

Self Defence Device with GSM Alert and GPS Tracking with Fingerprint Verification for Women Safety

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Abstract – A new approach is given towards the security of women in the form of a device. The objective of the device is to provide women with a tool that can provide them security and ensure their safety in case of any mishap. The paper proposes a better approach which makes use of a high voltage current producing circuit which will be used to stun the opposition for few seconds. The fingerprint module for activation of device, electric shock producing circuit, GSM/GPS module for alerting and location tracking all interfaced with a microcontroller to design a small baton shaped device which will be handy and easily portable. Women's safety plays a very vital role now a day due to rising crimes against women. To help resolve this issue we propose a GPS based women's safety system that has dual security feature. The proposed system consists of dual alerts that are buzzer and message is sent through GSM. This system can be turned on by a woman in case she even thinks she would be in trouble. This Project presents a women safety detection system using GPS and GSM modems. The system can be interconnected with the alarm system and alert the neighbors'. This detection and messaging system is composed of a GPS receiver, GPS Receiver gets the location information from satellites in the form of latitude and longitude. The user receives the information from GSM which receives the processed information from the Microcontroller. A GSM modem is interfaced to the MCU. The GSM modem sends an SMS to the predefined mobile number. When a woman is in danger and in need of self- defense then she can press the switch, which is allotted to her. By pressing the switch, the entire system will be activated then immediately a SMS will be sent to concern person with location using GSM and GPS.

Keywords – Arduino UNO microcontroller, GPS, Fingerprint, GSM, Relay.

I. INTRODUCTION

The Indian women's movement has always raised the issue of- violence against women (which is basically, gender-based violence) and the violence that follows from structural inequalities like caste, poverty or identity. No such city or country is present in the world where women and girls live free of the fear of violence. No leader can claim: this is not happening in my backyard. Unfortunately, the news has recently come into the notice about the instances of abuse, kid- napping and rape. Schools and universities must compulsorily teach the students to learn about physical education and art, schools do not equip students with basic skills of life - especially the safety one. It's necessary for a project that instructs young girls how to defend themselves is immense. This work focuses on a security system that is designed to serve the purpose of providing security to women, while

facing such social challenges they never feel helpless. Smartphone's the device operates.

II. LITERATURE SURVEY

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 and girls are facing problems. The device described here is a self defense system specially designed for women in distress to help them to protect themselves. This device can be fitted in a purse, belt or fitted to the girl's sandals and the panic button at- psycho-educational intervention of men that used the violence toward their partner or ex-partner. This was proposed in Spain, Costa Rica and Chile. With reference to , a facial expression analyzing system was developed to report the threat based on facial expressions of danger. The camera captured images of the

captured in those images were analyzed. On detection of the expressions which showed fear, a threat report was filed. This system was proposed to be installed in railway stations, bus stations, shopping, centers, etc.

III. EXISTING SYSTEM

Various methods are existing for women security like pepper spray canisters, the Stun Rings, the Ultra-sonic Dog Repellent, the Stun Gun, the Tear Gas Spray. There are also mobile phone based apps that can send an alert message using GSM networks and GPS locating tracking systems.

Disadvantages:

- Can't refuse the safety problem.
- No system implemented.

IV. PROPOSED SYSTEM

The lady can protect herself by electric shock to the person harassing her. 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 smart watch. Proposed system consist finger print scanner that helps the user to authenticate women safety GSM, GPS are used along with ARDUINO for efficient operation

Advantages:

- Rapid response system
- Easy implementation

1. Design And experimental Details:

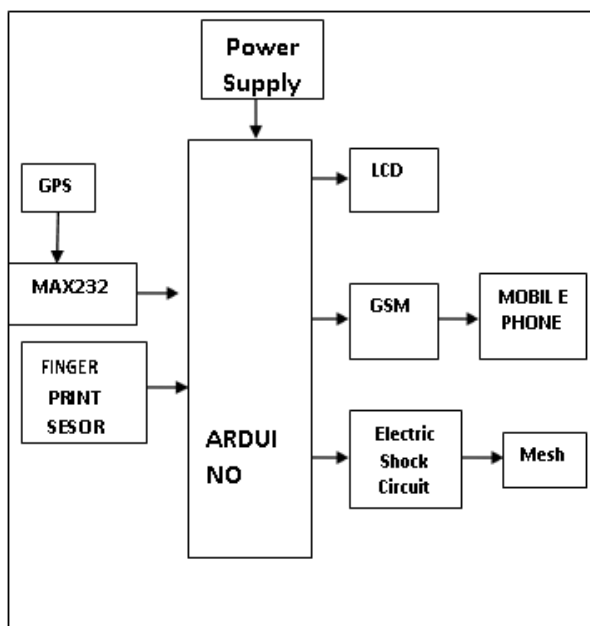


Fig. 1. Block Diagram.

