

Intelligent safety system for women security using GPS and GSM

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Abstract— The crimes against women have been rising significantly and often hear about eve-teasing cases in the public places of the society. The security of women is the important concern these days and a safety device to act as a rescue to prevent harm at the time of hazard is highly necessary for them. For that purpose, we are building a intelligent safety system for them, if there is an emergency, concerned victim can send information by clicking the button in the device as an input Then automatically this system detects the victim location and sends SMS alert to the nearest police station and the dearest ones without the requirement of her interaction in critical times. Thus the proposed system is reliable, low cost and user friendly helps women to overcome their fear in critical situation.

Index Terms: Module, GSM Module, Arduino

1.INTRODUCTION

In Today's World the safety of women is in danger. The rate of crimes against women is not decreasing but in fact increasing at an alarming rate especially harassment, molestation, eve-teasing, rape, kidnapping and domestic violence. Many preventive measures have been taken by the government to stop these misbehaving activities but still have not affected the growing rate of these crimes and have remained unaffected. The problem of sexual harassment in work place is increasingly coming out day-by-day. Sexual harassment at a workplace is unwanted behavior of a person that causes discomfort, offence or distress to the other. Majority of such cases are happened to woman by men working at high position in an organization. Women is getting kidnapped at every 44 minutes, raped at every 47 minutes, 17 dowry deaths every day. The fear of harassment against women is not only the condition at outside but it may also happen at homes.

Women are not so physically fit as compared to men so in case of a need a helping hand would be a boon for them. Students face incidents like child trafficking and kidnapping, to overcome this issue we came up with a solution i.e., Intelligent Women Safety System Using GSM and GPS. In this project women can easily overcome their hard situation by making use of our system by giving s single touch our system can help you send emergency alerts to chosen people with your location.The proposed design comprises of features to notify family members and nearby police station for immediate assistance when women are not safe. Moreover, a Shock wave generator is a part of the proposed design which women can use to attack the perpetrator 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 Delhi Nirbhaya case that triggered the whole nation was the greatest motivation for this system. It was high time we women needed a change

2. HARDWARE IMPLEMENTATION

2.1. ARDUINO

Arduino Uno is a microcontroller board developed by Arduino.cc which is an open-source electronics platform mainly based on AVR microcontroller Atmega328.The current version of Arduino Uno comes with USB interface, 6analog input pins, 14 I/O digital ports that are used to connect with external electronic circuits. Out of 14 I/O ports, 6 pins can be used for PWM output.Arduino Uno is a microcontroller, the central controller for the whole unit. Arduino Uno based on the ATmega328.It has 14 digital input/output pins, 6 analog inputs, a 16 MHz

quartz crystal, a USB connection, a power jack, and reset button. The board can be programmed with Arduino Software (IDE). The board can operate on an external supply from 6 to 20 volts. The recommended range is 7 to 12 volts. If using more than 12V, the voltage regulator may overheat and damage the board. ATmega328 is commonly used in many projects hence it is low-powered, low-cost micro-controller. Here we are using arduino as a main component based on requirements and specifications, arduino uno can satisfy our project needs and budget friendly that's why we chosen this one as our main component in our project.



FIG 1. ARDUINO

2.2 LIQUID CRYSTAL DISPLAY (LCD)

Liquid Crystal Display screen is associated in nursing electronic display module. A 16x2 LCD display is basic module and it is commonly used in various devices and circuits. These modules are unit most popular over seven sections and different multi segment LEDs. LCDs are unit economical; simply programmable and don't have any limitation of displaying special & even custom characters (unlike in seven segments), animations and so on. The command register will store the command instructions given to the LCD. A command is an instruction given to LCD will do a predefined task like initializing it, clearing its screen, setting the cursor position, controlling display etc. this component is helpful in displaying the work in proposed system by this we can easily understand what is happening in the system.



FIG2. 16*2 LCD

2.3 GSM MODULE

GSM module is used to establish communication between a computer and a GSM-GPRS system. Global System for Mobile Communication (GSM) SIM card is inserted within the mobile device to send and receive the messages. The GSM SIM card number is registered with the system. With increasing usage of GSM, network services square measure expanded on the far side speech to include several alternative custom applications, machine automation and machine to machine communication. It operates at either the 900MHz-1800MHz frequency band. In this proposed system GSM module is playing key role in communicating the information between the victim and concerned emergency people.

