

# WOMEN SAFETY DEVICE USING GPS AND GSM

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**Abstract**— The world is becoming unsafe for women in all aspects. The crimes against women are increasing at a higher rate. The employed women are feeling unsafe due to increasing crimes. This paper proposes a quick responding mechanism that helps women during trouble. When someone is going to harass, she can press the button that is attached to the device and the location information is sent as an SMS alert to few predefined emergency numbers in terms of latitude and longitude. The microcontroller used is PIC16877A. It is interfaced with a push button, a GPS module, a GSM modem and a speech circuit (ISD1820PY). If the switch is pressed, it activates the speech circuit to capture the attention of the people nearby for help. The program is developed in embedded language to demonstrate the system capability in providing real time response. Thus the girl can be safe and she can feel protected.

**Keywords:** Microcontroller ATMEGA328P, GPS, GSM, Shock generator, Alarm circuit.

## I. INTRODUCTION

Even in this modern era women are feeling insecure to step out of their house because of increasing crimes in our country like harassment, abuse, violence etc., The corporate and IT sector are currently in boom. Many women are working in corporate even in night shifts. There is a feeling of insecurity among the working women.

The proposed device is more like a safety system in case of emergency. This device can be fitted in a jacket (similar to a blazer for women). It is an easy to carry device with more features and functions. The emergency push button is held to one of the buttons of the jacket. The main purpose of this device is to intimate the parents and police about the current location of the women. A GPS system is used to trace the current position of the victim and a GSM modem is used to send the message to the predefined numbers. There are several applications that reduce the risk of sexual abuse by sending SMS but in our model we also provide an audio circuit which is more useful for physically challenged people.

The block diagram of the proposed system is shown in Figure 1. The microcontroller acts as an embedded computing system and it controls the activities of all the subsystems. The program for PIC microcontroller is in Embedded C language and is dumped using a kit.

## II. EXISTING SYSTEM

In existing system, GSM and GPS based vehicle tracking system is currently used. This system consists of GPS module attached to a button in the vehicle. In case of emergency, the switch attached to the GPS can be pressed. The GPS that is used here is Teltonika FM1100 [1-3]. When any problem occurs the employee travelling in the vehicle presses the switch attached to the GPS. GSM module attached to this GPS and switch is used to send the message to a special

team of the organization. Although this system seems to be efficient, at times there are some drawbacks because the drivers may not be trustworthy.

Another existing method is an application based prototype [2]. It is interfaced with GPS, GSM and a spy camera. The user must register the emergency numbers. This is an android app which provides all facilities but it has a disadvantage that if the mobile phone of the victim is thrown away by the opposing person, this model cannot be used efficiently. To overcome these disadvantages we propose a model.

**Disadvantage:**

- The main drawback of existing system is:
- It does not generate the shock waves.
- It cannot communicate efficiently.

**III. PROPOSED SYSTEM**

The microcontroller acts as embedded computing system and controls the activities of all the subsystems. It is interfaced with Emergency Switch, GPS Receiver, GSM Modulator demodulator (MODEM), High Voltage Shock Circuit, LCD display and alarm circuit. The microcontroller periodically monitors the status of all the devices and also keeps on checking for any incoming SMS message from the parents or any caretakers. It also prepares the High Voltage Electric Shock Circuit to be ready to give a non-lethal shock to the attacker. If the help is not available and if the system is not reset within the stipulated time, the system obtains location information from the GPS and prepares a text SMS containing the present location information and sends a SMS through the GSM modem to the police control room and a distress message to the pre-programmed mobile number[3]. The design is implemented using an embedded microcontroller, in a modular form to be adaptable to different types of location tracking. Based on the total design of the system, the hardware and software of the system is designed to be near real time monitoring of the women and immediate help. The lady can protect herself by electric shock to the person harassing her. The software developed in

assembly language Demonstrate the system capability in providing real-time response. Using the location information supplied by the system, the location can be tracked and traced using GPS and Google Maps. Thus the lady will be safe and she feels protected. At the product level it can be as compact as a portable device.

**Advantage:**

- Self defence system.
- Easy to operate everyone.

