Women safety and security system using GSM and GPS

K.Latha, G.Vinay Kumar, P.Naveen, B.Srikanth, K.Vijay Srinivas

1Assistant Professor, 2student, 3student, 4student, 5student
1Electronics communication Engineering Department,
2QIS Institute of Technology, Ongole, India.

Abstract: Women have the right to be free from violence, harassment and discrimination. Removing the barriers of an unsafe environment can help women fulfil their potential as individuals and as contributors to work, communities and economies. But the World Health Organization estimates that about 1 in 3 (35%) of women worldwide have experienced either physical and/or sexual intimate partner violence or non-partner sexual violence in their lifetime. In this paper, “WOMEN SAFETY AND SECURITY SYSTEM USING GSM AND GPS” is defined to protect the women by herself. This paper proposes a quick responding mechanism that helps women during trouble. When someone is going to harass, she can just press the button and the location information is sent as an SMS alert to few pre-defined numbers in terms of latitude and longitude. The purpose of this paper is to feel safe the women.

Keywords: Arduino Uno, GSM Modem GPS Modem, Relay Driver and Shock Circuit

I. INTRODUCTION

Safety of Women in India has become a major issue in India now. The crime rates against women in the country have only risen to a great extent. Women think twice before stepping out of their homes, especially at the night. This is, unfortunately, the sad reality of our country that lives in constant fear. There cannot be real inclusion of women in society if women are subject to violence and harassment. We have a duty and opportunity to use our influence to expose and drive out intolerable behaviours and work together to promote a respectful environment.

We can add a camera and microphone to the Arduino ATMEGA. By using this we can capture the images and record the audio of the person, who are in trouble and these information will transmitted by using the GPM & GPS modules. The GPS module find out the position or location in terms of latitude and longitude, then it will send the information to some predefined numbers by using a GPS module.

Basavaraj Chougula proposed a SMART GIRLS SECURITY SYSTEM is to design a portable device which resembles a normal belt. It consists of Arduino Board, GSM/GPS modules, screaming alarm and pressure sensors.

Poonam Bhilare describes a “GPS and GSM based vehicle tracking and women employee security system” that provides the combination of GPS device and specialized software to track the vehicle’s location as well as provide alerts and messages with an emergency button trigger. R.A.Mahajan designed a paper on A SURVEY ON WOMEN’S SECURITY SYSTEM USING GPS AND GSM In this application the security system is done using the actual location tracing and SMS ,Audio to text Transmission module .The system send the emergency SMS by two category online and offline if the victim don’t have the internet availability then they can directly transfer the offline SMS to particular emergency contact number .The application also send the actual location related information of victim to emergency contact number.

Ms Sonali proposed WOMEN SECURITY SYSTEM USING GPS AND GSM. This paper proposes a quick responding mechanism that helps women during trouble. When someone is going to harass, she can just press the button and the location information is sent as an SMS alert to few pre-defined numbers in terms of latitude and longitude.

C. Priya explain One Touch Alarm for Women’s Safety Using Arduino GPS is connected to ARM controller. The capacitive sensor need to be pressed for fraction milliseconds to alert locate, and can send emergency message to the emergency contacts with intent location and the buzzer will alert to nearby people for help, then the tear gas will be released after the touching sensor is touched .Thus the victims can have enough time to escape from stranger using our application.

Mohamad Zikriya illustrate Smart Gadget for Women Safety using IoT system gives first priority on self-defence by providing the tolerable electric shock to culprit that reduces the exited state and help women to escape the critical situation, we also tend to implement the device that is triggered without any manual aide that provides safety for women in public places transport vehicles such as cabs, taxi, bus, auto rickshaw and working places.
Aim of the Study
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 buzzer is used as an alarm to alert the nearby people so that they may understand that someone is in need shock circuit generates an electric shock to injure the attacker for self defense.

II. EXPERIMENTAL SETUP

![Fig 1: Block diagram of women safety and security system](image)

In this proposed method, the women was in danger position then the women goes for self defense like we add a shock circuit. By using the shock circuit, she used to touch the person who is going to harm her then the person gets shocks but she won’t gets shocks. In this application the security is done by using the actual location tracing and SMS. The particular location of the victim was traced with longitude and latitude without any delay. The system sends the emergency SMS and location information to the predefined numbers. In addition to location tracking it also provides some safety and security to women like giving electric shock to the attacker.

The above block diagram gives an overview of the project in the pictorial form. With the help of the block diagram we will create pre model of the project and analyze the function of the project. The explanation of the project with block diagram overview is given as follows.

POWER SUPPLY
This section is meant for supplying Power to all the sections mentioned above. It basically consists of a Transformer to step down the 230V ac to 12V ac followed by diodes. Here diodes are used to rectify the ac to dc. After rectification the obtained ripple dc is filtered using a capacitor Filter. A positive voltage regulator is used to regulate the obtained dc voltage.