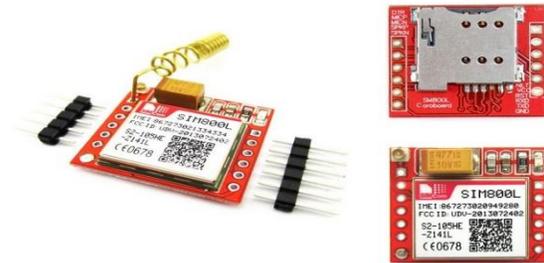


FIG3. GSM module

2.4 GPS MODULE

Global positioning system (GPS) is a satellite-based system that uses satellites and ground stations to measure and compute its position on earth. GPS gives the information about the latitude and longitude of the victim's location. It is an external type lengthy antenna and operating frequency is 1575MHz and operating voltage is 3-5V. The data synchronization is high in this type of module. The Global Positioning System is a location tracker. It, tracks the current location in the form of longitude and latitude. The GPS Coder Module will use this information to search an exact address of that location as the street name, nearby junction etc. which is directly connected to USART of the microcontroller provides reliable positioning, navigation, and timing services to worldwide users on a continuous basis in all weather, day and night, anywhere on or near the Earth. This GPS module will trace the victim location and will send information to arduino after that arduino uno will send that information to GSM. In turn it will send information to concerned people.



FIG4. GPS MODULE

2.5 PUSH BUTTON

A push-button or simply button is a simple switch mechanism to control some aspect of a machine or a process. Buttons are typically made out of hard material, usually plastic or metal. Button will be useful in activating the system process whenever it is needed.



FIG 5. Push button

2.6BUZZER

A Buzzer or electronic device an audio signalling device, usually piezoelectric speakers (buzzers) are used "piezo buzzer" is basically a tiny speaker that you can connect directly to an Arduino. The piezo buzzer produce sound based on reverse of the piezoelectric effect. These buzzers can be used to alert a user of an event corresponding to a switching action, counter signal or sensor input. Buzzer will be useful in our project by indirectly alerting the people around the victim.



FIG 6. BUZZER

2.7 GOOGLE MAPS

By making use GOOGLE maps we can easily get the respective location with longitude and latitude details, hence now days GOOGLE maps play a key role in tracing locations for delivering and for transporting and also for military purpose.

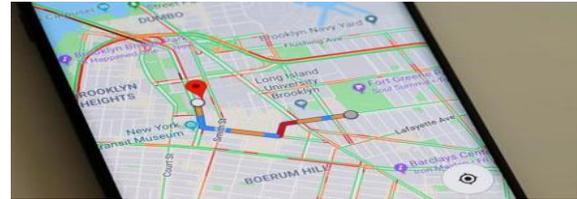


FIG 7. GOOGLE MAPS

2.8 RELAY

A relay is an electromagnetic switch that is used to turn on and turn off a circuit by a low power signal, or where several circuits must be controlled by one signal.

2.9 Voltage Regulator

Voltage regulators are very common in electronic circuits. They provide a constant output voltage for a varied input voltage. In our case the 7805 IC is an iconic regulator IC that finds its application in most of the projects. The name 7805 signifies two meaning, "78" means that it is a positive voltage regulator and "05" means that it provides 5V as output. So our 7805 will provide a +5V output voltage. It provides a constant +5V output voltage for a variable input voltage supply. The 7805 voltage regulator is a three-terminal voltage regulator IC. The availability of this is through various packages like SOT-223, TO-263, TO-220, and TO-3. Among this, TO-220 is the most used one. There are many important features in the 7805 IC. And we are also using 7805 IC in our project to get 5v output.



FIG 8. Voltage regulator

3. PROPOSED SYSTEM

The proposed women safety device provides assistance to a woman who might be in an unsafe situation. The device is essentially ready for all the situations that might go against the will of the woman. Fig.8 shows the hardware design of the safety device. It uses Arduino as micro controller. The design comprises of GSM (Global System for Mobile Communications) module for sending alert messages and GPS (Global positioning system) module for location tracing, buzzer for alerting the environment and shock wave generator for self-defence. It has a LCD that displays the message.

