

Design of Women Safety Device based on GPS

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Abstract - Women safety has always been an issue even in these modern times with so much advancement in technology. Women are not safe anywhere and are most vulnerable when traveling alone into lonely roads and deserted places. The main purpose of this device is to act as an emergency device for women, who are in potential danger of being attacked. The woman possessing this device will press the SOS button if in danger. An SMS containing the latitude and longitude coordinates will be sent to pre fed mobile numbers informing them of the danger and the location.

Key Words: GPS, GSM, Microcontroller

1. INTRODUCTION

Women safety is an important aspect of day-to-day life. The condition of woman in the world, especially in India has gone through many changes in the past few years, even though many women have done achievements and get the right positions in workplace and constitution. Still, they are looking for safety from social issues like sexual assault. Women don't know how to protect themselves from that situation and unable to find a help from their known ones and the police department, so we have proposed a method that provides physical protection to the woman by using the stun gun[2] technology. Whenever the panic key is pressed the boost circuit delivers a very strong shock pulse to the stranger at the same time by using the GPS[4], the live location of the woman is shared to the registered numbers.

In this age of technology, mobile phone is one of the gadgets that almost everyone like and uses to keep in touch with family and friends. All they need is a device that can be carried everywhere easily. This proposed project deals with a quick responding, cost protection system for an individual and especially for women using which a woman in anguish can call for help just with the press of a button on this smart gadget.

Women Safety Device can play a major role by providing women a safe environment in all situations for example detecting hidden camera, physically threatened, harassed, robbery, stalked. Implementing this device, these problems can be solved to an extent. With further research and innovation, this project can be used as a small wearable device like hand band, pendent[3] etc.

2. COMPONENTS

Following components are required for making this gadget. This gadget is prepared in two parts: hardware part and software part. The list of components required for designing the hardware and software part is given below.

2.1 HARDWARE

i. Arduino UNO : The Arduino microcontroller is an easy to use yet powerful single board computer that features an Atmel ATmega328 microcontroller operating at 5V with 2KB of RAM and 32KB of flash memory for storing programs and 1KB of EEPROM for storing parameters.

ii. SIM900 Modem: A SIM 900a based GSM modem is used to receive and send short message to user and system.

iii. NEO6M GPS Module: The heart of the module is a NEO-6M GPS chip. It can track up to 22 satellites on 50 channels and consuming only 45mA supply current. One of the best features the chip provides is Power Save Mode (PSM).

iv. Button: Push Button /Tactile Switch is used.

v. Adapter: An electric adaptor is used to convert attributes of one electrical device to those of an otherwise incompatible device.

vi. Relay : A relay is an electrically operated switch that can be turned on or off, letting the current go through or not, and can be controlled with low voltages, like the 5V provided by the Arduino pins.

vii. High Voltage Shock Circuit: High Voltage Shock Circuit is known as Stun Gun Shock Circuit Device, which has a 5-stage voltage multiplier circuit generating an output voltage of 10KV.

viii. Buzzer: A buzzer or beeper is an audio signaling device, which may be mechanical or electromechanical.

2.2 SOFTWARE

Arduino IDE: After successful completion of the Hardware connections, the Arduino Nano is programmed.

3. METHODOLOGY

Figure-1 shows the methodology of our device. As shown in figure first of all whenever 4 switch is pressed by victim it generates a signal and this signal goes to our micro-controller board through which signal is sent to GSM[6] module and GSM send current location to police and family members through the GPS. And the another switch that we use in it is a Relay which is used for activating the stun-gun circuit.

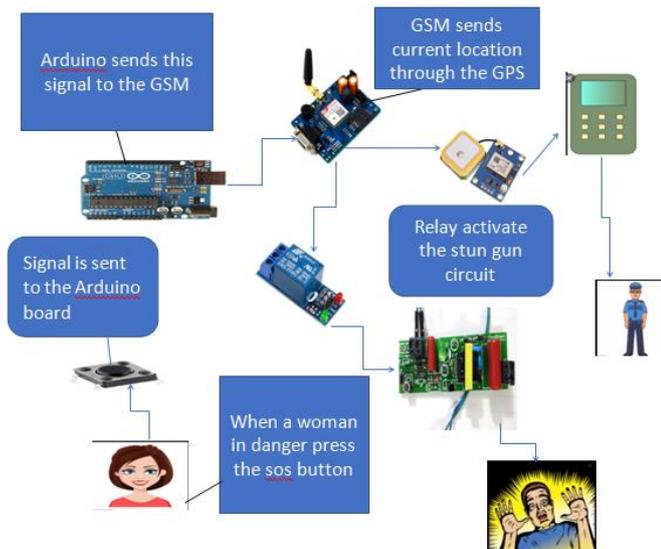


Figure 1: Methodology

4. SYSTEM DESIGN

The circuit comprises of Microcontroller (ARDUINO), GSM/GPS modules, SOS button, receiver and transmitter. At the point when the trigger is squeezed, the gadget will get initiated consequently. Quickly the area of the casualty will be followed with the assistance of GPS and crisis messages will be sent to contacts and one to police control room at regular intervals with upgraded area[7]. The shouting caution unit will be initiated and will convey sirens to get out for help[8]. The framework is additionally fit to produce an electric stun to hurt the assailant which may help the casualty to get away, connectivity as shown in fig.4 of the device.

