

# Women's Safety Device with GPS Tracking & Alerts

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## ABSTRACT

Women's safety is a very important issue because growing crimes against women these days. To help determination this issue we suggest a GPS based women's safety system that has double security feature. This device consists of a system that ensures double alerts in case a woman is worried 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 progress by a woman in case she is walking on a lonely road or some dark path or any remote area. Only the woman authentic to the devices can start the system by fingerprint scan. Once started the devices needs the woman to continuously scan her finger on the system every 1 minute, else the system now sends her location to the approved personnel number through SMS message as a security measure and also sounds a buzzer continuously so that neighbouring people may understand 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 verify to be very useful in saving lives as well as preventing atrocities against women. The device uses GPS sensor beside with a GSM modem, LCD display, LEDES and microcontroller based circuit to succeed this system. Keywords : GSM Modem, LCD Display, LEDES, Microcontroller, GPS

## I. INTRODUCTION

It is an unfortunate observation that there has been a substantial increase in crimes against women in the past decade. With a variety of software applications now in action, to help women, the statistics have not lowered. According to the National Crime Records Bureau (NCRB), in India, 93 women were raped everyday in the year 2014. Also 3,37,922 cases of crime against women were reported in year 2014 alone [1]. The current practices In female security broadly fall into different categories ranging from android applications developed for mobile phones,

and extend to fashionable apparels that can be wore and carried in day to day life. However, our focus is on creating a safety system that merges the benefits of existing techniques and brings about a solution that ensures both defense and creation of a seamless pathway to initiating legal procedures, if any; have to be taken by the victim. We intend to create a partial wearable that can provide a complete security solution and become a utility that eases the apprehension among women and their family members. The objective of research work is to create a safety system in the form of a portable safety device for women, that does the following tasks :

- ✓ Alerts family and police and gives location coordinates of the woman being attacked.
- ✓ Captures and stores an image/video of the attacker to maintain a proof for legal actions.
- ✓ Incorporates a defensive mechanism by giving a mild shock

In this paper, we provide a summary of the progress achieved so far, in making of the desired system. The rest of the paper is organized as follows: Section II gives an overview of the system designed to create a safety system for women. Section III & IV will give a brief account of the nature of the design and a description of hardware components and software approach used until the current work progress. An account of implementations performed till date is presented. Section V will produce the results obtained in accordance to the work completed yet, and will discuss on the expected outputs. Section VI will conclude the report giving the summary and an account of future course of the research

## II. BLOCK DIAGRAM

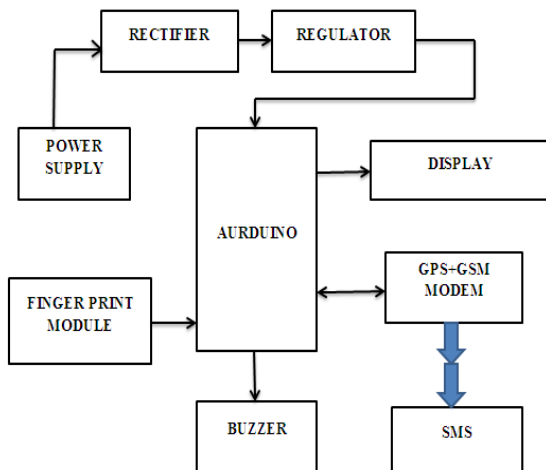


Figure 1. block diagram for the system

## III. HARDWARE

**ARDUINO UNO R3:** Arduino is a microcontroller board as shown in Fig.3. It has onboard power supply

and an USB port to communicate with PC and it contains an inbuilt microcontroller ATMEGA 328. Its operating voltage is 5v and it has 28pins of which 6 are used as analog Input pins and 14 are used as digital I/O pins of which 6 provide PWM output. It has 32 KB of flash memory of which 0.5 KB is used by boot loader and it contains 2KB of SRAM and 1KB of EEPROM. The data from PC is sent to the microcontroller in the arduino board. The digital pins 6 & 7 are connected to the electrical devices through power amplification section.

**POWER SUPPLY:** The primary function of a power supply is to convert one form of electrical energy into another and, as a result power supplies.

