

WOMEN SAFETY SYSTEM USING GSM & GPS TRACKING

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ABSTRACT

Women's safety plays a very vital role now a days 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 a dual alerts that is 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 neighbours. 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-defence 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.

I.INTRODUCTION

We know that India is a most famous country all over the world for its great tradition and culture. It is the country where women are given most respect in the society from the ancient time. Women are given the place of Goddess Lakshmi in the Indian society. In India women works in many different fields like aeronautics, space, politics, banks, schools, sports, businesses, army, police, etc. All the above said are which we actually see in our daily life however behind this there are many crimes against women at home, offices, streets, factories etc. The safety of women is in doubt due to incidents happened in recent years like rape cases, acid attacks, etc. The mere fact that "Women hold up half the sky"-they are not given a position of dignity and equality.

Technologies used:

Here we used technologies like, GSM technology, GPS technology Arduino software technology

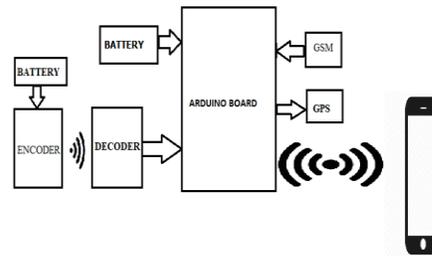
II. EXISTING SYSTEM

There are some apps named "tell tail", "women security", "security alert app" and many all these require internet connection to trace the location by using GPS. These are available to the educated women and only in android mobiles. The women may not get much time to unlock her mobile, open the app and press the SOS button. so they have many drawbacks.

III. PROPOSED SYSTEM

The proposed system consists of a panic button in the encoder module, whenever the women feels she is in trouble she can press the panic button directly. This proposed system has dual alerts like along with sending message to the registered mobile numbers it also allows the buzzer to ring in that area. This system is not also used for women safety bus also for children because it is very easy to use since the children only need to press the button.

IV. BLOCK DIAGRAM



Functions of each block:

POWER SUPPLY & BATTERY:

The power supply is the major component of our system which is used to provide supply to the whole system by converting one form energy to another form. Here we use a 9v battery to supply power to RFID encoder

ARDUINO UNO:

Here we will know about the different components on the Arduino board. Since Arduino UNO has become the most popular board among Arduino board family here we will study about it. In addition, to get started with electronics and coding, Arduino is the best board because it is easy to use.

The Uno consists of a microcontroller which is used to manipulate the serial operation based on the program present in the output is taken from one of the four ports. The operation of different pins in Arduino is given below,

Power USB:

The power is given to the Arduino board by using the USB cable from the computer. All you need to do is connect the USB cable to the USB connection.

Power (Barrel Jack):

By using Barrel Jack the Arduino boards can be powered directly from the AC mains.

3.3, 5, GND:

1. 3.3V : Supply 3.3 output volt
2. 5V : Supply 5 output volt
3. Most of the components used with Arduino board works fine with 3.3 volt and 5 volt.
4. GND(Ground): By using the several available ground pins in the Arduino the circuit can be grounded easily.

Analog pins:

The Arduino UNO board has five analog input pins A0 through A5. These pins are used for sensors like humidity sensor or temperature sensor to read the analog signal and convert it into digital value so that Microprocessor can read and access it

Main microcontroller:

Every Arduino board has a microcontroller within it. The microcontroller is the brain of the Arduino board. The microcontrollers are usually of the ATMEGA Company. Before loading up a new program from the Arduino IDE one must know what IC board is used before.

Digital I / O:

The Arduino UNO board has 14 digital I/O pins output. The logic values given to these pins are 0 & 1 which are used for different modules like LED'S relays etc.

AREF:AREF stands for Analog Reference.

GSM:

GSM initially termed as "Group Special Mobile" was formed by conference of European posts and telegraphs in the year 1982. GSM is backward compatible with present cellular telephone system. Later, the acronym for GSM is "Global System for Mobile Communication". It operates in two bands of frequencies they are 1800Mhz and 1900Mhz.

