Women Safety Device and Its Application

Chaitra Jain HP [1], Hema D [1], Pooja K S [1], Ramya K L [1] Arpita K [2]

Student [1], Dept. of computer science Engineering, BGS Institute of Technology, Karnataka, India Assistant professor

[2], Dept. of computer science Engineering, BGS Institute of Technology, Karnataka, India

Abstract - Women's security is a major issue of concern in today's world. Women are subjected to unethical physical harassment for a long time ago. Now that the technology has improved drastically, Women's safety methods such as various mobile apps have been tried and implemented, but the need of the time is that they need may be a device which will be carried everywhere easily. Here we present 'I am safe', an idea to design one such device which can be attached to the clothing or any simple thing you carry. The main advantage of this project is that this device can be carried everywhere since it is portable.

Key Words: women safety device, IOT, GSM, Renesas, LCD, GPS, Speaker, laser.

1. INTRODUCTION

In today's society, it's frequently seen that Girls are getting exploited by Men in different ways. Teenage and immature girls are facing a lot of problems associated with their security. In this regard, this project is a boon that provides not only security for the girls but also creates awareness in the society against increasing Girls and women's exploitation with the help of the latest technology. The project aim is to send messages in emergency times i.e., when the person is forced for sexual harassment, molestation, etc. then the messages will be sent to the mobile phones.In this project, we are using GSM and GPS Technology. The main function of the global positioning system modem is to provide the longitude and latitude of thelocation. The GPS modem receives data from the satellite and then it gives this bunch of data to the ARM controller through serial communication and the main function of the GSM modem is to send all the parameters to predefined numbers through a text SMS. Along with these technologies we are implementing GPRS technology also; General Packet Radio Serviceis apacket-based wireless communication

service that promises data rates from 56 up to 114kbps and continuous connection to the internet for mobile phone and computer users An Act to provide for more effective protection of the rights of women guaranteed under the Constitution who are victims of violence of any kind occurring within the family and for matters connected there with or incidental there to.

2. RELATED WORK

By studying literature, we've come to understand that a lot of works had done to make sure women's safety by proposing various IoT and Application-based devices. V. Hyndavi, N. Sai Nikhita, S. Rakesh Proposed a smart device for women's safety that automates the emergency alert system by using a pressure sensor, pulse-rate sensor, and temperature sensor to detect a possible atrocity automatically using outlier detection. a smart device for women's safety that automates the emergency alert system by using a pressure sensor, pulse-rate sensor and temperature sensor to detect a possible atrocity automatically using outlier detection. The disadvantage is that it is not very reliable need manual effort and it is expensive. Another work was proposed based on IBEACON Technology. The proposed system shows a versatile and interoperable combination of a device and application which will accessorize and empower the citizens and function as a multifunctional device. For the proposed system, they have used mems and pressure sensors to detect the abnormalities. When an abnormality is been detected, the present location is been obtained using GPS Sensor and an alert message is shipped to the nearby police headquarters or parents. The disadvantage is that the Tracking was difficult, and not able to find the exact location. Tejonidhi M.R developed an application which helps women to overcome with fear and can call to her guardian that she will take the assistance. The project resembles a smart band; it's the potential to guard the ladies, with the varied sensors integrated within the band. When she wearing the band or a watch, if she faces any Kind of harassment or if she feels something happened to be endanger, she can press the button located on the watch, when she falls in down, the various information such as location, body posture, pulse rate and SMS alert are sent to the predefined number by using the GSM through Raspberry Pi. The disadvantage is that the women have to click the power button for 2 times consecutively. It is not possible at all the situation. This app is also physically dependent. Dr. Prachi Gharpure proposed a system for women's safety is based on BLE (Bluetooth Low Energy) Beacon devices due to their low cost, ease of deployment, ease of accessibility to the users, and Superior interior localization. The advantages are

