



# WOMEN SECURITY SYSTEM USING GSM AND GPS

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**ABSTRACT:** Today in the current global scenario, the prime question in every girl's mind, taking into account the ever rising increase of issues on women harassment in recent past, is only about her safety and security. The only thought haunting every girl is when they will be able to move freely on the streets even in odd hours without worrying about their security. This paper suggests a new perspective to use technology to protect women. The system resembles a normal clothes which when activated, tracks the location of the victim using GPS (Global Positioning System) and sends emergency messages using GSM (Global System for Mobile communication), to three emergency contacts and the police control room. The system also incorporates a screaming alarm that uses real time clock, to call out for help and also generates an electric shock to injure the attacker for self defence.

**Keywords:** Safety, Security, Protection, Self Defence.

## 1. INTRODUCTION

In today's world, women safety has become a major issue as they can't step out of their house at any given time due to physical/sexual abuse and a fear of violence. Even in the 21st century where the technology is rapidly growing and new gadgets were developed but still women's and girls are facing problems. Women are adapt at mobilizing diverse groups for a common reason. They often work across ethnic, religious, political, and cultural divides to promote liberty. We are all aware of importance of women safety, but we must analyze that they should be properly protected. Women are not as physically fit as men, in an emergency situation a helping hand would be assistance for them. The best way to cur tail your probability of becoming a dupe of violent crime (robbery, sexual assault, rape, domestic violence) is to recognize, defence and look up resources to help you out of hazardous situation. If you're in dilemma or get split from friends during a night out and don't know how to find back residence, this device with you will guard you and can reduce your

risk and bring assistance when you need it. There are several app reduce the risk of sexual assault on women by informing control centre and their associates through SMS, but inlay of those this apparatus have much more efficient way to inform those this respected personals and also has a defending system which cannot be provided by existing app. This paper focuses on a security system that is designed solely to serve the purpose of providing security to women so that they never feel helpless while facing such social challenges. The system resembles a normal clothes which when activated, tracks the location of the victim using GPS (Global Positioning System) and sends emergency messages using GSM (Global System for Mobile communication), to three emergency contacts and the police control room. The system also incorporates a screaming alarm that uses real-time clock, to call out for help and also generates an electric shock to injure the attacker for self defence.

## 2. MATERIALS AND STUDY

The implementation of women security system (was) via GPS and GSM is to protect women and girls from sexual harassments and other forms of violence. In this paper we have implemented women safety system using AT89S52 microcontroller via GSM modem and GPS module and the interfacing is done through UART. Small introduction of these two modules which were used in existing work were discussed below

a) An AT89S52 microcontroller is one of the series of 8051, one of the oldest yet commonly used microcontrollers. It has the less complex features than other microcontrollers and it is also easily available and cheap in comparison of other microcontroller.

b) *GSM modem* (Global System for mobile Communication): GSM is a digital mobile telephony system. It operates at either the 900MHz or 1800MHz frequency band.



In case of any harassment, the women wearing a watch or band is embedded with 8051 microcontroller and through GSM the “help” message is sent to 4 predefined contacts (parents, friends, media, police control room). In this system women has to press the switch manually. It may be a disadvantage if she may not be in the situation to press the switch. So to overcome this in our proposed work we have used force sensor which will sense over force exerted onto the women automatically. And also in the existing system there is no immediate attack to the attackers. In our project we have added this feature also to provide more security system.

### 3. PROPOSED TECHNIQUE

In the proposed design we have implemented an automatic women security system. That the proposed system is to design a portable device which resembles normal clothes. It consists of microcontroller with GSM/GPS modules, screaming alarm force sensors and shock circuit providing electric shock.

#### Level 1:

When the threshold of the force sensor crosses, the device will get activated automatically. Immediately the screaming alarm unit will be activated and will send out sirens to call out for help and the location of the victim will be tracked with the help of GPS and emergency messages will be sent to the contacts

#### Level 2:

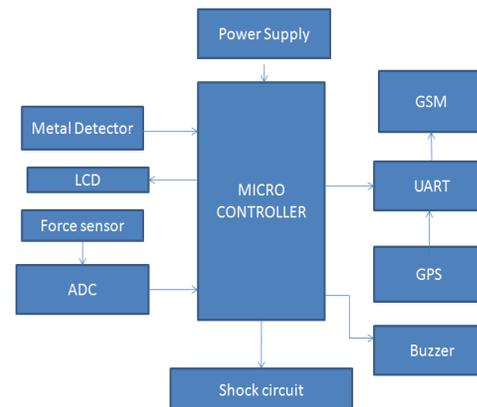
Metal detector is used to sense whether the attacker has any knife or related things. The system is also capable to generate an electric shock to harm the attacker which may makes victim to escape.