- 1) A GSM network consists of the following components:
- 2) 1.Base Station Subsystem(BSS):It consists of severalBase Band Controllers(BSCs).It acts as an interface between the mobile station and the network subsystem.The Mobile Station communicate with BSS over the radio interface. Mobile handoffs between two BTSs under the control of same BSC are operated by the BSC and not by switching center.
- 3) 2.Network Subsystem:It controls the switching GSM calls between external networks and BSCs and is further liable for controlling and providing external access.There are different databases in NSS they are, Home Location Register and the Visitor Location Register which provides the call routing and roaming capabilities of GSM.It also consists of operation support subsystem which provides operation maintenance center and they are used to observe and maintain the performance of each mobile system,BSS and BSCs.It has to maintain all telecommunication hardware and network operations with a particular market.It will control the billing activities,charging activities and all mobile equipments in the system

GPS:

The GPS is a Global Navigation Satellite System (GNSS) developed by the United States Department of Defence. It is the only fully functional GNSS in the world. It uses a constellation of between 24 and 32 earth orbit satellites that transmit precise radio signals, which allow GPS receivers to determine their current location, the time, and their velocity. These satellites are high orbit, circulating at 14,000km/hr and 20,000km above the earth's surface. The receiver uses a fourth satellite to solve for x, y, z, and t which is used to correct the receiver's timer. Although four satellites are required for normal operation, fewer apply in special cases.To give information about degraded position when they are fewer than four visible satellites some GPS receivers use additional clues or assumptions (such as reusing the last known altitude)

The position and time can be calculated accurately by using GPS receiver by sending the data down to earth from each satellite consisting of different pieces of information. The accurate atomic clock is the important part on GPS satellite.

From the above information the distance of each satellite in view is known by GPS receiver. The accurate position and time can be calculated by using 4 satellites which are seen by GPS receiver

RF ENCODER & DECODER

RFID reader that can read 125 KHz tags is used in the EM-18 RFID reader module.So, it can be called as a low frequency RFID reader. It gives out a serial output and has a range of about 8-12 cm. There is a built-in antenna and it can be connected to the PC with the help of RS232.

This board is based on the EM-18 RFID Module. Using the board with microcontrollers to read a card's data is very simple and requires just a serial connection. The board has a 5V voltage regulator so it can be powered by 9~15V DC adaptor. From other interfacing board the module can be powered through header wires(+5V & GND). The board has power indication LED (Labeled red in color) and to indicate the detection of Card/Tag, it has a LED (Labeled green in color) and Buzzer.By using SEL selection jumper the switching between two output formats. (Note:- Data is available at both TTL/CMOS and DB9 simultaneously.) Weigand26 O/P from only data2 (It is DATA0 pin of EM-18) & data1 (It is DATA1 pin of EM-18) Pins.

V.ALGORITHM

- 1.Initialize GPS sensor with 9600 baud rate.
- 2.Connect GPS TX Pin connected to aurdino RX pin0.
- 3.Once power is on it takes 2 min to 3 min to activate GPS sensor.
- 4.GPS sensor is giving different data like GPGGA, GPGSV ,GPGSA.
- 5.In that we require GPGMC.
- 6.From that we have to extract the required data.
- 7.Finally the required message is sent to the mobile number in the code.

VI.WORKING

This paper clearly uses two main modules of GSM and a microcontroller. Whenever the user press the panic button in the encoder the microcontroller pin gets low and it starts to allow GPS to send location information to GSM. Through the AT commands all those messages reaches the microcontroller. Using AT Commands GSM will sends the help message along with latitude and longitude values to the registered mobile numbers in the code. Normally, we prefer two mobile numbers to be registered in the code. If necessary we can use mobile numbers up to four , if we need to use more than four it takes time to send message.

VII.ADVANTAGES

1. It is very easy to use
2. Easy to maintain

3. Used for security purposes
4. Mobile number can be changed easily

VIII.APPLICATIONS

- 1.Security appliances.
- 2.It will be used for safety of
 - a. Women's
 - b. Physically challenged people
 - c.Children
- 3.It will be used for child tracking during school time.
- 4.Automotives and transport vehicles
- 5.Security, remote monitoring, transportation and logistics.

IX.CONCLUSION

Now a day's being safe and secure is very important for women. Our main aim of this project is to design a system which is very easy to handle and provide personal security system. This design will deal with most of the critical issues faced by women and will help them to be secure. Existing systems provide the safety by using the internet connection through apps in the android mobiles and tracking the vehicle this type of security mechanism is very difficult to use. The proposed system will provide the latitude and longitude values of location of the victim which can further be tracked using Google maps. By using this system we can reduce the crime rate against the women. Women's security is a critical issue in current situation. The crimes can be reduced with the help of real time implementation of our proposed system.

X.FUTURE SCOPE

In this paper we can further implement Beam Gun in Japanize an electronic light gun. This can be used for the defence purpose. And pepper spray can be used. Wearable technology, wearable's, fashionable technology, wearable devices, tech togs, or fashion electronics are clothing and accessories incorporating computer and advanced electronic technologies. The designs often incorporate practical functions and features.

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