Block Diagram



FIG:9 Block diagram of our proposed system

Workflow of the proposed System

- Step 1: Start.
- Step 2: Switch ON the power supply.
- Step 3: location tracing will takes place can be shown in the figure



Fig 10 : location tracing display

- Step 3: Emergency button is pressed.
- Step 4: If GPS receives signal, GPS will start calculating the current latitude and longitude values of the victim and send it as SMS to the registered mobile number using GSM module.

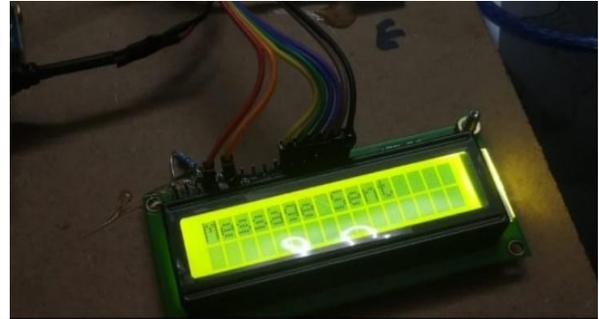


FIG 11: SMS sent to registered mobile number

Step 5: shock button is pressed the shock circuit will get activated; hence can be useful for self-defence in that limited span

Step 6: if she thought she is safe, she can press the safe button

Step 7: all these actions are displayed on LCD

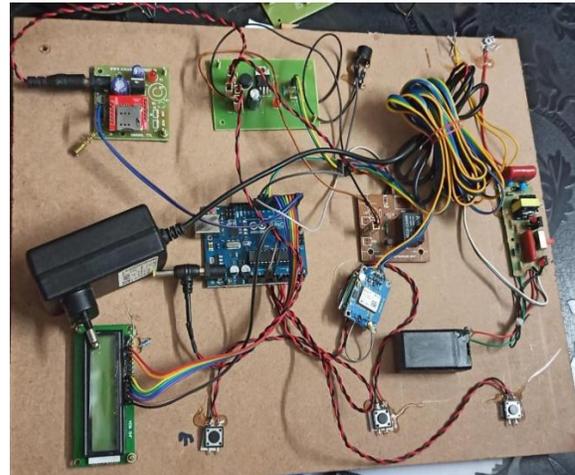


Fig 12: Proposed system Hardware Design

4. RESULTS

In our proposed system whenever the victim presses the emergency button, his location link will be sent to nearby police station and registered Mobile numbers. hence they can also get information about her status whether she is safe or not by making use of safe switch, sometimes if she requires help in seconds of time then there will be a problem, to avoid that problem partially we came up with the solution i.e., shock button. Hence every time whenever she using the system then automatically concerned information and location will be sent to their respective people and nearby police station

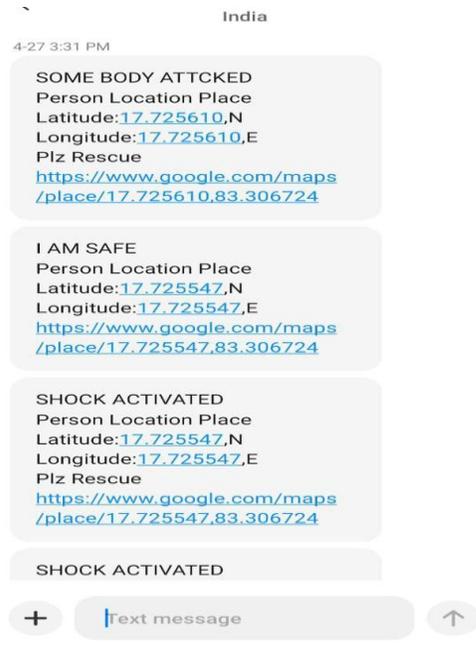


Fig 13: SMS alert with GPS location

5. CONCLUSION

The proposed design will deal with critical issues faced by women and will help to solve them with technologically sound equipment and ideas. The merit of this work is it not only provides safety and it also provides security by means of self-defence mechanism. The crime against the women can be now brought to an end with the help of real system implementation of the proposed model.

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