#### Level 3:

To send messages and track the location GSM and GPS is used. The design can also provide electric shock to the attacker for immediate recovery. Thus our design achieves more security.

### 4. BLOCK DIAGRAM

This system has been implemented to secure the women from any kind of harassments. Its been obtained in three level of security.



When a force which is higher than the threshold value is applied to the women, it was detected by the force sensor and system incorporates a screaming alarm that uses a buzzer to call out for help. Since the force sensor output is analog, it is given to the ADC to get the digital output.

The metal detector detects the presence of metals like knife and other things present with the kidnappers and with the help of shocking circuit, the shock was applied to the kidnappers. The shock that was applied is mild.

The GPS is meant for tracking the location of the spot and with the help of GSM the emergency message is sent to the predefined contact. The UART is used to communicate with GPS and GSM module. The message is sent using peripherals with continuous I/O communication. Christo Ananth et al. [3] discussed about a system, GSM based AMR has low infrastructure cost and it reduces man power. The system is fully automatic, hence the probability of error is reduced. The data is highly secured and it not only solve the problem of traditional meter reading system but also provides additional features such as power disconnection, reconnection and the concept of power management. The database stores the current month and also all the previous month data for the future use. Hence the system saves a lot amount of time and energy. Due to the power fluctuations, there might be a damage in the home appliances. Hence to avoid such damages and to protect the appliances, the voltage controlling method can be implemented.

The LCD display monitors the whole operation.

### 4. HARDWARE DESCRIPTION:

#### 4.1 ATMEL89S52

The AT89S52 is a low-power, high-performance CMOS 8-bit microcontroller with 8K bytes of in-system programmable Flash memory. The device is manufactured using Atmel's high-density nonvolatile memory technology and is compatible with the Indus-



try-standard 80C51 instruction set and pin out. The AT89S52 is a low-power, high-performance CMOS 8-bit microcontroller with 8K bytes of in-system programmable Flash memory. The AT89S52 provides the following standard features: 8K bytes of Flash, 256 bytes of RAM, 32 I/O lines, Watchdog timer, two data pointers, three 16-bit timer/counters, a six-vector two level interrupt architecture, a full duplex serial port, on-chip oscillator, and clock circuitry.

#### 4.2 GSM

GSM Shield (SIM 900a): The SIM900 which is a complete Quad-band GSM/GPRS solution comes in a SMT module which can be embedded in customer applications. Featuring an industry-standard interface, the SIM900 delivers GSM/GPRS 850/900/1800/1900MHz performance for Data, voice, SMS and Fax in a small form factor and with low power consumption. SIM900 can fit almost all the space requirements in the M2M application with dimensions of 24mm x 24mm x 3 mm. SIM900 is designed with a very powerful single-chip processor integrating AMR926EJ-S core. Quad - band GSM/GPRS module with a size of 24mmx24mmx3mm, SMT type suit for customer application, An embedded Powerful TCP/IP protocol stack Based upon mature and field-proven platform, backed up by our support service, from definition to design and production.

#### 4.3 LCD

LCDs come in many shapes and sizes but the most common is the 16 character x 2 line display with no back light. It requires only 11 connections – eight bits for data (which can be reduced to four if necessary) and three control lines (we have only used two here).

It runs off a 5V DC supply and only needs about 1mA of current. The display contrast can be varied by changing the voltage into pin 3 of the display, usually with a trimpot. To get the display working requires eight bits of data, a register select line (RS) and a strobe line (E). These are supplied from the PC printer port (refer to schematic). A third input, R/W, is used to read or write data to/from the LCD. In this kit the R/W line is tied low so only writes to the LCD are possible (more on this later). The eight bits of data are supplied from the printer port data lines and two printer port control lines are used for RS ('auto') and E ('strobe'). Basically the LCD has two registers, a data register and a control register. Data is written into the control register when RS is low and into the data register when RS is high. Data is latched into the LCD register on the falling edge of 'Enable'.