**IV. BLOCK DIAGRAM**

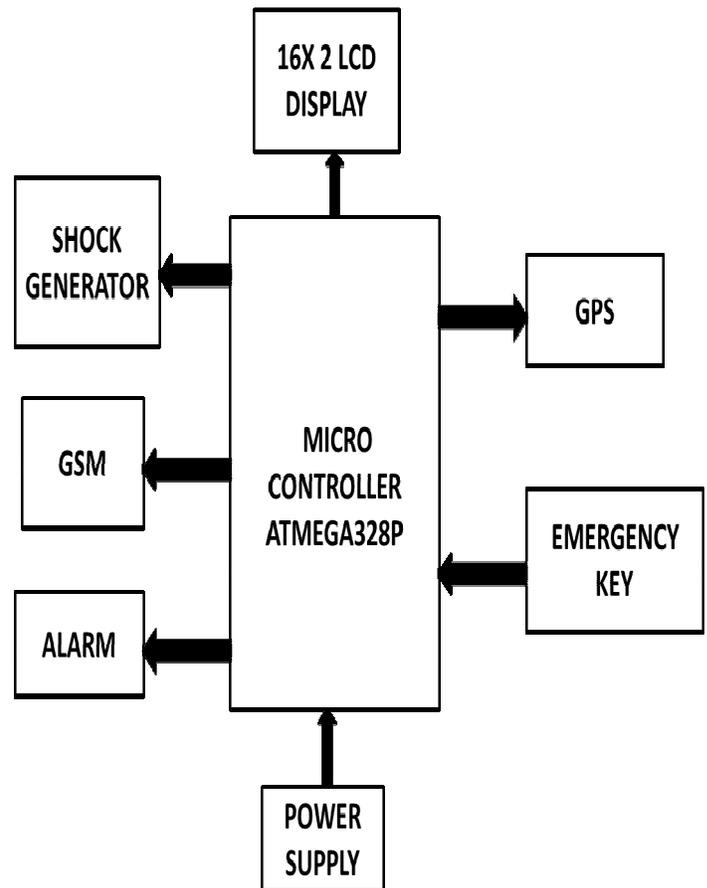


FIG: Block Diagram

**Hardware requirements:**

- Arduino UNO

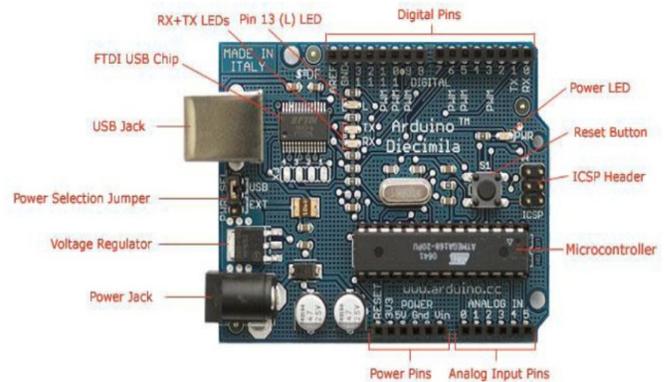
- GPS
- GSM
- Shock Generator
- Alarm Circuit
- LCD Display
- Relay
- Power supply unit

**Software requirements:**

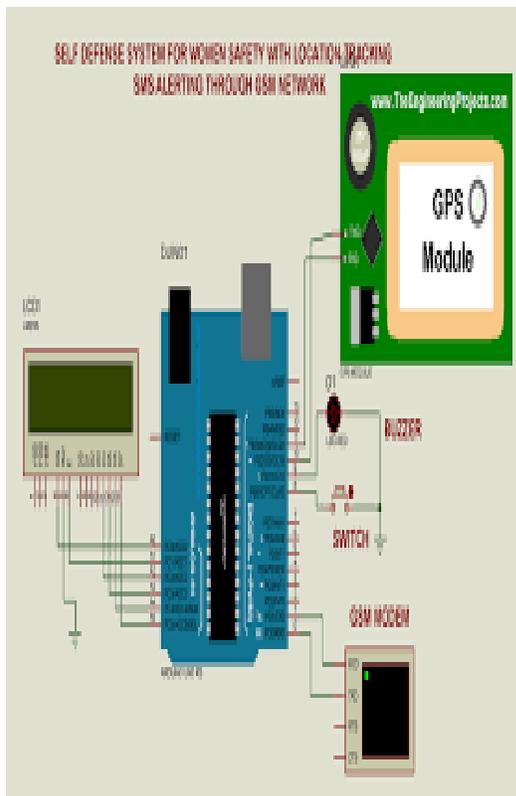
- Arduino IDE
- Embedded C

memory, and programmable input/output peripherals. Microcontrollers include and integrated CPU, memory and peripherals' capable of input and output