MICROCONTROLLER SECTION
This section forms the control unit of the whole project. This section basically consists of a Microcontroller with its associated circuitry like Crystal with capacitors, Reset circuitry, Pull up resistors (if needed) and so on. The Microcontroller forms the heart of the project because it controls the devices being interfaced and communicates with the devices according to the program being written.

LCD DISPLAY SECTION
This section is basically meant to show up the status of the project. This project makes use of Liquid Crystal Display to display / prompt for necessary information.

BUZZER SECTION
This section consists of a Buzzer. The buzzer is used to alert / indicate the completion of process. It is sometimes used to indicate the start of the embedded system by alerting during startup.

GSM MODULE SELECTION
A GSM module is a chip or circuit that will be used to establish communication between a mobile device or a computing machine and a GSM system. The modem (modulator-demodulator) is a critical part here. These modules consist of a GSM module powered by a power supply circuit and communication interfaces (like RS-232, USB 2.0, and others) for computer. A GSM modem can be a dedicated modem device with a serial, USB or Bluetooth connection, or it can be a mobile phone that provides GSM modem capabilities.

GPS MODULE SELECTION
Global Positioning System (GPS) is a satellites based system that uses satellites and ground stations to measure and compute its position on Earth. GPS is also known as Navigation System with Time and Ranging (NAVSTAR) GPS. GPS receiver needs to receive data from at least 4 satellites for accuracy purpose. GPS receiver does not transmit any information to the satellites. This GPS receiver is used in many applications like smart phones, Cabs, Fleet management etc.
BUMPER SWITCH SELECTION
When it is pressed then it will send GPS signal to the controller, then controller will send the GPS co-ordinates via GSM to the pre-defined numbers.

RELAY DRIVER CIRCUIT SELECTION
It is a mechanical switch which is operated electrically to turn ON or OFF current in an electrical switch.

III. CIRCUIT DIAGRAM

![Circuit Diagram of women safety and security system](image)

Fig 2: Circuit Diagram of women safety and security system

WORKING

The power supply consists of a step down transformer 230/12V AC which is converted to DC using a Bridge rectifier. The ripples present are removed using a capacitive filter and it is then regulated to +5V using a voltage regulator 7805 which is required for the proper operation of the microcontroller and other components.

When someone is going to harass, she can just press the button and the location information is sent to as an SMS alert to few pre-defined numbers in terms of latitude and longitude. The controller used is ATmega 328p. It is interfaced with a push button, a GPS module, a GSM modem and a 16X2 LCD display. If the switch is pressed the controller take the current location information from the GPS module and send those data to pre-defined numbers using a GSM modem. The program is developed in a "C" language. The purpose of this project is to feel safe the women.

FLOW CHART

![Flow Chart](image)
IV RESULT & DISCUSSION

The main purpose of the work is to provide safety and security to the women in danger situation. The button is pressed by a women when she feels insecure. Once the button is ON, the microcontroller gets the commands and the GPS will calculate the current latitude and longitude values of the victim. The calculated values are shown in Fig 3. GSM module will send SMS which contains latitude and longitude values to the numbers already stored in the microcontroller and nearby police station. GSM will send SMS to the registered mobile numbers for every 1 second. The SMS send to the registered mobile numbers are shown in Fig. 4. display message on the LCD is shown in Fig 5. IoT module will track the current location of the victim and it will update the location on the webpage. The microcontroller will switch ON the buzzer in the device, so that nearby people may come to know that someone is in danger and they will come to rescue. The microcontroller also turn ON the neuro-simulator that apply electric shock to the attacker.

Fig 3: GPS detected location values

![GPS detected location values](image)

I AM IN DANGER PLEASE TAKE CARE IMMEDIATELY AT LOCATION: http://maps.google.com/?q=16.511466.80.624526

I AM IN DANGER PLEASE TAKE CARE IMMEDIATELY AT LOCATION: http://maps.google.com/?q=16.511457.80.624633

Fig 4: SMS send to registered number

![SMS send to registered number](image)

Fig 5: Location detected on LCD

![Location detected on LCD](image)

V. CONCLUSION

The project “WOMEN SAFETY AND SECURITY SYSTEM USING GSM AND GPS” has been successfully designed and tested. Here the proposed design will deal with critical issues faced by women in the near past and will help to solve them with technically sound equipment’s and ideas. This system can overcome the fear that scares every woman in the country about her safety and security.

FUTURE SCOPE

Our project idea gives an extension to design a system which shall make every place and every hour safer for women again. A system which shall re-establish how very gregarious mankind is. This system shall geotag and send SOS alert to the nearest police station, close contacts and also alert people in and around the venue of the crime, everything just at a click of a button. The idea is to make up for the time it takes police to arrive at the location. We can add a camera and microphone to the Arduino ATMEGA. By using this we can capture the images and record the audio of the person, who are in trouble and
these information will transmitted by using the GPM & GPS modules. The GPS module find out the position or location in terms of latitude and longitude, then it will send the information to some predefined numbers by using a GPS module.

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