

Expert System based Women and Child Security System

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Abstract—An expert system based women and child security system proposes a quick responding mechanism that helps women and child during trouble. When someone is going to harass, she can press the button that is attached to the device and the location information is sent as an SMS alert to few predefined emergency numbers in terms of latitude and longitude. The system consists of a microcontroller PIC 16F877A which is interfaced with a push button, a GPS module and GSM modem. If the switch is pressed it activates buzzer to capture the attention of the people nearby for help. The program is developed in embedded language to demonstrate the system capability.

Keywords— IOT, 5G, Smart sensors, GPS, GSM, SMS, Expert system, Security system.

I. INTRODUCTION

Womens are adept at mobilizing diverse groups for a common cause. They often work across ethnic religious, political and cultural divides to promote peace. We are all aware of importance of women“ safety, but we must realize that they should be properly protected. But women are not as physically strong as men, in an emergency situation a helping hand would be relief for them. The best way to minimize your chances of becoming a victim of violent crime such as robbery, Sexual assault, rape, domestic violence is to identify, defense and call on resources to help you out of dangerous situation. If you are in trouble or get separated during a night out and don't know how to get back home this device with you will protect you and can reduce your risk and bring assistance when you need. There are several apps developed to reduce the risk of sexual assault on women by informing control centre and their friends through SMS, But in place of those this device have much more efficient way to inform respected personals and also has a defending system which cannot be provided by existing app.

According to the reports of WHO, 35% women all over the world are facing a lot of unethical physical harassment in public places such as railway-bus stands, foot paths etc. Abhijith Paradkar *et.al* reviewed various existing systems on women security. The authors have felt a need of advanced women security system to provides the safety measure in public places as well as travelling alone through public transports [1]. R. R. Pavithra developed a wearable arm band for safety and protection of women and children. The authors analyze the psychological signals like pulse rate and vibration using sensors connected to Arduino activates the GPS to send alert messages via GSM to the family contact. An alarm is

also employed to alert the surroundings by its sound and meanwhile [2].

Ladies' security is a basic issue in this day and age and it's especially required for each person to be acting over such an issue. The papers [3-8] describes about a safety electronic system for women, built in public transport vehicles such as cars, buses and auto-rickshaws as nowadays women are being molested, kidnapped and harassed by the drivers. Hence implemented electronic system is fitted in the vehicle which has display, keypad, GPS, GSM and embedded board to control and interconnect all of the above. As journey is started passenger can enter her guardian, friend or relative mobile no, he/she is going to get all the notifications of the female passenger journey. First of all the driver's name, mobile number, vehicle registration number and the secure pin generated by passenger is sent by SMS to the concern person of passenger. Passenger may always not get down at destination decided, she may get down little early or little further depending on various factors, hence an option to terminate journey is also provided called as end of journey which is executed and validated using secure pin, which driver will not be aware of. This system uses serial EEPROM to store various locations of cities and hence new locations can be added and thus project will work in any city because locations are not hardcoded in the code but it is external to code. The gadget furnishes with all the elements which will investigate every possibility to help the trick in any sort of crisis circumstances.

Magesh kumar *et.al.* implemented an emergency reaction scenario identifiable application named IPROB with an intension to provide safety for women even during scenarios like attack of terrorist or any natural disaster, the user can try to save herself by shaking the phone more than the normal threshold value, this automates and activates the application. It raises an alert and if the end user fails to reply in a defined time interval then the predefined message is broadcast to the stored phone number. If the receiver at the other end approves a emergency service like ambulance, fire engine and so on then they are alerted. If the receiver approves a hearable alert, then it mechanically alert and enable the speakerphone of the victim [9].

A smart watch for women security based on IOT concept proposed by Helen *et. al.* included ideas are when a women or child wearing this watch is exposed to sexual or vulnerable attack, the sensor present in it detect the heart beat rate of a person which will be high at the moment by the secretion of epinephrine hormone from axis and gets activated, also

through GPS/GSM it will be helpful for police to arrive soon at the spot by tracking the GPS, such a system will lead to safer and better environment. The disadvantage of this paper is that the location of the user is not known so tracing out the location of the victim is hassle and doesn't help in reducing the crimes [10].

Poonam B *et al.* developed a GPS and GSM based vehicle tracking and women employee security system that provides the combination of GPS device and specialized software to track the vehicles location as well as provide alert and message with an emergency trigger. The information of the vehicle position provided by the device can be viewed on Google map [11].

II. WORKING AND EXPERIMENTAL METHODS

Our proposal will be very much helpful in such cases in not only informing about attacks but also in giving the exact location of the child or women to nearby police station for necessary action. Women or children will be provided with an equipment which is not visible to others, the equipment consists of GPS module by which we can get the geographical location and these location values are displayed on the LCD. In the case of any emergency conditions she can press a button the micro controller sends latitude and longitude information to authorized persons through GSM then the location information will be tracked and sent to police and family members so that she will be rescued in proper time and we can easily trace out the kidnapped a women or children with the GPS location and this system gives voice alert to the surrounding people. The block diagram of the security system is shown in figure 1.

