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GSM BASED GIRL'S SAFETY SYSTEM

Ambhore Kajal Shriram, Bathe Maya Kisan, Pawar Prajakta Ramdas ,Sonawane S.M.
Department of Electronics and Telecommunication,
Shri Chhatrapati Shivajiraje college of engineering, Dhangawadi
Pune , India

kajalambhore23@gmail.com, mayabathe123@gmail.com
prajaktapawar376@gmail.com, shrutee.sonawane@gmail.com

ABSTRACT :

The aim of this paper is girl's safety. Today in the current global scenario, the prime question in every girl's mind, considering the ever rising increase of issues on women harassment in recent past is mostly 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 for women safety. We propose an idea which changes the way everyone thinks about women safety. In this system we use accelerometer sensor which sense the tilt action and gives information to microcontroller. If the accelerometer senses the three times tilt action then the GPS, GSM, Buzzer ,Relay will on. Through GPS we can track the location of girl and through GPS we can send the message to parents and through sound of buzzer nearer people will come to help the girl. So this system is very helpful for girls safety.

KEY WORDS : **Safety, GPS, GSM, Buzzer, Relay**

I. INTRODUCTION

This paper focuses on a security system that is designed merely to serve the purpose of providing security to women so that they never feel helpless while facing such social challenges. An advanced system can be built that can detect the location and health condition of person that will enable us to take action accordingly based on electronic gadgets like GPS receiver[1],GSM The device descried 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 girls sandals and the panic button attached to the belt. The lady in danger can activate the system by pressing emergency button on belt or tilting her sandal. It is a simple and easy to carry device with wide range of features and functionality. [2] In order to deal with security problems, the system is proposed with innovative solution. This system will help to track the location of vehicle through using smart GPS device[3]. Many attempts are made to make women journey safer [4].

I. BLOCK DIAGRAM

The block diagram of the conceptual system is shown in below figure. The microcontroller acts as an embedded computing system and controls the activities of all the subsystems. In this system we used Accelerometer to sense the tilt action which is give the sensing action to microcontroller.

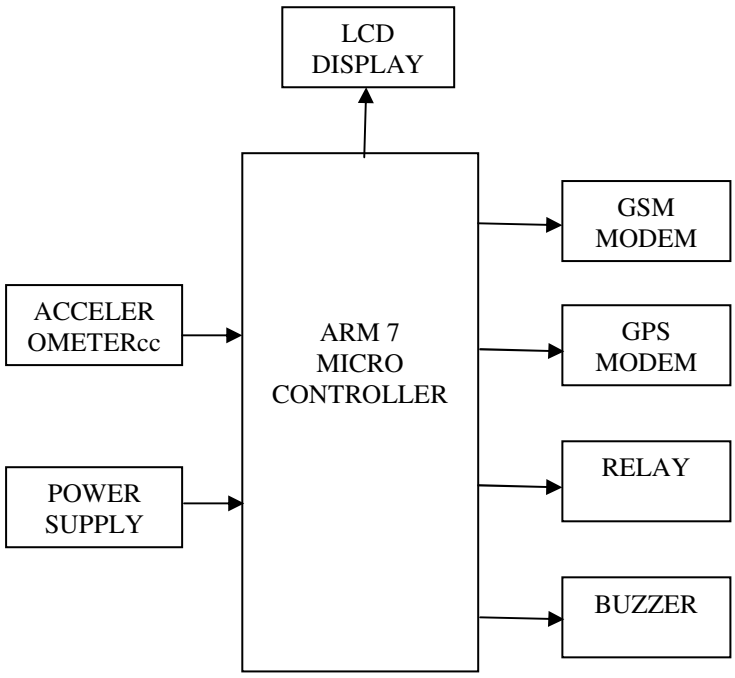

Fig 1:Block Diagram

The power supply unit has provide a regulated D.C. supply to all sections of the system Microcontroller ,GSM modem, Accelerometer are operate on 5 volt regulated dc voltage. GSM modem can accept any GSM network operator SIM card and adjust like a mobile phone with its own unique phone number . GPS is used to track the location of girl .Relay is an electromagnetic switch consist of coil, common terminal .normally closed terminal and one normally open terminal.

II. FUNCTIONAL DESCRIPTION

This project can be implemented using the following blocks. For easier understanding of the blocks are mentioned below:
1*Accelerometer*: Accelerometer is an electrochemical device that will measure the acceleration forces. We use ADXL335 accelerometer in our system.

2.*GSM modem*: GSM (global system for mobile communication) is a digital mobile telephony system that is widely used in Europe and other parts of the world. GSM uses a variation of time divisin multiple access (TDMA) and is the most widely used of the three digital wireless telephony technologies(TDMA , GSM and CDMA).

3.*Arm 7Micro controller Block:* Micro-controller takes the data from the comparator block. Based on this data it interprets the number of people that have crossed from one side to the other and vice versa.

4.*Display Unit*: It is 16*2 LCD that shows the number of people in the room at any particular instant. It also shows which appliance is being used and at what power they are being used.

5.*GPS modem:* The global positioning system (GPS) is a satellite based navigation system made up of at least 24 satellite. GPS works in any weather condition, anywhere in the world, 24 hours a day, with no subscription fees or set up charges.

6.*Buzzer:* A buzzer is an audio signaling device, which may be mechanical, electromechanical, or piezoelectric. Typical uses of buzzers include alarm devices, timers, and confirmation of user input such as a mouse click or keystroke.

