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WOMEN SAFETY DEVICE USING GPS MODULE

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ABSTRACT

Nowadays, the amount of violence against women is increasing vigorously due to the greater exposure of women in every field of life. The crime rate is on the spike. The recent incidents, especially regarding rape cases has been horrifying. In India, Women's safety has become a severe issue result of such crimes. Despite various international agreements, and gender movement, assaults continue to be particularly susceptible. Keeping all these issues at priority, we proposed a device which will be really very helpful to women. The system serves various main purposes, first to send the victim's location to the pre-programmed contact numbers with the help of GPS and GSM. Further, Victim can turn the buzzer on so that nearby people can help her to get out of the situation. Along with this the third main purpose is that she can give a shock to the abuser just by turning the other switch on and touching the device to the abuser's body so that current will pass through him. That shock will not harm or won't kill the abuser, but women or any victim will get a chance to escape from the location and save themselves.

1. INTRODUCTION

When it comes to safety and security, particularly for women, the use of technology has become increasingly important. One such technological solution is the integration of a GPS module into a women's safety device. The proposed gadget will fill in as an emergency device for women in trouble, providing both everyday safety features and the ability to handle real emergencies. The principle working venture of the women safety device is simple and easy to use. Whenever a woman senses danger, she simply needs to press the push button switch of the device. This action will trigger a series of functions that will ensure her safety and alert her selected contacts. In the proposed system, the GPS module plays a crucial role in determining the current location of the woman in distress. The GPS module utilizes the Global Positioning System to accurately determine the location/area of the person wearing the device

Once the information is received by the controller, it sends the message to the contacts through the GSM module and the location is tracked through the GPS. By using the shock circuit, we can touch the person who is going to harm victim then the person gets shocks, but victim won't get shocks.

2. CASE STUDY

"A distortion has crept in our conduct and we at times insult women. Can we take a pledge to get rid of this in our behaviour," he suggested, urging people to "**take a pledge** to get rid of everything that humiliates women in everyday life".

This was not the first time Mr. Modi had talked about gender equality and respect for women. In his first Independence Day speech as prime minister in 2014, **he had condemned rapes in India** saying "when we hear about these rapes, our heads hang in shame".

After eight years under his Bhartiya Janata Party (BJP) government, data shows that crimes against women remain unabated. The numbers show a consistent year-on-year rise, except in 2020 - the year when the Covid-19 pandemic swept India and a hard lockdown forced the country to shut down for months. Experts say it also impacted data collection.

In the year 2021 - for which the government released crime data last week - India recorded the highest number of crimes against women ever.

Activists say the rising graph is a matter of serious concern, but authorities say it's because there's better reporting now, and more people are going to the police to register cases.

We mined the National Crime Records Bureau (NCRB) reports for the past six years to distil the data about crimes against women and here's what we found, in five charts.

Of the six million crimes that police in India recorded between 1 January and 31 December last year, 428,278 cases involved crimes against women.

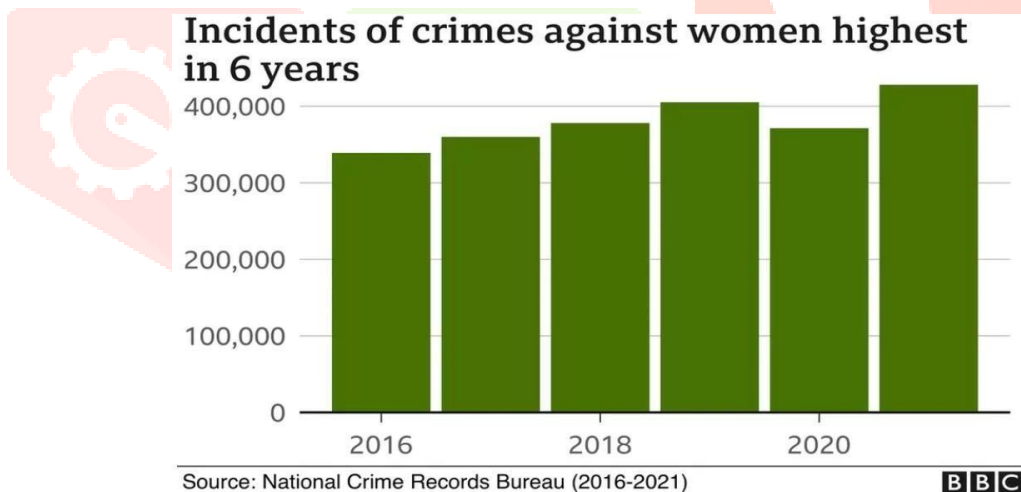
It's a rise of 26.35% over six years - from 338,954 cases in 2016.

The majority of the cases in 2021, the report said, were kidnappings and abduction, rapes, domestic violence, dowry deaths and assaults.

