

GPS & GSM based Women Safety & Alerting System

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Abstract - The world is becoming so much more unsafe for women. Social evils like molestations, dowry, crime against women, worst among all is rape is on the rise in many countries. Security for women is still a major issue as the number of crimes over women and girls is increasing day-by-day. The Aim of this project is to protect women from dangerous situation by sending GPS location to a predefined number. For sending location alerts we are making use of GSM network and SMS messaging system. This system is composed of a GPS receiver, Microcontroller and a GSM Modem. GPS Receiver gets the location information from satellites in the form of latitude and longitude. The Microcontroller processes this information and this processed information is sent to the police/parents using GSM modem. This system also provides Laser Gun based fighting system for self-defense. The presented application is a low cost solution for sending location alerts and very useful in case of dangerous situations, for monitoring adolescent kids by their parents as well as in car tracking system applications. The proposed solution can be used in other types of application, where the information needed is requested rarely and at irregular period of time (when requested).

I INTRODUCTION

This project aims at securing the woman during dangerous situation by sending their location using GSM and GPS receiver to a predefined number. This system also provides Laser Gun based fighting system for self-defense. This tracking system is composed of a GPS receiver, Microcontroller and a GSM Modem and Laser Gun. GPS Receiver gets the location information from satellites in the form of latitude and longitude. The Microcontroller processes this information and this processed information is sent to the user/owner/Police using GSM modem. Microcontroller also gets the speed of the vehicle and sends it to user/owner/Police. An embedded system is a combination of software and hardware to perform a dedicated task. Some of the main devices used in embedded products are Microprocessors and Microcontrollers. Microprocessors are commonly referred to as general purpose processors as they simply accept the inputs, process it and give the output. In contrast, a microcontroller not only accepts the data as inputs but also manipulates it, interfaces the data with various devices, controls the data and thus finally gives the result. The "Women Safety Alert" using PIC16F876A microcontroller is an exclusive project which is used to find the position of the vehicle on the earth. This information is provided by the GPS with the help of the data it receives from the satellites. An embedded system is a computer system designed to perform one or a few dedicated functions often with real-time computing constraints. It is embedded as part of a complete device often including hardware and mechanical parts. By contrast, a general-purpose computer, such as a personal computer (PC), is designed to be flexible and to meet a wide range of end-user needs. Embedded systems control many devices in common use today.

II LITERATURE SURVEY

Circumstances that we find ourselves in today in the field of microcontrollers had their beginnings in the development of technology of integrated circuits. This development has made it possible to store hundreds of thousands of transistors into one chip. That was a prerequisite for production of microprocessors, and the first computers were made by adding external peripherals such as memory, input-output lines, timers and other. Further increasing of the volume of the package resulted in creation of integrated circuits. These integrated circuits contained both processor and peripherals. That is how the first chip containing a microcomputer, or what would later be known as a microcontroller came about. Microprocessors and microcontrollers are widely used in embedded systems products. Microcontroller is a programmable device. A microcontroller has a CPU in addition to a fixed amount of RAM, ROM, I/O ports and a timer embedded all on a single chip. The fixed amount of on-chip ROM, RAM and number of I/O ports in microcontrollers makes them ideal for many applications in which cost and space are critical. Introduction to PIC Microcontrollers: PIC stands for Peripheral Interface Controller given by Microchip Technology to identify its single-chip microcontrollers. These devices have been very successful in 8-bit microcontrollers. The main reason is that Microchip Technology has continuously upgraded the device architecture and added needed peripherals to the microcontroller to suit customers' requirements. The development tools such as assembler and simulator are freely available on the internet at www.microchip.com, Low - end PIC Architectures: Microchip PIC microcontrollers are available in various types. When PIC microcontroller MCU was first available from General Instruments in early 1980's, the microcontroller consisted of a simple processor executing 12-bit wide instructions with basic I/O functions. These devices are known as low-end architectures. They have limited program memory and are meant for applications requiring simple interface functions and small program & data memories. Some of the low-end device numbers are 12C5XX 16C5X 16C505, Power supply is a supply of electrical power. A device or system that supplies electrical or other types of energy to an output load or group of loads is called a power supply unit or PSU. The term is most commonly applied to electrical energy supplies, less often to mechanical ones, and rarely to others. The Global Positioning System (GPS) is a burgeoning technology, which provides unequalled accuracy and flexibility of positioning for navigation, surveying and GIS data capture. The GPS NAVSTAR (Navigation Satellite timing and Ranging Global Positioning System) is a satellite-based navigation, timing and positioning system. The GPS provides continuous three-dimensional positioning 24 hrs a day throughout the world. The technology seems to be beneficiary to the GPS user community in terms of obtaining accurate data up to about 100 meters for navigation, meter-level for mapping, and down to millimeter level for geodetic positioning. The GPS technology has tremendous amount of applications in GIS data collection, surveying, and mapping. GSM, which stands for Global System for Mobile communications, reigns (important) as the world's most widely used cell phone technology. Cell phones use a cell phone service carrier's GSM network by searching for cell phone towers in the nearby area. Global system for mobile communication (GSM) is a globally accepted standard for digital cellular communication.