Independent of Electricity., real-time GPS, Independent of Smartphones, and GSM system. The disadvantage is slower speed: When dealing with real-time data, it is imperative that data is transmitted and available as fast as possible. Wireless networks are susceptible to increased latency and signal interference that impacts the speed and consistency of the data. Bhavya S, Nagesh K V presented a project named "WOMEN SELF DEFENSE WATCH" which aims at providing security during emergency situations by including GPS (the location where the victim is in) and GSM (sends a message to nearby police stations or family members). Normally in emergency situations, an individual presses an emergency key So whenever an emergency keys pressed the ALARM gets activated for a specified duration and later the system will take GPS points (the location where the victim is in terms of latitude and longitude) D. G. Monisha1 and R. Subhashini developed a product called "FEMME". This device is a security system, specially designed for women in distress. An ARM controller for the hardware device is the most efficient and it consumes less power. A radio frequency signal detector is used to detect hidden cameras. The disadvantage is that all the existing systems must be connected to the GPRS service to work properly, hence cannot be used during an emergency if there is no internet connectivity.

3. PROPOSED SYSTEM

The proposed system will deal with critical issues faced by women in the near past and will help to solve them with technologically sound equipment's and ideas. This system can overcome the fear that scares every woman in the country about her safety and security.

4. ADVANTAGES

➢ Totally secure and reliable, using which we help to catch culprit at the place of crime only.
➢ Also, can be used as safety device for vault, automobiles, home, office.
➢ This weapon will help in controlling assaults from close persons of victim which contributes about 98% in such incidences.
➢ This application will be accessible automatically as well as manually.
➢ Very cheap system compares to currently available safety devices in market.
➢ Easy to carry, no need of extra efforts as can be attached with waist belt only for woman safety.
➢ Very effective as useful all over the globe where range is available at any time with high accuracy and efficiency.

5. FRAMEWORK AND SYSTEM DESIGN

A. Working Framework
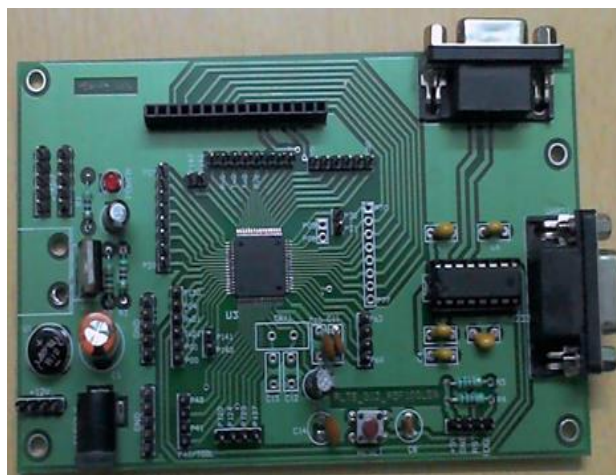
It
It is a 16-bit microcontroller having 64 pins. It is having3 sections power section, control section and communication section.

POWER SECTION:
➢ Operating voltage of dc motor would be 12v.
➢ Diode acts as a bridge rectifier and converts from AC to DC. Regulator coverts 12v to 5v.
CONTROL SECTION:
➢ It is the main part of the controller where it contains the 64 pin IC R5F100LE.
➢ It contains 68 registers where 58 are general purpose registers. Remaining 6 pins are reserved (VCC, GND, crystal).
➢ It contains 3 UARTS (0,1,2). LCD is for output section and it belongs to port section.

➢   Here two resistors are used to reduce the power loss.

FEATURES OF RENESAS

➢   Operating voltage and frequency would be 5v and 50 MHz
➢   On chip debug function, inbuilt reset function
➢   Input interrupts, on chip watch dog timer, 10-bit ADC.
➢   IDE (Integral Development Environment)
➢   Cube suit+ is used as a software, Inbuilt UART, SP12c.

B.   Block Diagram and Components
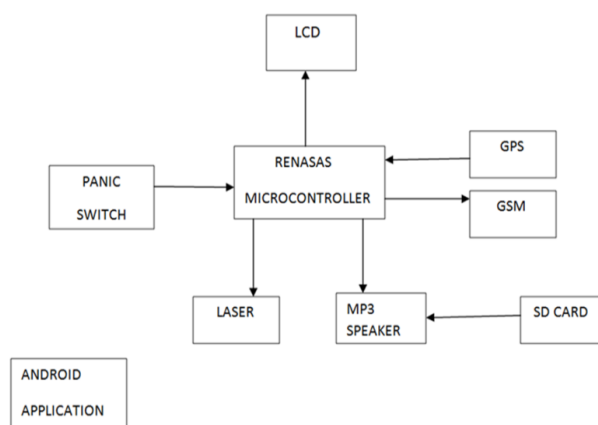
a.   It is 16-bit architecture, it has 64 I/O pin (R5F100LE).
b.   Microcontroller acts as heart of our project, which controls the whole system.
c.   It contains a Flash ROM of 64KB, RAM of 4KB and
d.   Data Flash of 4KB.It is a High speed on-chip oscillator & also Self-reprogrammable under software control.