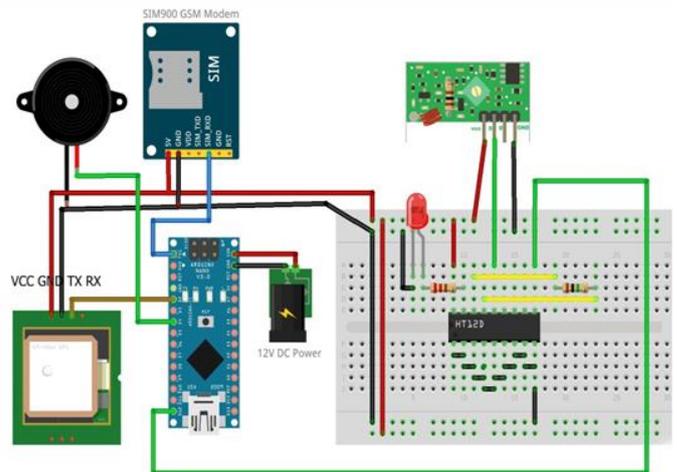


Figure 2: Circuit connection

System designing is split into two sections, namely transmitter section and receiver section. Figure 3 and 4 shows the block diagram of transmitter and receiver sections.

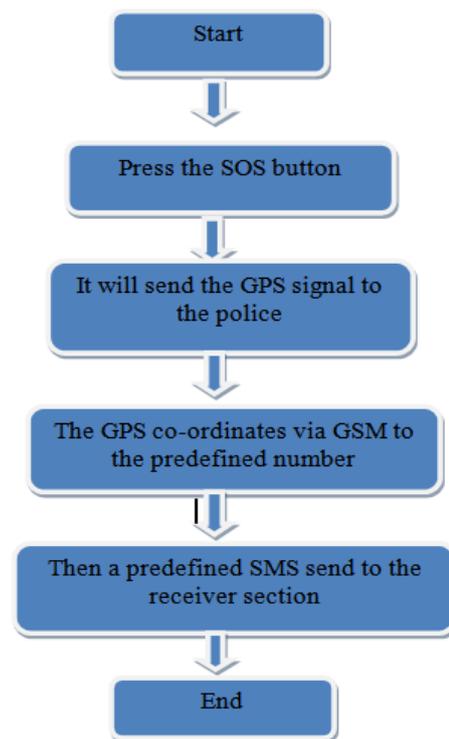


Figure 3: Transmitter section

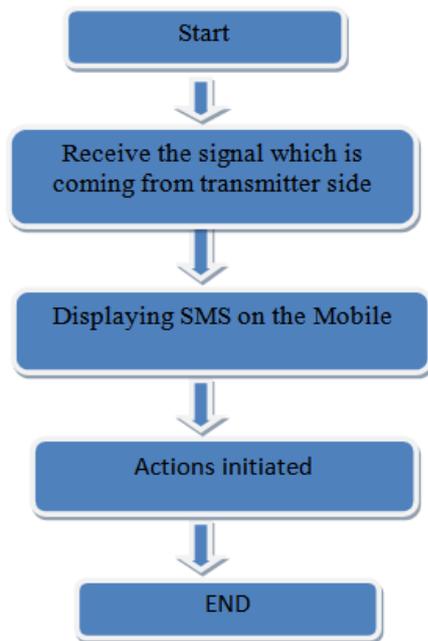


Figure 4: Receiver section

5. RESULT AND DISCUSSION

A model with NE06M GPS module, GSM SIM300, stun gun and Buzzer controlled by Arduino microcontroller acts as the useful gadget for women safety, the location information and message "*I am in danger*" is received by the emergency contacts. Another SOS button using for stun gun which is for activating the high voltage current through which an individual can defend herself.

The limitation of the device is its operating voltage is 3.4-4.5V more then or less then this it cannot be operated. These algorithms cannot guarantee 100% security. Sometimes the GPS may fail due to certain reasons and in that case you need to carry a backup map and direction.

6. CONCLUSION

Women's security and safety is a critical and social issue in today's world. In this paper we have successfully designed the women safety system which can be kept in pocket

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