2. Arduino:

Arduino/genuino uno is a microcontroller board based on the atmega328p (datasheet). It has 14 digital input/output pins (of which 6 can be used as pwm outputs), 6 analog inputs, a 16 MHz quartz crystal, a usb connection, a power jack, an icsp header and a reset button. It contains everything needed to support the microcontroller; simply connect it to a computer with a usb cable or power it with a ac-to-dc adapter or battery to get started.. You can tinker with your uno without worrying too much about doing something wrong, worst case scenario you can replace the chip for a few dollars and start over again.



Fig.2. ARDUINO.

3. Finger Print:

This is a finger print sensor module with TTL UART interface for direct connections to microcontroller UART or to PC through MAX232 / USB-Serial adapter. The user can store the finger print data in the module and can configure it in 1:1 or 1: N mode for identifying the person. The FP module can directly interface with 3v3 or 5v Microcontroller. A level converter (like MAX232) is required for interfacing with PC serial port. Optical biometric fingerprint reader with great features and can be embedded into a variety of end products, such as: access control, attendance, safety deposit box, car door locks.



Fig.3.Fingerprint.

4. Liquid Crystal Display:

LCD (Liquid Crystal Display) screen is an electronic display module and find a wide range of applications. A 16x2 LCD display is very basic module and is very commonly used in various devices and circuits. These modules are preferred over seven segments and other multi segment LEDs. The reasons being: LCDs are economical; easily programmable; have no limitation of displaying special & even custom characters (unlike in seven segments), animations and so on. A 16x2 LCD means it can display 16 characters per line and there are 2 such lines. In this LCD each character is displayed in 5x7 pixel matrix. This LCD has two registers, namely, Command and Data. The command register stores the command instructions given to the LCD. A command is an instruction given to LCD to do a predefined task like initializing it, clearing its screen, setting the cursor position, controlling display etc. The data register stores the data to be displayed on the LCD. The data is the ASCII value of the character to be displayed on the LCD.

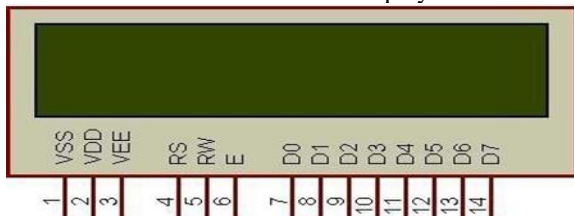


Fig.4.16x2 LCD.

5. GSM Network:

GSM provides recommendations, not requirements. The GSM specifications define the functions and interface requirements in detail but do not address the hardware. The reason for this is to limit the designers as little as possible but still to make it possible for the operators to buy equipment from different suppliers. The GSM network is divided into three major systems: the switching system (SS), the base station system (BSS), and the operation and support system (OSS).

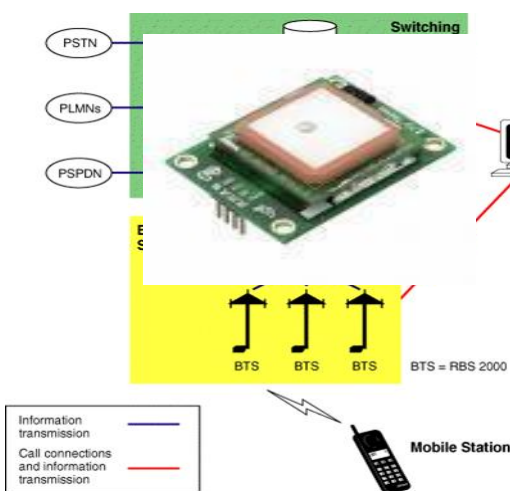


Fig.5. GSM Network.

