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# Effective Public Space Safety Measures and Technologies for Women

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**ABSTRACT:** A NEO-6M GPS module, a SIM900A GSM module, and Arduino microcontrollers are used to construct a location tracker system. The system aims to use GPS technology to determine the exact geographic locations and use GSM to send this information via SMS to a specified phone number. The primary components are a SIM900A GSM module for communication, a NEO-6M GPS module for obtaining latitude and longitude coordinates, and an Arduino Uno microcontroller for control logic and interface. The system gathers GPS data, formats it, and sends it as SMS messages using the programming skills of Arduino. When these elements are combined, a flexible and affordable real-time location tracking system is produced. In such circumstances, women may feel safer, more confident, and have fewer chances of being harassed with the use of a safety gadget that will notify the victim's family members or the authorities (in serious situations).

**KEYWORDS-** Women's Safety, SIM900A GSM module, Wearable device, Real-time tracking, Safety gadget, IoT (Internet of Things)

## I.INTRODUCTION

Women's safety problems have captured lots of attention globally in recent years. Women are increasingly experiencing harassment, assault, and violence, which highlights the critical need for practical measures to protect their safety, especially when they are traveling alone or in strange places. Our article seeks to address this urgent need by creating a comprehensive women's safety gadget that makes use of an Arduino, a GPS (Global Positioning System) module, a GSM (Global System for Mobile Communications) and a push button. Our research main goal was to create a small, portable, and easily manipulated gadget that would make women feel safer when they travelled alone or in potentially dangerous situations. When necessary, the gadget uses GPS technology to follow the user's location and issue safety alerts.

Technology use has become more significant in terms of safety and security, especially for women. One such technological solution is the addition of a GPS module to a safety gadget for women. With its combination of common safety features and emergency response capabilities, the suggested device will serve as a substitute for women in need of assistance in an emergency. The women safety device's walking excursion is straightforward and user-friendly (Mungale et.al, 2024). A lady only needs to press the device's push button switch whenever she feels threatened. This will set off a sequence of events that will protect her and notify the contacts she has chosen. The GPS module is essential to the suggested system's ability to pinpoint the precise location of the distressed woman. The GPS module precisely determines the location or region of the wearer of the gadget by utilizing the Global Positioning System. After the controller receives the data, it uses the GPS to track the location and the GSM module to transmit the message to the contacts.

## II. RELATED WORK

Even though India considers itself to be a big economic hub, it is still surrounded in a web of ills, including violence against women, dowries, molestations, and, worst of all, rape (Jharkhand et.al, 2023). With the use of numerous gadgets, the crimes against women (Sharma et.al, 2022) can now be stopped. This device explains a basic idea in which fingerprint-based connectivity (Ranjitkumar et.al, 2022) is used for activating the proposed IoT-based safety gadget for women. In the event of danger, the device instantly notifies police authorities and other close individuals if fingerprint verification (Jayapriya et.al, 2024) is unsuccessful within a minute. It additionally offers self-defence alternatives including group texting and audio recording (Banerjee et.al, 2024), as well as a shockwave generator. Women may find safe locations on a map with the use of a companion mobile app (Dhawale et.al, 2024), which helps them get there from where they are.

Smart wearable device for women safety using IoT. This smart safety device for women combines temperature, pressure (Jha et.al, 2024), and pulse-rate sensors. It automatically sends distress alerts with location coordinates to predefined contacts and nearby police stations (Jayapriya et.al, 2024) upon identifying suspicious activity.

GSM-based design and implementation of women safety device using internet of things. This device tracks its location using GPS and detects abrupt movements using flex, force, and vibration sensors (Zhou et.al, 2024). Wi-Fi technology continuously tracks sensor readings, and GSM is used to communicate alerts (Kumar et.al, 2024) to police stations, guardians, and relatives. Fast assistance for victims is further facilitated by features like hidden camera detection (Bennett, 2024) and chloroform engine trickery. Additionally, children's safety (Khan and Das, 2024) is prioritized by speed monitoring and GPS/GPRS/GSM-based position tracking.

