Self Defense Security Method for Region Tracking and SMS Alerting Through GSM Networks

K.Anusha[1], B. Ramesh Naik[2]

[1, 2] Department of ECE

[1, 2] Seshachela Institute of Technology, Puttur , AP, INDIA

Abstract- *The world is fitting so much extra dangerous for females. Social evils like molestations, dowry, crime in opposition to females, worst among all is rape is on the rise in lots of international locations. Incidents of crime against women have been increasing at an alarming p.C. In Indian cities, most common incidents being rape, kidnapping, sexual harassment and eve teasing..Security for females continues to be a major quandary because the number of crimes over ladies and girls is growing day-via-day. In this age of technology, cell mobile is one gadget close to everybody makes use of to hold in touch with household and friends.. All they want is a device that can be carried round without problems and worn whenever the woman feels harmful. This inspiration document describes a fast responding, rate protection process for an individual and notably for women using which a girl in distress can call for help just with the clicking of a button on this intelligent gadget. Self safety procedure for ladies security is like a sensible stay up for women. It has the capacity to aid ladies with technologies which can be embedded right into a compact gadget. The ladies carrying this gadget as a watch or band, in case of any harassment or when she finds that any one is going to harass, she presses a switch that is located on the watch or band or when the ladies has fallen the information about the assault along with the body posture and region information is shipped as SMS alert to a couple predefined emergency numbers And soon help is on its way! The process will include embedded hardware and software co-designed for this dedicated utility. The system allows for realizing specific location of the man or woman, as quickly as the set off key on the belt is pressed. By way of providing the instant place of the distressed sufferer to the police so that the incident would be prevented and the wrongdoer apprehended. In case if the caretaker wants to know the reward location of the lady, he/she can accomplish that by means of sending a SMS to the SIM number of the lady which involves a secret password. Then this method responds to such request via sending again a SMS containing place understanding in terms of Latitude and Longitude. This is able to help slash crime towards ladies. It also comprises a shock mechanism to supply non-deadly electric shock in emergency occasions to discourage the attacker.*

Keywords- Microcontroller, GSM, GPS, LED, ADC

I. INTRODUCTION

In at present‟s world, females safety has grow to be a major hindrance as they can‟t step out of their apartment at any given time as a result of bodily/sexual abuse and a fear of violence. Even within the 21st century the place the science is quickly developing and new objects have been developed but nonetheless women and women are facing issues. Even today in India, women can't move at night time in many places and even at day time crowded places hundreds of thousands and enormous quantities of incidents of bodily/sexual abuse happens to ladies day-to-day. Amongst other crimes, rape is the fastest growing crime within the nation at present.[1]

The gadget descried here's a self safety system peculiarly designed for women in misery to help them to safeguard themselves. This gadget can be fitted in a handbag, belt or geared up to the girl‟s sandals and the panic button connected to the belt. The woman in threat can set off the approach by means of urgent emergency button on belt or tilting her sandal. It is a simple and handy to hold gadget with vast range of points and functionality. [2] the elemental method is to intimate immediate place and a distress message to the cops and registered number like mom and dad, neighbors, media, and females telephone and so on. In order that unlucky incidents can be averted and to furnish actual time evidence for swift motion in opposition to the perpetrators of crime in opposition to ladies. [4]

The block diagram of the conceptual procedure is shown in beneath determine. The microcontroller acts as an embedded computing method and controls the events of the entire sub-methods. It's interfaced with Emergency switch, Analog to Digital Converter (ADC), three-Axis MEMS Accelerometer, pressure Sensor, physique Temperature Sensor, GPS Receiver, GSM MODEM, Speech Circuit, excessive Voltage Shock Circuit. The microcontroller periodically displays the repute of all sensors and in addition continues on checking for any incoming SMS message from the mum and dad or any care takers. It exams for any abnormal values of body tilt, body temperature and stress from the MEMS Accelerometer, Temperature Sensor and stress sensors respectively, through the ADC. If all parameters are

normal and if the Emergency change will not be pressed, it goes again in the loop and continues average monitoring approach. But, if any of those parameter values are

irregular or if the Emergency swap is located to be pressed, it activates the speech circuit to make loud shouting sound to seize the attention of the regional men and women for support. It additionally prepares the excessive Voltage electric Shock Circuit to be capable to provide a non-deadly shock to the attacker. [14] If the aid will not be to be had and if the process is just not reset inside the stipulated time, obtain place know-how from the GPS and prepare a text SMS containing the present location information and ship SMS via GSM modem to the police manipulate room and distress message to the preprogrammed cell number. The design is applied making use of an embedded microcontroller, in a modular kind to be adaptable to distinct varieties of location monitoring. Based on the whole design of the procedure, the hardware and application of the method is designed to be near actual-time monitoring of the females and on the spot help. The lady can safeguard herself through the electrical shock to the character harassing her. The program is developed in assembly language to demonstrate the process potential in supplying actual-time response. Making use of the area understanding provided by using this method the area utilizing GPS and traceable through Google Maps. Therefore the girl shall be nontoxic and he or she feels included. On the product stage it may be as compact as a cellular cellphone.
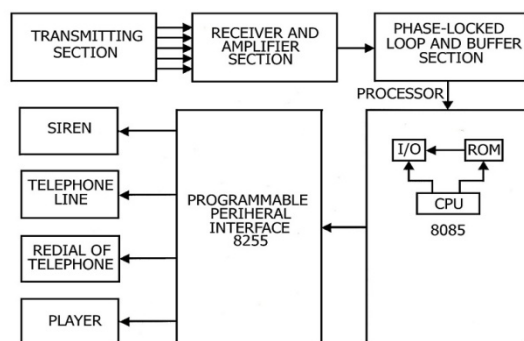
II. PROCESS ARCHIECTURE