Also, 107 women were attacked with acid, 1,580 women were trafficked, 15 girls were sold, and 2,668 women were victims of cybercrimes.

With more than 56,000 cases, the northern state of Uttar Pradesh, which is India's most populous with 240 million people, once again topped the list.

It was followed by Rajasthan with 40,738 cases and Maharashtra with 39,526 cases.



3. DESIGN OVERVIEW

3.1 POWER SUPPLY

The Main and most crucial function of a power supply is, as a result power supplies, to convert one form of electrical energy into another. In this project we have power supplies with +5V & -5V option normally

+5V is enough for total circuit. Another (-5V) supply is used in the case of OP amp circuit. A power supply can be used to create a women's safety device by integrating it with other components such as GPS tracking and alerts. The device can be designed to have two parts: an "Alerting" device and a "Defencing" device. The "Alerting" device can be activated by pressing a button, which sends a help message with the location to predefined mobile numbers. The "Defencing" device can be designed to produce electric shocks to divert the attention of the offender and aid the victim in escaping harm. Additionally, the safety device can include features such as capturing images and storing them on an SD card and server. The use of a power supply

in this device can ensure its proper functioning and provide the necessary electrical power for its various components

3.2 LCD DISPLAY

LCD displays are available to display various arbitrary images which can be displayed or hidden, such as preset words, digits and 7 segment displays as in a digital clock. Some basic technology is used, except the arbitrary images, that are made up of a large number of pixels, while other displays have larger elements. A model here is efficient and used mostly because of its low price and great possibilities most frequently used in practice. That model is based on Hitachi or HD44780 microcontroller which display messages in two lines with 16 characters each. All the alphabets, Greek letters, punctuation marks, mathematical symbols are displayed with help of this micro controller. It is possible to display symbols made by customers according to their requirement has interesting and useful characteristics like automatic shifting message on display appearance of the pointer, backlight etc.

3.3 GSM MODEM

A GSM module can be used to create a women's safety device by integrating it with other components such as GPS and sensors. The device can be designed as a wearable smart device that can be easily worn anywhere. The sensors, such as temperature and pulse sensors, send input signals to a microcontroller, which is connected to the GSM module. When the sensors detect signals indicating that the user is in distress or trouble, the GSM module can send messages to relatives and call the nearby police station through a mobile app. Additionally, the GPS module integrated with the microcontroller can send location details through the mobile app. This combination of components and functionalities aims to provide women with safety in public locations.

3.4 GPS MODULE

A women's safety device can be created using a GPS module by integrating it with other components such as microcontrollers, GSM modems, and alert systems. The GPS module receives location information in the form of latitude and longitude from satellites. This location data is then processed by microcontrollers such as Raspberry Pi 3, Arduino board. The processed information is used to trigger alerts and send messages to predefined mobile numbers. The alerts can be in the form of a buzzer, warning sound, or panic button. The messages can be sent through GSM modems to inform family, friends, neighbours, or the police control room. Some devices also have additional features like capturing images, storing pulse rate data, or delivering a shock to the abuser. Overall, the GPS module plays a crucial role in providing accurate location information for women's safety devices.