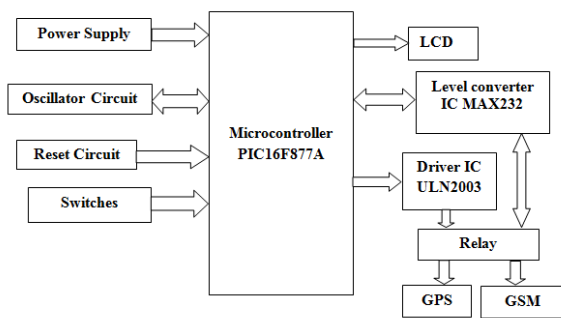


Fig. 1 The block diagram of expert system based women and child security system

A. Component Details

The following major components are used to make the experimental set up:

- ✓ Microcontroller PIC 16F877/874
- ✓ LCD Interface
- ✓ MAX232
- ✓ ULN 2003 Driver
- ✓ GSM Module
- ✓ GSM Module

Hi-tech C is an IDE (Integrated Development Environment) that helps to write, compile, and debug embedded programs. It encapsulates the following components:

- A project manager.
- A make facility.
- Tool configuration.
- Editor.
- A powerful debugger.

Hi-tech C adds many new features to the Editor like Text Templates, Quick Function Navigation, Syntax Coloring with brace highlighting, Configuration Wizard for dialog based start up and debugger setup. A unique feature of the Hi-tech C is the Device Database which contains information about more than 400 supported micro controllers. When you create a new Hi-tech C project and select the target chip from the database, Hi-tech C sets all assembler, compiler, linker, and debugger options for you. As new devices become available, they are added to the database along with data sheets and header files.

B. Circuit Diagram

The circuit diagram and experimental setup of the expert system based women and child security system is shown in figure 2 and 3 respectively.

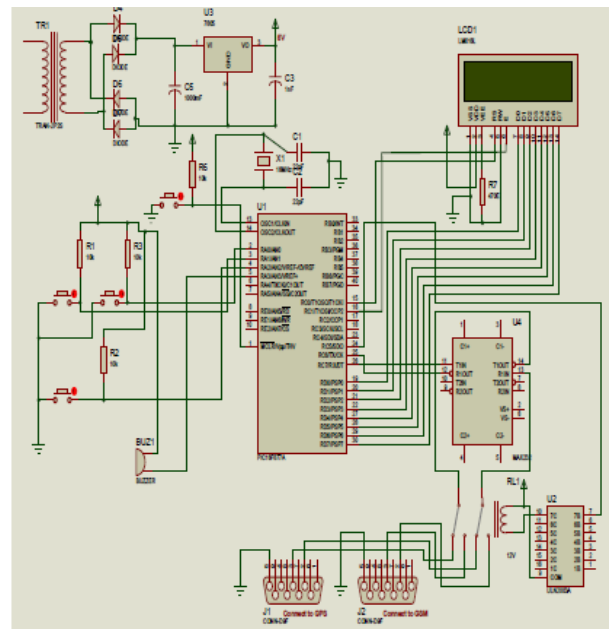


Fig. 2 The circuit diagram of expert system based women and child security system

III. FUTURE SCOPE

- By encrypting the GOOGLE MAPS in the GPS it can detect the area instead of latitude and longitude information
- By using nano side material, the kit size gets reduced.
- Using wireless GPS modem and wireless panic button

- the carrying of the kit can be avoided
- More effective system can be designed by adding motion detector technology

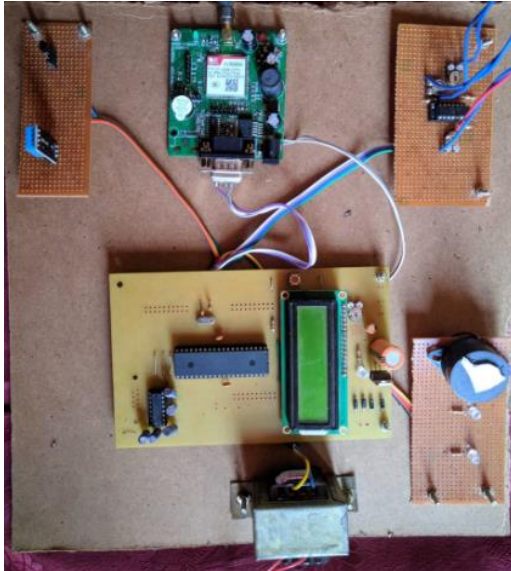


Fig. 3 The experimental setup of expert system based women and child security system

IV. CONCLUSION

An expert system based women and child security system is a portable system and very helpful when a person doesn't have any device for communication. It is smaller in size and cannot be identified easily as a communication device, that means, only the user has the knowledge about the system,

third person will not be aware of it as a security system. It can be easily fit within smaller gadgets like watch. It can track the person even if they are in a less coverage area. So this system can be carried anywhere easily and used at any time without much user interaction and with best functionality.

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