Fig.1-The block diagram of the "Self safety system for women security with vicinity tracking and SMS Alerting via GSM community".

The above figure includes the fallowing sections.
- ✓ Embedded microcontroller
- ✓ Three-Axis MEMS Accelerometer
- ✓ Piezoelectric pressure Sensor
- ✓ body Temperature Sensor
- ✓ Analog to Digital Converter (ADC)
- ✓ Clock Generator for ADC
- ✓ Audio Voice Recording and Playback IC

- ✓ dual Band GSM MODEM
- ✓ GPS Receiver
- ✓ MODEM Interface and degree Converter
- ✓ excessive Voltage electrical Shock Circuit
- ✓ liquid crystal display display unit
- ✓ vigour supply

➢ **Embedded microcontroller:** The microcontroller is the essential part of this method.. The microcontroller does all controlling pursuits of the system by way of executing a program stored into its flash application memory[3]. The microcontroller chosen for this undertaking is Atmel"s 89S52.It is an eight-bit microcontroller with eight-k bytes of internal flash application memory, 256-byte data reminiscence and four-I/O ports. The microcontroller controls all subsystems like GSM modem, GPS receiver, MEMS Accelerometer, strain Sensor, Comparator and lcd panel and so forth. On this project.

➢ **Three-Axis MEMS Accelerometer for Tilt (fall) Sensing:** The tri-axial accelerometer sensor (ADXL335) is used to derive body posture of the subject. It's used to feel fall of the patient. It is securely fixed to the sufferer"s physique and is saved in upright role. It consists of a three-Axis MEMS accelerometer .MEMS stands for Micro Electro Mechanical Sensor.

➢ **Piezoelectric stress Sensor:** When the girl is subject to physical harassment, the physical strain can also be sensed making use of a piezoelectric sensor. A piezoelectric sensor is a device that makes use of the piezoelectric outcome, to measure changes in pressure, acceleration, temperature, pressure or force by using converting them to an electrical charge.[5]

✓ **body Temperature Sensor and sign Circuit:** The temperature sensor chosen for this venture is LM35.The sign from the sensor is fed to signal situation circuit. It's for signal conditioning and standardization. It supplies the desired acquire to the temperature signal

✓ **Analog to Digital Converter (ADC):** The ADC part is accountable to convert the analog sign right into a binary quantity. The microcontroller can now learn the digital data from ADC. An eight-bit, successive approximation variety ADC is used.[7]

✓ **Clock Generator for ADC:** here we are utilising an IC 555 timer chip to produce these clock alerts at TTL stage. The IC 555 is operated in astable mode to produce rectangular wave clock sign at about a hundred KHz frequencies. These TTL degree Clock signal is utilized to clock enter pin of the ADC.[6]

✓ **Audio Voice Recording and Playback IC (APR33A3 IC):** The APR33A3 series are strong audio processor together with high efficiency audio analog-to-digital converters (ADCs) and digital-to-analog converters (DACs). It offers

authentic stable state storage capability and requires no application or microcontroller help. It provides excessive nice recording and playback with 11 minutes audio at 8 KHz sampling cost with 16 bit resolution.

III. AXISACCELEROMETER

The APR33A3 sequence is primarily designed for easy key trigger, person can record and playback the message averagely for 1, 2, four or eight voice message(s) via switch. It is compatible in simple interface or must restrict the length of single message. It can without difficulty cut down electrical present ingesting to15uA and expand the using time in any projects powered by means of batteries.[12]

➢ twin Band GSM MODEM (Wavecom's SIM 900): This GSM Modem can take delivery of any GSM network operator SIM card and act identical to a cellular mobile with its own certain mobile number. It is a wi-fi MODEM and can send and acquire knowledge by way of the GSM network. It requires a SIM card and connectivity to the GSM community. It can be used in GPRS mode to hook up with the internet and use all the applications for information logging.

➢ GPS receiver: GPS stands for international Positioning process. Global Positioning system (GPS) is a community of satellites that constantly transmit coded information, which makes it feasible to exactly identify locations on the planet via measuring distance from the satellites. The reason of making use of GPS module in the method is, it continually transmits serial information like position of an person sporting sensor, in phrases of latitude and longitude, date, time and velocity values to processing unit.