7.*Relay:* A relay is an electrically operated switch. Many relays use an electromagnet to mechanically operate a switch, but other operating principles are also used, such as solid- state relays.

III. DESCRIPTION IN DETAIL

In our project we are designing a module which will help the girl to protect herself and can move freely in today's world. The accelerometer module will be fitted to the girls' sandals. The accelerometer is interfaced with the micro controller. This module will be activated or made **ON** when a girl tilt's her sandal at a particular angle. As soon as girl tilt's her sandal the accelerometer will sense this change of the angel. If the girl tilt her sandal three times then all the modem i.e. GSM ,GPS, Relay and Buzzer. Because of sound of buzzer the people present around will come to help the girl/ women as soon as possible and also police can reach to girl as soon as possible.

In this project we have added GSM module. GSM module will send the message to her relatives and also to the police. So, the relatives and the police can reach to girl/women to help her immediately. We have interfaced a GPS module to find location of the girl in the danger. Along with the message the location of the girl will be send to her relatives and police. So, the relatives and the police can reach to girl/women to help her immediately by getting the location (co-ordinates) accessing Google Maps. Thus the girl will be safe and she feels protected.

IV. APPLICATIONS AND ADVANTAGES

APPLICATION:

- Soldier tracking
- Pilgrims tracking

ADVANTAGES:

- Highly flexible
- Quick response time
- Fully automate system thus Reduces human efforts
- Robust system.
- Less time delay

V. FUTURE DEVELOPMENTS

In future our proposed project can be implemented using hooter instead of buzzer which has sound in decibel and instead of relay we use the shock circuit.

When soldier get injured by terrorists attack and the rescue team will be easily find exact position to save soldier by making some modification in our project.

VI. GLOBAL SYSTEM FOR MOBILE COMMUNICATION(GSM)

This GSM Modem can accept any GSM network operator SIM card and act just like a mobile phone with its own unique phone number. It is a wireless MODEM and can send and receive data through the GSM network. It requires a SIM card and connectivity to the GSM network. It can also be used in GPRS mode to connect to the internet and use all the applications for data logging. The GSM system is the most widely used cellular technology in use in the world today. It has been a particularly successful in cellular phone

technology for its various features. In this Implemented women safety system, interfacing of the microcontroller with the GSM module and the HyperTerminal has been done. HyperTerminal is a Windows application. The AT commands are sent by the HyperTerminal to the GSM module. The Information Response and/or Result Codes are received at the microcontroller and retransmitted to the HyperTerminal by the controller.

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VII. ARM7 MICROCONTROLLER

The ARM7TDMI-S is a general purpose 32-bit microprocessor, which offers high-performance and very low power consumption. The ARM architecture is based on Reduced Instruction Set Computer (RISC) principles, and the instruction set and related decode mechanism are much simpler than those of micro programmed Complex Instruction Set Computers (CISC). This simplicity results in a high instruction throughput and impressive real-time interrupt response from a small and cost-effective processor core. Pipeline techniques are employed so that all parts of the processing and memory systems can operate continuously.

Fig 2:ARM Microcontroller

Typically, while one instruction is being executed, its successor is being decoded, and a third instruction is being fetched from memory. The ARM7TDMI-S processor also employs a unique architectural strategy known as Thumb, which makes it ideally suited to high-volume applications with memory restrictions, or applications where code density is an issue. The key idea behind Thumb is that of a super-reduced instruction set. Essentially, the ARM7TDMI-S processor has two instruction sets:

• The standard 32-bit ARM set.
• A 16-bit Thumb set.

Features of LPC2138:

- 16/32 ARM7TDMI-S microcontroller in tiny LQFP64 package
- 64kb on-chip static ram
- 512kb programming flash memory
- Two 10 bit ADC which provides 14 analog inputs
- Single DAC providing variable analog outputs
- Two 32 timer event counter

VIII. GLOBAL POSITIONING SYSTEM(GPS)

GPS stands for Global Positioning¬ System. Global Positioning System (GPS) is a network of satellites that continuously transmit coded information, which makes it possible to precisely identify locations on earth by measuring distance from the satellites. The purpose of using GPS module in the system is, it continuously transmits serial data like position of an individual wearing sensor, in terms of latitude and longitude, date, time and speed values to processing unit.

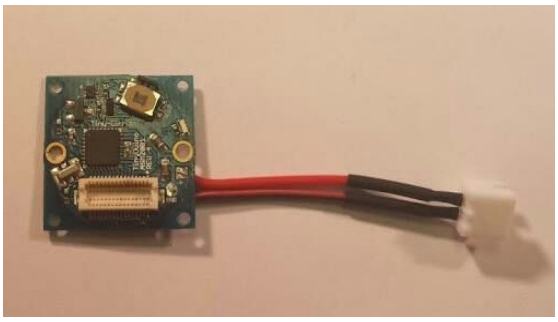

Fig 3:GPS Modem

- GPS works on serial Interface (232)
- Serial Baud Rate = 9600 or 4800
- GPS co-ordinates are received every 2 seconds
- Initialize Baud Rate =9600 or 4800
- Serial Interrupt ON
- Receive the co-ordinate frame

IX. CONCLUSION

In this project we are able to track the user every few minutes to ensure total safety. Also the girl/Women is able to defend herself in form of giving shock and Buzzer to startle the mole stator. In this way we are able to increase the safety level of girls During day or night In this work implementation smart electronic system has been implanted using microcontroller, GPS, GSM etc. This electronic security system can be used as a tracking device to ensure women safety during travelling in various public transport vehicles such as cabs, taxi, auto rickshaw etc.

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