**Arduino pin diagram:**



**V. CIRCUIT DIAGRAM**



**Arduino:**

Arduino UNO is a microcontroller board based on the ATmega328p. it has 14 digital input/output pins, 6 analog input, a 16 MH quartz crystal, a USP connection, a power jack , and ICSP heater and a reset button . it contains everything needed to support the microcontroller, simply connected to a computer with a USP cable or power it with a AC to DC adapter or battery to get started



**Buzzer:**

**Need of microcontroller:**

A microcontroller is a functional computer system on- a - chip. It contains a processor core,



A Buzzer or beeper is an audio signaling device, which may be mechanical, electromechanical or piezoelectric typical uses of buzzers and beepers include alarm devices, timers and confirmation of user input such as a mouse click or key stroke. Buzzer is an integrated structure of electronic transducers, DC power supply, widely used in computers, printers, copiers, alarms, electronic toys, automotive electronic equipment, telephones, timers and other electronic products for sound devices.

Active buzzer 5v rated power can be directly connected to a continuous sound, this section dedicated sensor expansion module and the board in combination, can complete a simple circuit design, to “Plug and play”.

#### **Power supply:**

The operation of power supply circuits built using filters, rectifiers, and then voltage regulators. Starting with an AC voltage, a steady DC voltage is obtained by rectifying the AC voltage. Then filtering to a DC level, and finally, regulating to obtain a desired fixed DC voltage. The regulation is usually obtained from an IC voltage regulator unit, which takes a DC voltage and provides a somewhat lower DC voltage, which remains the same even if the input DC voltage varies, or the output load connected to the DC voltage changes.

#### **(LCD)Liquid Crystal Display:**



Most common LCDs connected to the microcontrollers are 16x2 and 20x2 display. This means 16 characters per line by 2 lines and 20 characters per line by 2 lines, respectively. The standard is referred to as HD44780U, which refers to the controller chip which receives data from an external source and communicates directly with the LCD.

#### **Shock Generator:**

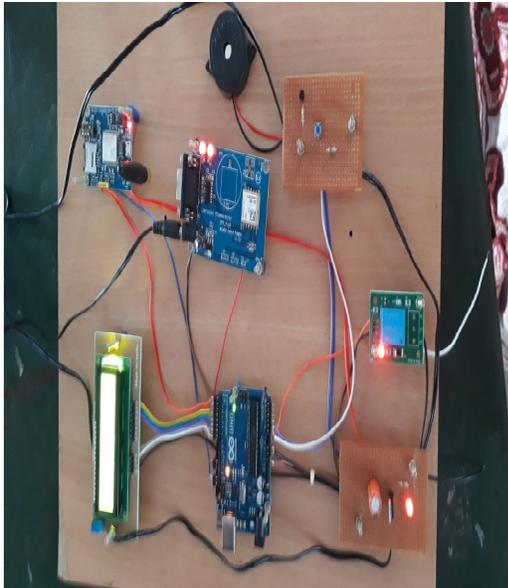
Electric shock generator is an electronic device that produces voltage around 1200mv & current of 3microamp. Electric shock generator is fixed in to the portable device. Whenever the push button is triggered the shock is generated on to the tip of the device. In shock generator circuit the concept of mosquito bat is used.

## **VI. CONCLUSION**

Being safe and secure is the demand of the day. Our effort behind this paper is to design and fabricate a gadget which is so compact in itself that provides advantage of personal security system. This design will deal with most of the critical issues faced by women and will help them to be secure. Existing systems provide the mechanism to track the vehicle but no other emergency mechanism is proposed. The proposed mechanism provides viewing the location of the victim in terms of latitude and longitude which can further be tracked using Google maps. This system helps to decrease the crime rate against women.

Women's security is a critical issue in current situation. These crimes can be brought to an end with the help of real time implementation of our proposed system.

## VII. RESULT



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