➢ MODEM Interface and level Converter: The GSM Modems and the GPS receivers work on RS 232 ordinary. The RS 232 ordinary is not suitable to TTL, for that reason, it requires a line driver such as the MAX232 chip to convert RS232 voltage phases to TTL stages, and vice versa. One important knowledge of the MAX232 chip is that it uses a +5V energy supply which is the identical as the supply voltage for the microcontroller.[8]

➢ electric Shock Circuit: The thought of imposing a small circuit which provides electrical shock to the attacker is to get off the attacker and whilst informing others about it. Nonetheless, the shock depth is so adjusted that it deters the attacker. This circuit will also be carried in a handbag effortlessly. [14]we are able to provide electric shock to the attacker a no. Of instances. A swap is provided with the intention to allow and disable the electric shock giving circuit using potentiometer VR1 which you can manage the depth of outrage current at the electrodes.[13]

➢ liquid crystal display display Unit: This process has a liquid crystal display display module for exhibiting more than a few prompts and status know-how of the method. It is also used display the title messages and different messages while communicating with the process. A 2-line, sixteen character kind lcd show module is used. The microcontroller sends the signals to lcd module through its port pins. [9]

➢ power deliver Unit: The vigor deliver unit has to provide a regulated D.C give to all sections of the system. As it is primary to function the instrument on batteries in view that it's used with the man or woman while moving. It includes rechargeable batteries, filter capacitors and voltage regulators.

The batteries can be charged via a regular charger. Microcontroller, GSM modem, GPS receiver, MEMS Accelerometer, pressure Sensor, Comparator and lcd panel function on +5v regulated dc voltage and electrical Shock Circuit require 12v dc give. A regulated power give unit is built to provide all above voltages at 1 amp highest current capability.[10]

IV. PURPOSES

- can be used for the defense of females.
- can be used for the security of children.
- can be used for the safeguard of elderly aged persons.
- can be used for the protection of bodily challenged persons.
- can be utilized as a authorized proof of crime with particular area understanding for prosecution.

V. ADVANTAGES

- safety device which can also be carried by every person
- ultra low energy consumption.
- Compact in dimension.
- wi-fi connectivity.
- convenient and fast to put in.
- convenient upkeep
- Low price with high efficiency.
- Works round the clock.
- rapid response.
- Environmental friendly system.

VI. OUTCOME AND DIALOGUE

The process was applied by means of first designing the hardware and later the application. It was conscientiously verified for its right operation and reliability. Hardware design

started out with the aid of designing man or woman circuits and their checking out. Compatible adjustments had been implemented at quite a lot of stages as essential. After the confirmation of the correct operation of each and every circuitry, the printed Circuit Board (PCB) used to be designed making use of Protel PCB making program. PCBs are fabricated by means of the manual procedure utilizing screen printing and chemical (FeCl) etching process. After the holes are drilled, the mounting of accessories and soldering was once implemented. The circuit was conscientiously proven as soon as once more after mounting of all add-ons on the PCB. Voltage stages and indicators ware checked for his or her correctness at quite a lot of levels. Some minor changes had been applied as needed.[11] application design used to be started after the hardware was totally fabricated and proven effectually. Applications ware written in 8051 assembly language for character modules and proven independently. After each module was confirmed, integration of all program modules and quandary taking pictures and debugging was applied. Full functionality of the entire system with all interface modules was eventually carried out to experiment the method for its full performance and aspects. The instrument functioned as expected and the desired results have been produced.

VII. CONCLUSION

This paper reviewed the emergency response procedure which is worthwhile for females in the incidents of crime. The key objective is to enhance a low price method which is able to retailer the information of the participants in the targeted locality and furnish immediate alert in case of crime against women. This presents females safety. Being risk-free and comfortable is the demand of the day. Our effort at the back of this mission is to design and fabricate a device which is so compact in itself that provide knowledge of personal protection system. This gadget will traditionally be very useful for the women. It is most likely a short time period and preventive answer. This will be proved as a multi-pronged strategy with the participation of multi stake holders of society. The construction of a hardware and program prototype has accomplished two targets: validation of the proposed structure and checking whether or not the utilized science is suitable for the procedure. This approach will aid its users in complicated quandary. This system can be highly touchy and handy to manage. Its speedy action response will furnish safeguard and security to individual person.

REFERENCES

[1] Moser, c. and c. mcilwaine (2006), "Latin American urban Violence as a development concern: towards a framework for Violence reduction", World Development, Vol. 34, no. 1, pp.89-112.

[2] Hill, r., J .Temin and L .Pacholek (2007), "Building Security where there is no Security", Journal of Peace building and Development, Vol. 3, no. 2, p. 38-51.

[3] Technology, Sunrom.model, no.1180."Speech Recognition System" www.sunrom.com.2012. http://www.sunrom.com/201.

[4] "Atmel Corporation", www.atmel.in.1999.http://www.atmel.in/Images/DOC1486.PDF.

[5] "SURAKSHA, A Device to Help Women in Distress: An Initiative by A Student of ITM University, Gurgaon" efytimes.com 2013. http://efytimes.com/e1/118387/SURAKSHA-A-Device-To-Help- Women-In-Distress-An-Initiative-By-A-Student-Of-ITM-University-Gurgaon.

[6] A K Ray and K M Bhuruchandi "Advanced Microprocessors And Peripherals",pp.650-652.