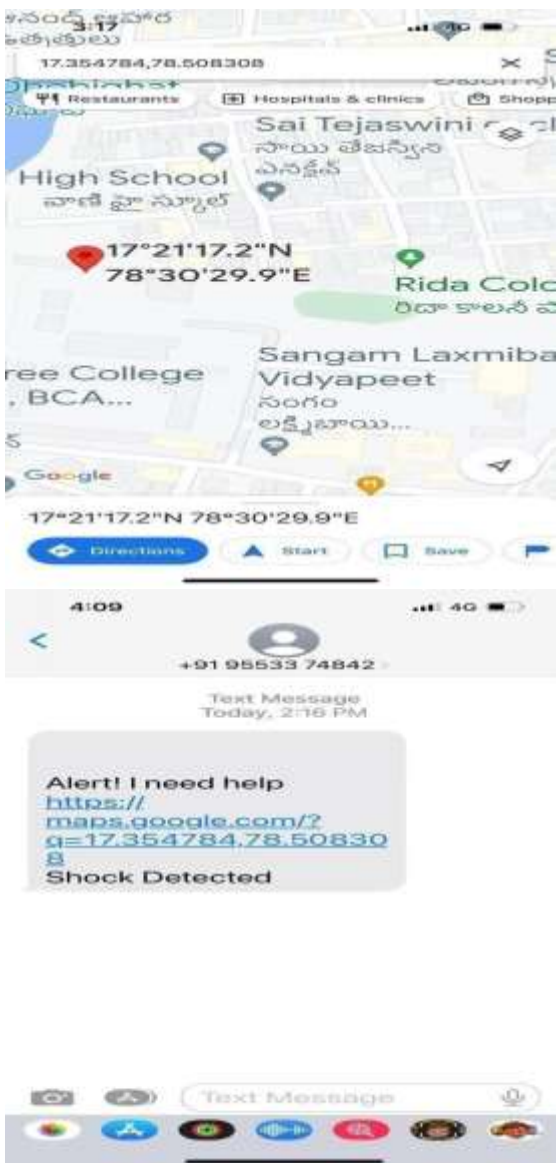
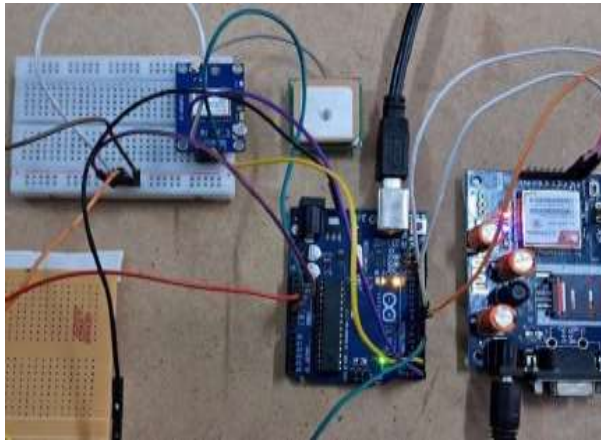


Fig. 6.4: Location Tracking and Alert Message

## VI. CONCLUSION

GPS tracking and alerts can be a valuable tool in enhancing personal safety for women. Let me break it down for you in a concise way. GPS tracking allows individuals to keep track of their location in real-time. By using a GPS enabled device, such as a smartphone, you can easily determine your exact location and share it with trusted contacts. This can be particularly useful in emergency situations, as it helps others locate you quickly. Moreover, there are wearable devices, like smartwatches, that come with built-in GPS tracking. These devices can be synced with your smartphone, allowing you to easily access location information and send alerts if needed.

In conclusion, GPS tracking and alerts can be valuable tools in enhancing women's safety. They provide an additional layer of security by allowing individuals to track their location, share it with trusted contacts, and receive timely assistance if needed. However, it's important to remember that personal safety is a holistic approach that involves multiple strategies and awareness.

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