**LCD DISPLAY:** LCDs are available to display arbitrary images which can be displayed or hidden, such as preset words, digits and 7 segment displays as in a digital clock. They use some simple technology, except that random images are made up of a large number of pixels, while other displays have greater elements.

**GSM MODEM:** Global system for mobile communication (GSM) is a worldwide accepted standard for digital cellular communication. GSM is the name of a standardization group recognized in 1982 to create a common European mobile telephone standard that would formulate conditions for a pan-European mobile cellular radio system operating at 900 MHz.

**AGPS:** Separate/self-ruling GPS devices depends on information from satellites. A-GPS augments that by using cell tower data to improve quality and accuracy when in poor satellite signal conditions. In very poor signal conditions, for example in urban areas, satellite signals may show multipath propagation where signals miss off structures, or are weakened by weather conditions or tree shade. Some GPS navigators used in reduced conditions can't fix a position because of satellite signal fracture and must

wait for superior satellite reception. A GPS unit may need as long as 12.5 minutes (the time needed to download the GPS almanac and ephemerides) to solve this problem and be able to provide a accurate location.<sup>[2]</sup>An assisted GPS system can address these problems by using external data. Utilizing this system can come at a cost to the user. For billing purposes, network providers often count this as a data access, which can cost money, depending on the plan.<sup>[3]</sup>

**FINGERPRINT IDENTIFICATION MODULES:**

This is an sensitive biometric fingerprint reader/sensor (R305) module with TTL UART interface for direct contacts to a microcontroller UART. The user can store the finger print data in the module and can configure it in 1:1 or 1: N mode for identifying the person. This module can directly interface with any 3.3V or 5V microcontrollers, but a suitable level converter/serial adapter is required for interfacing with the serial port of a PC.

**IV. WORKING**

Flow chart:

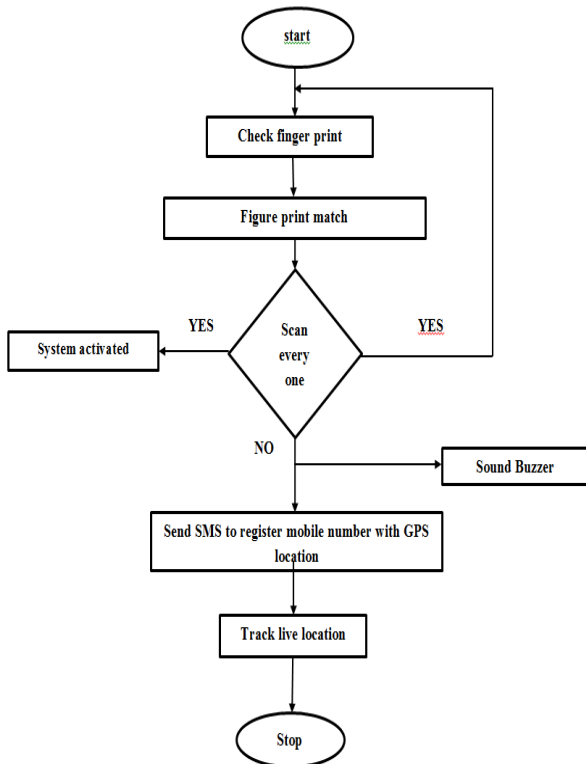


Figure 2. flow chart of the system

**V. ADVANTAGES**

- ✓ Sophisticated security.
- ✓ Monitors all hazards and threats.
- ✓ Alert message to mobile phone for remote information.
- ✓ Can be used to prevent incidents
- ✓ It calls for help without alerting the attacker.
- ✓ It is less costly as compare to mobile phone.
- ✓ It is the wearable device

**VI. APPLICATIONS**

- ✓ Security appliances.
- ✓ Safety of women.
- ✓ Used as a legal evidence of crime with exact location information for prosecution.

**VII. CONCLUSION**

Our effort behind this project is to design and fabricate a gadget which is so compact in itself that provide advantage of personal security system the emergency response system which is helpful for women in the incidents of crime. It is low cost system which can store the data of the members in the particular locality and provide immediate alert in case of crime against women. This provides women security. Being safe and secure is the demand of the day.

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