PORTABLE SECURITY SYSTEM FOR WOMEN USING GPS & GSM

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Abstract: *Women security can be made possible by a portable security device. Women security is the major problem in the present day scenario. Generally, society is victim of the terrorism, kidnapping, theft, murder. At the same time women are facing problems like molestation etc. There are some applications available in the market for security purpose like android applications, Websites for complaining etc. In this project, The GPS can be used to detect the location of victim and can send the details such as location and distance to the mobile numbers of family or friends. In the worst situation when victim press button, an alert message will be sent to the mobile numbers enrolled in microcontroller.*

Index Terms- GSM, GPS, ATtiny85 (smallest Arduino), LCD Display.

I. INTRODUCTION

In the current scenario, there is a highest priority issue for women security. Recently security concern of women is the one of the major problem. Generally, society is victim of the terrorism, kidnapping, theft, murder. At the same time women are facing problems like molestation etc. There are some applications available in the market for security purpose like android applications, Websites for complaining etc. The mobile which will be more helpful for providing security to the women and it can be easily handled by anyone from anywhere. It is also highly economic and less expensive; GSM and GPS are preferred most for this mode of controlling. In the difficult situation when we press button which helps to transmit the victim details like location, distance will be sent to the mobile numbers which are enrolled in the memory IC, these numbers will get an alert message that the victim needs help. The module uses LCD to display on the screen while sending message.

II. LITERATURE SURVEY

In India women has a special importance since Hundreds of years. In present days, India went through many changes in the status of women. Women are given equal importance and status with men. They are mostly involved and helping the country in many aspects such as politics, jobs, business. Though they are treating equally with men, still facing security problems like Kidnapping, harassment, murder, molestation. As per the current statistics, India is the fourth most dangerous country in the world for women. Government has provided security through rules & regulations to society for providing security to women.

In modern era, violence against women are rising to the threatening rate. The percentage of female employees working in companies and industries as well as in other sectors has been increasing day by day. It became necessary for the women employees to travel late nights and reach the destination locations as a part of their job. Women may face problem from any direction like after completing their work and returning home by walking, going to the places alone. It is not sure that women are safe until they return home. There are some cases of women death without a particular reason when they went for trips made by friends and company. This happens mostly due to attacks on woman. 93 women were raped every day in India in the year 2015 as per the National Crime Records Bureau (NCRB), and 3,37,922 cases of crime against women were reported in year 2014. It is highly not possible to provide security for women at different places. However, the rapid increase in the violence and attacks against women since few years is indicating the threat to the development and growth of women in society.

III. EXISTING METHODOLOGY

Considering the women safety as the major aspect, Indian Government has taken some steps that provides security for women on both technological and non-technological sides. Where as in technological side government had provided mobile applications and websites, coming to non-technological side they provided “She teams”. Even though government has taken many steps for providing security to women still there are some issues for women. These security problems can be reduced by the proposed Method.

IV. PROPOSED SYSTEM

In this Project, the module will be more helpful for providing security to women. It consists of smallest microcontroller ATtiny85. By using the smallest microcontroller, the size of the entire system will be greatly reduced. The family members or friends will get an alert message to their mobiles at the time of women in threat condition or in problem. When women press the button on the module it detects the GPS locations and GSM Module sends the locations to the mobile numbers which are saved in the microcontroller along with an SMS. By that they can detect the women location and moves to further rescue process. By this way we can provide a smallest security technology to the women.

V. DESCRIPTION

The system consists of microcontroller ATtiny85 (smallest Arduino), GPS module, GSM module, LCD display. The system is expressed in figure below:

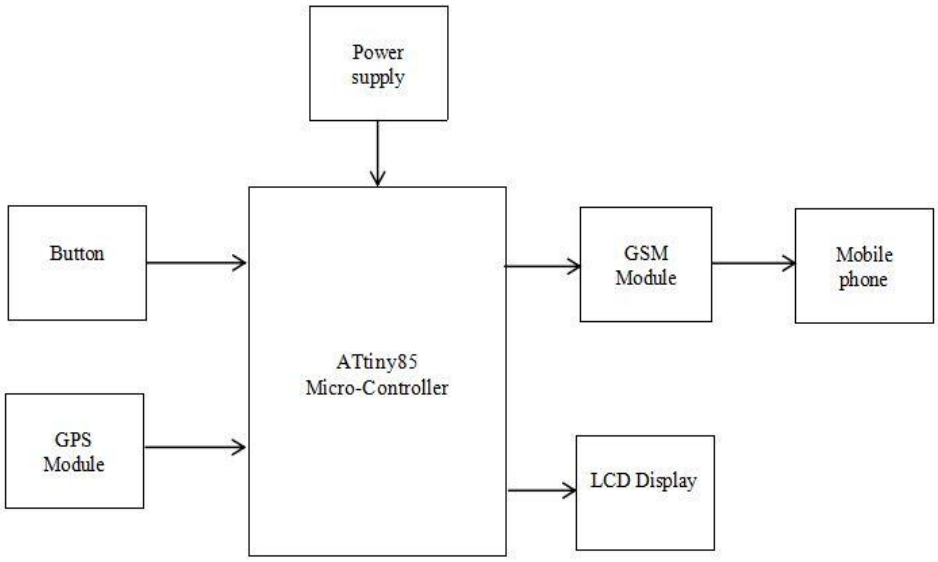

Fig 1: Block diagram of Portable Women security system using GPS & GSM

1. **Arduino ATtiny85:** ATtiny85 is a 8-bit AVR microcontroller and is based on RISC CPU. It comes with 8-pin interface (PDIP) and comes under the category of low power controllers. It is also available in four packages called PDIP, SOIC, TSSOP, and QFN where first three come with 8-pin interface while the last one contains 20 pins. The program memory is 8KB while both EEPROM and RAM contain a memory space of around 512 bytes. These memory spaces are very useful for storing the number of instructions in the form of code. This memory space is large to hold programs for embedded applications. ATtiny85 can be programmed by interfacing with Arduino board pins with the ATtiny85 pins. Arduino Pin 10 is connected to ATtiny85 Pin 1, Arduino Pin 11 is connected to ATtiny85 Pin 5, Arduino Pin 12 is connected to ATtiny85 Pin 6, Arduino Pin 13 is connected to ATtiny85 Pin 7, Arduino +5V is connected to ATtiny85 Pin 8, Arduino Ground is connected to ATtiny85 Pin 4. This ATtiny85 Microcontroller is also available with Mini USB Board that makes the user to reduce the time taking in interfacing with Arduino. By interfacing the ATtiny85 with Arduino, the program can be compiled using Arduino IDE software and uploaded to the ATtiny85 Microcontroller. Its dimensions for mini USB board are 21x18x4mm. And for ATtiny85 microcontroller its dimensions are 10x10mm. Due to its very small size the entire module can be greatly reduced in size and cost.

Fig 2: ATtiny85 microcontroller

Fig 3: mini USB Board with ATtiny85 microcontroller

2. **GSM Module:** SIM800L can be used in this Module. SIM800L is a smallest cellular module that allows for sending and receiving SMS and voice calls. It is Low cost and small quad band frequency support that helps this module perfect for different projects that requires long range connectivity. SIM800L consists of antenna that is small wounded and placed on the module. This antenna is small and most efficient than default antenna of GSM Module.

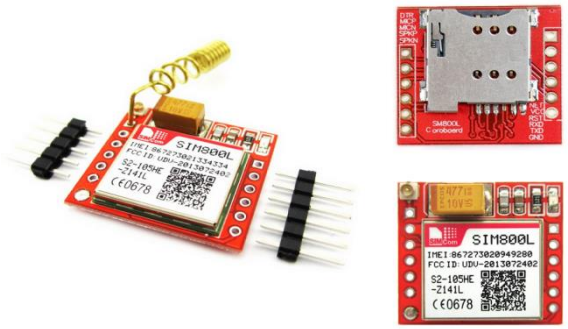

Fig 4: SIM800L GSM Module

3. **GPS Module:** GPS receivers provides reliable positioning, Navigation and timing services. U-blox NEO-6M GPS Module is the latest and smallest GPS Module with active antenna. This unit uses the latest technology to give better positioning values. It consists of 25x25mm active antenna with a UART TTL socket. It is also included with battery so that the GPS can be locked faster. It is highly sensitive for indoor applications. Ufi cable connects the active antenna with the GPS Module.

Fig 5: GPS Module with Active Antenna.

4. **LCD Display:** LCD (Liquid Crystal Display) is a electronic display module finding a wide range of applications. 1.44-inch TFT LCD Colour Screen Module is the small display that can be used in any project. It can be used with every kind of microcontroller. The 1.44-inch display has 128x128 colour pixels.

Fig 6: 1.44-inch TFT LCD colour Screen Module

5. **Power Supply:** A battery can be used as Power supply for the entire unit. A single USB port in ATtiny85 board is used for both data transmission and for power supply. Batteries with different values and sizes are available in the market. It is highly preferable to use rechargeable battery for continuous usage.

6. **Button:** A button is used as a Panic button in the system. It is small sized mini push button. The push button is of type Single Pole Single Throw (SPST). Its dimensions are 6x6mm. These are connected to the module in less time and easily.