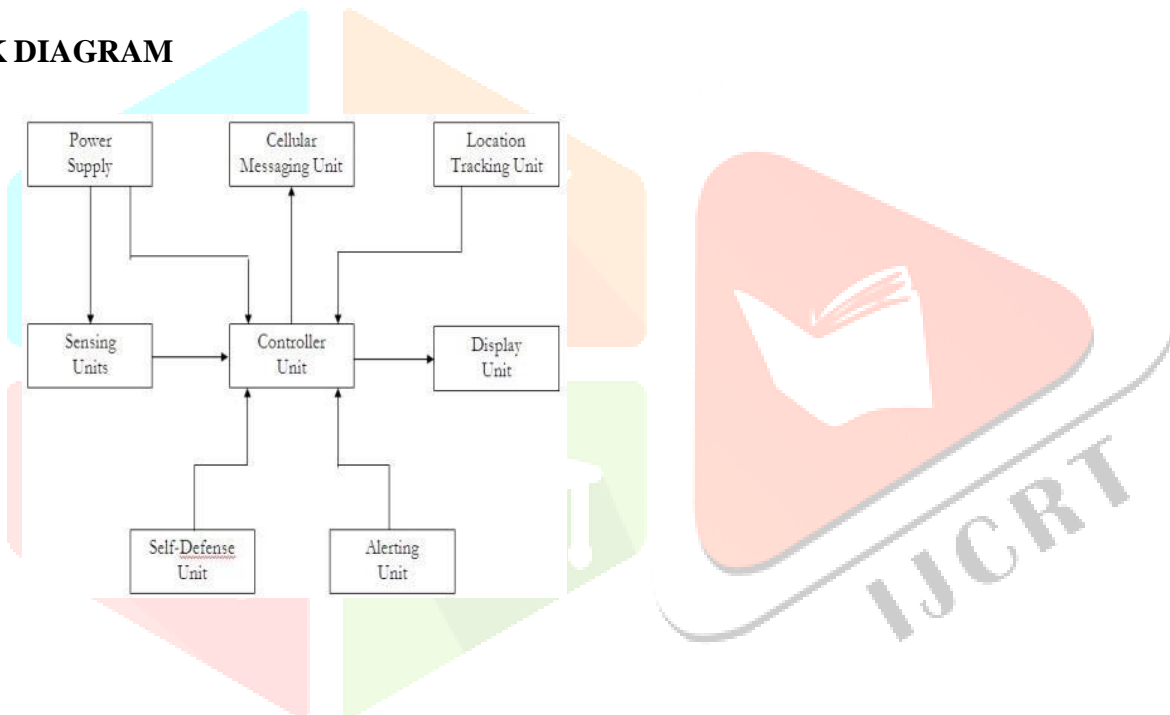
3.5 ARDUINO UNO BOARD

An Arduino Uno module can be used to create a women's safety device by integrating it with various technologies such as GPS, GSM, and IoT. The device is designed to provide security and protection to women in dangerous situations. It utilizes sensors to detect threshold values and activate an algorithm that triggers an alert. The device continuously communicates the user's location using GPS and a GSM modem-based system, ensuring that the user's whereabouts are known. In case of an emergency, the device can be activated by pressing a specific switch, which triggers the system to send an emergency message to predefined mobile numbers. Additionally, the device can capture the overall situation and store an image for further evidence. The integration of Arduino Uno with these technologies enables the device to provide real-time location tracking and immediate assistance to women in need.

4. FLOWCHART



5. BLOCK DIAGRAM



6. WORKING PRINCIPLE

The Women Safety Device using GPS Module is a compact and portable device that can be easily carried by women. It is equipped with a Global Positioning System (GPS) module, which uses satellite signals to determine the device's location. The device is connected to a smartphone application, which can be used to track the user's location in real-time. In case of an emergency, the user can press a panic button on the device, which will send an alert to the registered emergency contacts and the local authorities.

7. FEATURES

1. **Real-time Tracking:** The GPS module in the device provides accurate location tracking, which can be viewed in real-time through the smartphone application.
2. **Panic Button:** The device is equipped with a panic button, which can be pressed in case of an emergency. This will send an alert to the registered emergency contacts, along with the user's location.
3. **Geo-Fencing:** The device has a feature of setting up a virtual boundary, known as geo-fencing. If the user crosses this

boundary, an alert will be sent to the emergency contacts.

4. **Two-way Communication:** The device allows two-way communication between the user and the emergency contacts. This can be helpful in providing updates on the user's location and situation.
5. **Siren:** The device is equipped with a loud siren, which can be activated in case of an emergency. This can attract the attention of people nearby and help the user to get assistance.

8. BENEFITS

1. **Ensures Safety:** The primary benefit of this device is that it ensures the safety of women by providing real-time tracking and emergency assistance.
2. **Easy to Carry:** The device is compact and can be easily carried by women in their bags or pockets. This makes it a convenient safety solution.
3. **Quick Response:** In case of an emergency, the device sends an alert to the registered contacts and the authorities, ensuring a quick response and timely assistance.
4. **Cost-effective:** The Women Safety Device using GPS Module is a cost-effective solution compared to other safety measures like hiring a personal security guard.
5. **User-Friendly:** The device is designed to be user-friendly, with simple features and an easy-to-use interface. This makes it suitable for people of all ages.

9. CHALLENGES

1. **False Alarms:** The device may send false alarms in case the user presses the panic button accidentally. This can cause unnecessary panic and inconvenience for the emergency contacts.
2. **Limited Battery Life:** The device's battery life is limited, and it needs to be charged regularly. In case of an emergency, if the battery is dead, the device will not function.
3. **Network Connectivity:** The device relies on network connectivity to send alerts and track the user's location. In areas with poor network coverage, the device may not function effectively.
4. **Privacy Concerns:** Since the device tracks the user's location, there may be concerns about privacy and misuse of the data collected by the device.

10. CONCLUSION

The Women Safety Device using GPS Module is a step towards ensuring the safety of women in today's world. It provides a sense of security and peace of mind to women, knowing that they have a device that can help them in case of an emergency. However, like any other technology, it has its limitations and challenges. Therefore, it is important to continuously improve and update the device to make it more efficient and reliable. With the use of this device, we can take a step towards a safer and more secure environment for women.

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