III EXISTING SYSTEM

The System used in vehicles for tracking the locations and repairs of vehicles, Even for reporting if any problem occurred to the passengers inside the vehicle, this kind of system is not so convenient and secured to the passengers, they don't get protected or self defense.

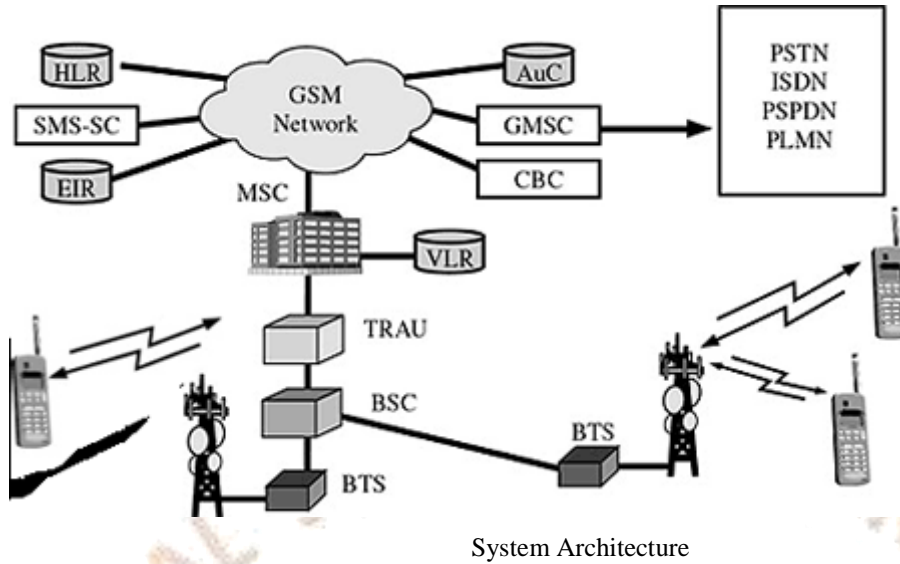
IV PROBLEM STATEMENT

Many people are getting raped and facing problems in an empty area, lack of self defense for protecting from attacks.

V PROPOSED SYSTEM

Overcoming the research from existing system we have noted certain points that could clearly impact the model's accuracy. One major of such is model itself. So we propose to implement GPS & GSM tracking and Laser light for self defense. This helps the person to get protected till the helper on the way.

VI SYSTEM ARCHITECTURE



Program Code:

The program code which is dumped in the microcontroller of our project is shown below.

```
#include <16F876A.h>
#include <GPS.h>
#include <GSM.h>

#use delay (clock=20M)
#use rs232 (baud = 9600, xmit=PIN_B1,rcv=PIN_B0,stream=GSM)
#use rs232 (baud = 9600, rcv=PIN_A0,stream=GPS)

char num1[16] = "+91*****";

char lat[12];
char lngtd[12];

void main()
{
output_high(PIN_C2); //Buzzer
output_high(PIN_C4); //LED
delay_ms(700);
output_low(PIN_C2);
output_low(PIN_C4);
delay_ms(700);
output_high(PIN_C4);
delay_ms(700);
output_low(PIN_C4);

init_gsm();

while(1)
{
delay_ms(500);
output_high(PIN_C4);
delay_ms(50);
output_low(PIN_C4);

if(!input(PIN_C3)) //Switch
{
```

```

get_GPS_data(lat,lngtd);

output_high(PIN_C4);
output_high(PIN_C2); //Buzzer

send_sms(num1,"Safety Alert at http://maps.google.com/?q=%s,%s",lat,lngtd);
delay_ms(4000);
send_sms(num2,"Safety Alert at http://maps.google.com/?q=%s,%s",lat,lngtd);
delay_ms(4000);

output_low(PIN_C2);
output_low(PIN_C4);
}
}
}

```

VII Result

The project “Women Safety Alert with Laser Gun for Self-defense” was designed such that the location and the position of the vehicle is transmitted to the owner on his mobile phone as a short message (SMS) at his request using GPS and GSM modems. This system also enables to monitor the accident situations and it can immediately alert the police/ambulance service with the location of accident.

It also enabled with Laser Gun based Self-defense system.

VIII Conclusion

Integrating features of all the hardware components used have been developed in it. Presence of every module has been reasoned out and placed carefully, thus contributing to the best working of the unit. Secondly, using highly advanced IC's with the help of growing technology, the project has been successfully implemented. Thus the project has been successfully designed and tested.

IX REFERENCES

The sites which were used while doing this project:

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