VI. WORKING

Women security can be improved by placing this module in the articles of women such as watch or a band. As this module contains the advanced and smallest components, the size is greatly reduced. The microcontroller is programmed and it contains the mobile numbers of the family or friends of the women. When the system is given power supply, the GPS module traces the GPS location of the women. At the time of security problem, when the victim presses the button on the module, The GSM module sends an SMS to the mobile numbers of friends, family of the women that are saved in the microcontroller. A message containing Google maps link along with Latitude and Longitude values will be sent to the mobile numbers. By pressing the link in message, The Google maps directs towards the GPS location of victim with the help of Latitude and Longitude values. The messages containing GPS locations will be transmitted continuously even though the women is moving from place to place.

VII. RESULTS

The latitude and longitude values from GPS module will be in NMEA strings and these are sent in the messages. To get the exact locations from these NMEA strings the equation will be:

ddmm.mmmm= dd+(mm.mm/60)

For example, 1338.89151N,07925.90778E

13+(38.89/60) = 13.6481N

79+(25.90/60) = 79.4316E

The practical values of Victim location while Testing process, Fig.7 shows the alert message to the mobile number with latitude and longitude values. And Fig.8 shows the Exact location of the victim.

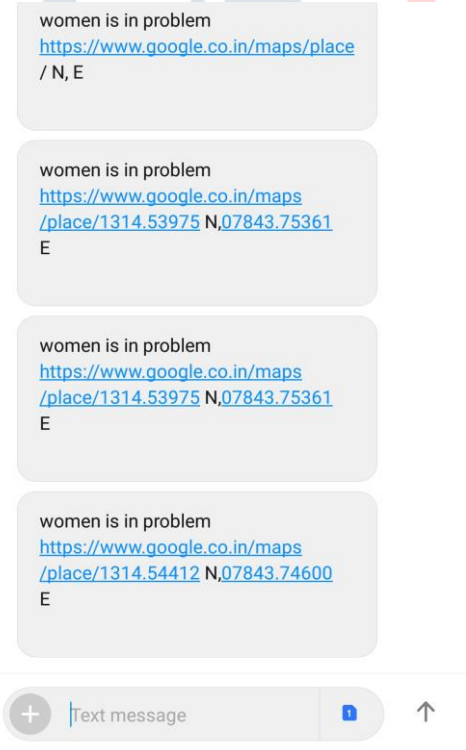

Fig.7: Alert Message with GPS locations.

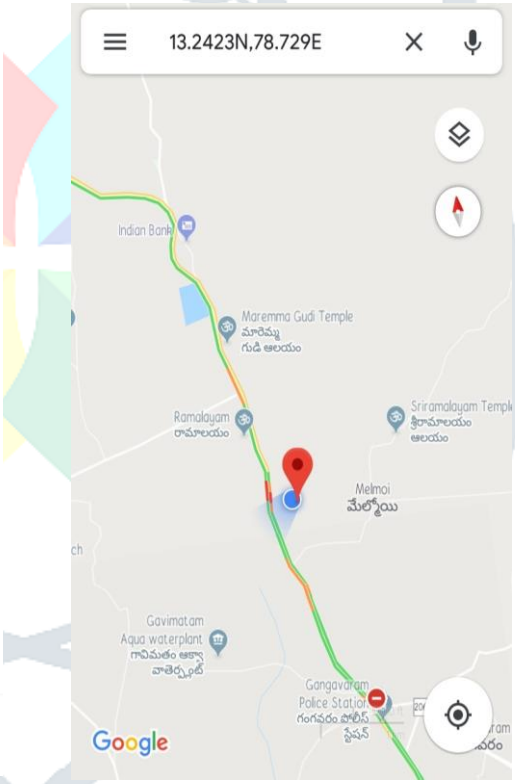

Fig.8: Google maps location of the Victim

Latitude and longitude values from Fig.7 are 1314.54412N,07843.74600E. The conversions of these values are given below:

13+(14.54/60) = 13.2423

78+(43.74/60) = 78.729

The exact latitude and longitude values are 13.2423N,78.729E. which are shown in the fig.8

VIII. CONCLUSION

The proposed design will deal with critical issues faced by women in the near past and will help to solve them with technologically sound equipment and ideas. While the society may or may not change for the enhanced, the power to be autonomous, self-assured and truly free can come with arming oneself with the best possible device. This system can overcome the fear that scares every woman in the country about her safety and security.

IX. FUTURE SCOPE

In future, this project is implemented using Internet of things (IoT) which helps in faster and accurate transmission of messages. By using the Microelectronics this project can be greatly reduced in terms of size and made easy to manufacture in the bands and watches of women.

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