#### 4.4 GPS

GPS Module: This is a GPS Receiver (5V Serial) with high gain having 4 Pin 2.54mm pitch strip. The third generation POT (Patch Antenna on Top) is used by the receiver for the GPS module. It can be interfaced with normal 5V Microcontrollers with the help of the in built 3V-5V converter. The interfacing is made easier with the help of low pin count. The 4 Pins are 5V, TX, RX, and GND. This standalone 5V GPS Module does not require external components. It consists of internal RTC Back up battery and can be directly connected to USART of the microcontroller. The current date, time, longitude, latitude, altitude, speed, and travel direction / heading among other data, are provided by the module and can be used in a many applications including navigation, fleet management, tracking systems, mapping and robotics. The module can support up to 51 channels. The GPS solution enables small form factor devices which deliver major advancements in GPS performances, accuracy, integration, computing power and flexibility. They are used to simplify the embedded system integration process.

#### 4.5 SCREAMING ALARM (BUZZER)

The device offers true on-volatile storage, single-chip voice recording and playback capability for 40 to 60 seconds. It supports both random and sequential access of multiple messages. Sample rates can be selected by user, allowing designers to customize their design for unique quality and storage time needs. Microphone amplifier, integrated output amplifier and AGC circuits greatly simplify system design. This device is ideal for use in portable voice recorders and many other consumer and industrial applications. High levels of storage capability is achieved by APLUS integrated using its analogy/multilevel storage technology which is implemented in an advanced Flash non-volatile memory process. 256 voltage levels can be stored in each memory cell. This technology enables the APR9600 device to reproduce voice signals in their natural form eliminating the need for encoding and compression, due to which often distortion is introduced.

#### 4.6 FORCE SENSOR

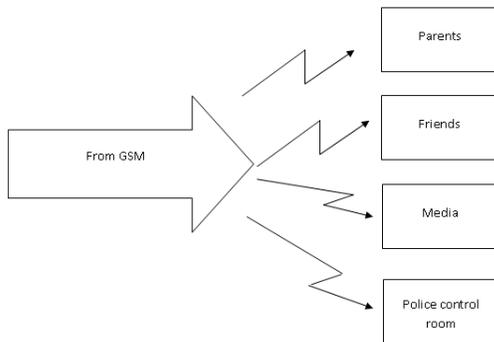
The Force Sensor used here is Piezoelectric sensor which measure the force level above the threshold level. It has a supply voltage level of 6Vdc. The common mode pressure of this sensor is 5psig (pressure pounds per square in gauge). The output of force sensor is analog signal.

### 5. OPERATION TECHNIQUE

The implementation of women security system achieved in three levels. In the first, alarm is raised based on force sensor when it detects force being



applied on women. In second, shock is applied to kidnappers when metal detector detects the presence of metal. At third, message will be send to the predefined numbers using GSM and spot is being tracked using GPS. The main advantage of this system is that the user does not require a Smartphone unlike other applications that have been developed earlier. The use of sophisticated components ensures accuracy and makes it reliable. The cloves provides with all the features which will leave no stone unturned to help the victim in any kind of emergency situations.



Women wear cloves, if somebody try to attack her heavy force is exerted on her. The force sensor senses force on the women continuously. When heavy force is applied on her by attacker it sense the force more than the threshold level it sends signal to the controller. The metal detector also senses for the presence of metal like knife and etc. suddenly the controller applies electric shock on the attacker through the electric shock system and alarm is raised for help. The location is tracked by the GPS module. The location and HELP message is sent to the contacts that we have stored in our system through GSM module. So women can be saved from the attackers.

#### 6. RESULT:

We successfully implemented the system and acquired the desired output. The intelligent security system women has been developed with such a motivation that the women are provide with safe environment under all circumstances.

#### 7. CONCLUSION:

The proposed design will deal with critical issues faced by women in the near past and will help to solve them with technically sound equipments and ideas. This system can overcome the fear that scares every woman in the country about her safety and security.

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