IoT Woman safety system using GSM GPS ESP8266 Blynk Alerts

This project presents the design and implementation of an IoT-based women safety system that ensures real-time monitoring, emergency alerting, and location tracking using integrated communication technologies. The system is built around an Arduino Uno microcontroller, interfaced with a GPS receiver, GSM module, ESP8266 Wi-Fi module, magnetic switch, and push button to provide a comprehensive personal security solution.

In emergency situations, the user can trigger an alert by pressing a push button, upon which the system acquires the current location in terms of latitude and longitude using the GPS module. This information is instantly transmitted to predefined contacts via SMS using the GSM module and simultaneously updated to the Blynk mobile application through the Wi-Fi module for live tracking. Additionally, a magnetic switch is incorporated to detect unauthorized access or unusual attempts, automatically triggering alerts without user intervention.

The system also includes a buzzer for immediate audible alerts and an LCD display to show system status and operational messages. LED indicators provide visual feedback for different system conditions. The use of IoT technology enables continuous monitoring and enhances the responsiveness of the system.

Overall, this project offers a reliable, low-cost, and efficient safety solution that combines real-time tracking, instant notifications, and automated threat detection to enhance personal security for women in critical situations.

The main objectives of the project are:

- To design a reliable and user-friendly women safety device using an Arduino Uno as the main controller.
- To enable instant emergency alert generation through a push button during critical situations.
- To implement real-time location tracking using a GPS receiver (latitude and longitude).

- To send SMS alerts to predefined contacts using a GSM module in case of emergency.
- To provide live tracking and notifications through the ESP8266 Wi-Fi module integrated with the Blynk mobile application.
- To detect unauthorized access or unusual attempts using a magnetic switch and automatically trigger alerts.
- To incorporate audio-visual alert mechanisms such as a buzzer and LED indicators for immediate attention.
- To display system status and alerts on an LCD module for user awareness.
- To develop a low-cost, portable, and efficient safety solution using IoT technology.
- To enhance personal security and quick response by enabling real-time communication and monitoring.

The main building blocks of the project are:

- TP4056.
- Li-Ion Battery Power Supply.
- ARDUINO UNO
- GSM modem
- GPS Receiver
- ESP8266 WI-FI module.
- LCD with driver
- Magnetic Switch
- Buzzer with driver
- Push Button.

Software's used:

1. Arduino IDE for compiling and dumping code into Microcontroller
2. Express SCH for Circuit design.

Block Diagram