## III. METHODOLOGY

### 3.1 DESIGN

The Arduino UNO detects the button press event when the push button is pressed and starts the process of getting the NEO 6M GPS Module's current GPS coordinates. After obtaining the coordinates, the Arduino UNO converts the data into a readable format and gets ready to send out an SMS with the position data. The SMS message is then sent to the specified phone number(s) to set up in the program code by the Arduino UNO communicating with the SIM900A GSM Module. The device's position is updated and shared with the designated recipients on a regular basis thanks to this process, which is repeated at predetermined intervals or in response to trigger events. The location tracker system's safety and security aspects are improved by adding a push button, which gives users an easy and quick way to communicate their precise location with selected contacts.

### 3.2 COMPONENTS SPECIFICATION

- Arduino UNO
- GSM Module
- GPS Module
- Push Button

### Flow Chart

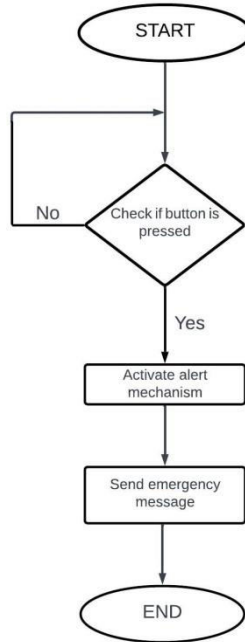


Fig.1.Flow Chart

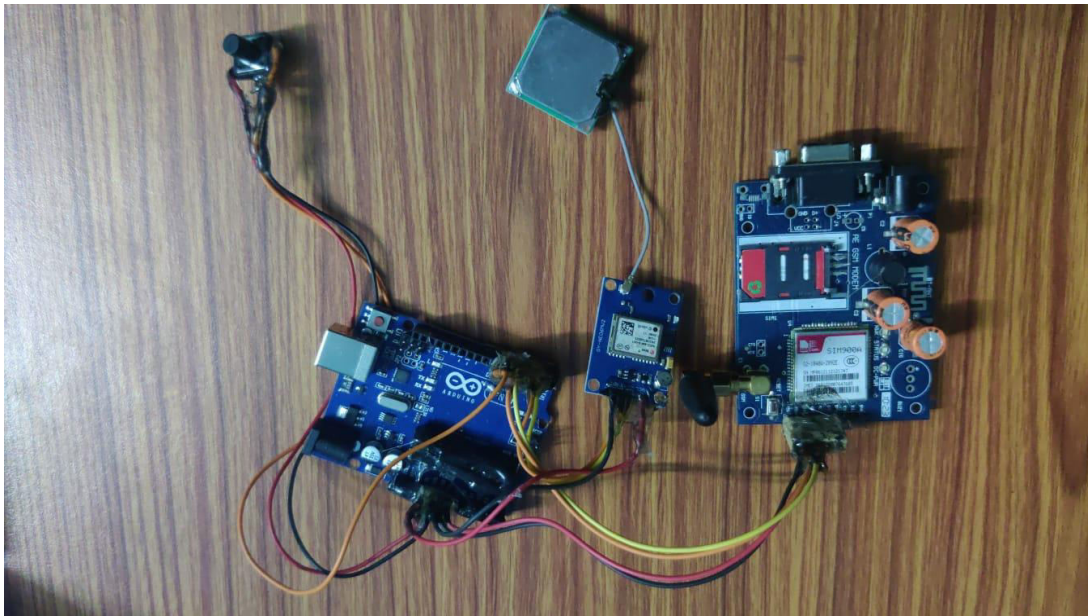


Fig-2 Circuit Diagram

### IV.CONCLUSION

Finally the position tracker that makes use of the Arduino, NEO 6M GPS module, and SIM900A GSM module provides a reliable means of communication and tracking in real time. Accurate location data is ensured by utilizing the GPS module to collect precise latitude and longitude information. Through the use of program code, the GSM module sends SMS notifications to pre-configured phone numbers, enabling smooth communication.

This technology offers a dependable way to guarantee protection and safety, especially in emergency scenarios where it's important to quickly convey the user's precise location. It is appropriate for many applications, such as asset tracking and personal safety, due to its efficiency and simplicity. Furthermore, the ability to manually activate a push button through integration enhances user involvement and gives them more control over the tracking process. Overall, women's security and comfort can be enhanced with the help of this Arduino-based location tracker.

#### ABBREVIATIONS

**GSM**- Global System for Mobile Communications

**GPS**- Global Positioning System

**NEO**- Near Earth Object

**SMS**- Short Message Service

**IoT**- Internet of Things

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