- To determine position locations; for example, you need to radio a helicopter pilot the coordinates of your position location so the pilot can pick you up.
- To navigate from one location to another; for example, you need to travel from a lookout to the fire perimeter.
- To create digitized maps; for example, you are assigned to plot the fire perimeter and hot spots.
- To determine distance between two points or how far you are from another location.

6. Global Positioning System:

The Global Positioning System (GPS) is a satellite based navigation system that can be used to locate positions anywhere on earth.

Designed and operated by the U.S. Department of Defense, it consists of satellites, control and monitor stations, and receivers. GPS receivers take information transmitted from the satellites and uses triangulation to calculate a user's exact location. GPS is used on incidents in a variety of ways, such as:

GPS is made up of three parts: between 24 and 32 satellites orbiting the Earth, four control and monitoring stations on Earth, and the GPS receivers owned by users. GPS satellites broadcast signals from space that are used by GPS receivers to provide three-dimensional location (latitude, longitude, and altitude) plus the time.

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Fig.6. GPS.

7. Relay:

A relay is an electromechanical switch, which perform ON and OFF operations without any human interaction. General representation of double contact relay is shown in fig. Relays are used where it is necessary to control a circuit by a low-power signal (with complete electrical

isolation between control and controlled circuits), or where several circuits must be controlled by one signal.



Fig.7. Relay.

III. RESULTS

This is the basic model of the kit. We have Arduino, GSM, GPS, Fingerprint sensor and many more. In this step ,it is clear that power is not supplied to the kit.so the kit doesn't work until the power is supplied.The entire project can be explained by the following pictures,here we have mesh which can generate a shock circuit.



Fig.8. When Kit is OFF.

This is the kit when power is on. When power is on the LED lights glow and the LCD screen shows "waiting for the matching fingerprint".

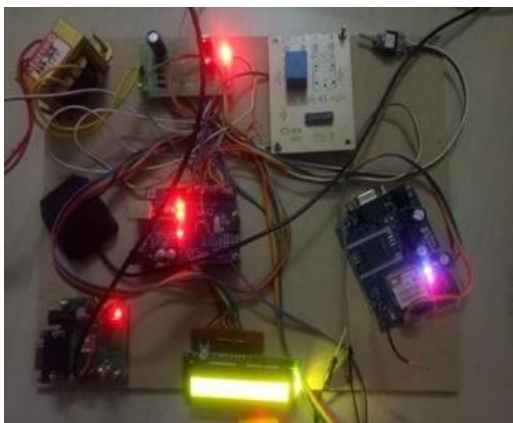


Fig.9. When kit is ON.

This is when we keep our fingerprint on the fingerprint sensor ,if our fingerprint matches then the circuit generates shock circuit which will be used to threaten the opposite person. If our fingerprint doesn't match , then the kit stops working.

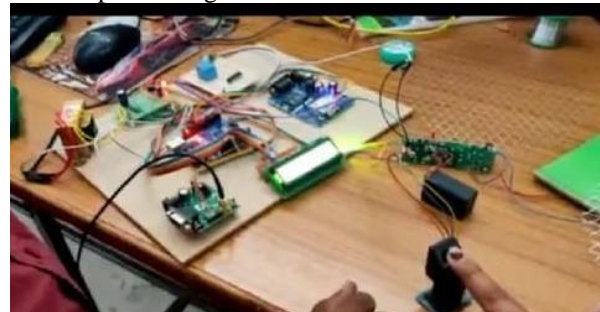


Fig.10. While Keeping Fingerprint.

IV. CONCLUSION

There are many devices which are developed for women's safety but none of the device integrates GSM/GPS alerting and location tracking along with offensive capabilities. The applications which are already used for the women safety do not have any provision for defending herself and does not ensure safety till the messages are sent to the victim's close ones and they arrive at a place of for women's safety but none of the device integrates GSM/GPS alerting and location tracking along with offensive capabilities. The applications which are already used for the women safety do not have any provision for defending herself and does not ensure safety till the messages are sent to the victim's close ones and they arrive at a place of incident and save her from the mishap. The proposed design for Biometric Self Defense Device with GSM Alert and GPS Tracking is the best possible tool for a woman to defend herself. This paper provides an algorithm to develop an equipment which a victim can use to defend herself by stunning the opposition with a high electric current and at the same time she can send an alert message with her current location to her close ones. For sudden attacks, external button can be provided for activation of device. Flashlight can be integrated as an additional protection.

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