1.   LCD

➢   Here we use 16*2 LCD where it has2 rows and 16 columns. To display each character on LCD we require 5*7 dot matrix.
➢   1st pin VSS (source to source) always connected to ground
➢   2ndpin VDD (drain to drain) always connected to +5v
➢   3rd pin V0 is always connected to ground; the main purpose is to control the brightness of the LCD. It has a predefined IC which sets the brightness
➢   4thpin Rs (Register Select) it has two kinds of registers.
1. Command register (Rs=0) Command register is   selected
2. Data register (Rs=1) data register is selected. 5thpin (R/Wbar) Read/Writebar
1. Always connected to ground
2.   Here always write is enabled 6th in it is used for enable operation

2.   GSM MODULE

➢   Sim 900 is used in the project
➢   When led starts blinking it indicates to search for network
➢   When it is continuously on it indicates the availability of network.
➢   Band rate is set as 9700 and contacted using 50Hz

   3. MP3 MODULE

➢   MP3 used is FNM16P.
➢   MP3 supports MP3 &WAV decoding.
➢   MP3 is a particular file type used for storing music.
➢   MP3 used is 24bit DAC and SNR is 85 to 90 db.
➢   MP3 player dedicated to playing back sounds stored in coded format inside those files.
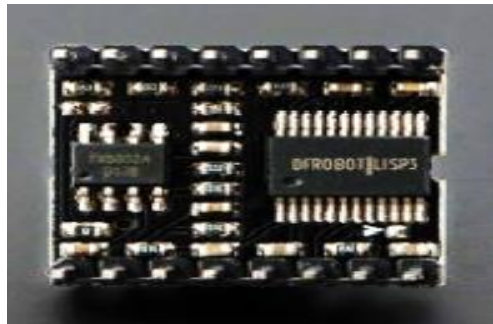
➢   Here it has 24bit DAC and has an SNR of 90DB. Here UART RS232 cable is used and a total capacity of 99 folders and 255 channels
➢   4th and 5th pin used for right and left
➢   ADKEY is used to skip to next song
➢   Here microcontroller controls the operation to send the commands

   4. GPS

➢   When a GPS receiver is turned on, first it will download orbit information of all the satellites.

➢   In this process, the first time it can take as long as 12.5 minutes, but once this information is downloaded; it is stored in the receiver's memory for future use.

➢   The receiver already knows the velocity, which is the speed of a radio wave or 1,86,000 miles per second.

➢   To decide the time part of the formula, the receiver matches the satellites transmitted code to its own code, and by comparing them determines how much it needs to slow down its code to match the satellites code.

➢   GPRS.06126.00. A,1258.9980, N…. here numbers indicate the time and N indicates the longitude and words at the end of the string indicates end of checksum

5. SPEAKER

➢   Speaker enhances the sound and creates the crowd.

➢   Speaker is used to call for instant help by playing preloaded songs in SD card by MP3player.

6. LASER POINTER

➢   It is a device that emits light through a process of optical amplification based on the stimulated emission of electromagnetic radiations.

6. IMPLEMENTATION

6.1. HARDWARE IMPLEMENTATION:

➢   VCC AND GND

Pin 16 provides supply voltage to the chip. The voltage   source is +5v.Pin 13 is the ground.

➢   RST

Pin 6 is the RESET pin. It is an input which is an active high. when we apply a high pulse to this pin, the microcontroller will reset and terminate all the activities.

6.1.1 CIRCUIT DIAGRAM

This process is often referred to as power on reset. Activating a power-on reset will be causing all values in the registers to be lost.
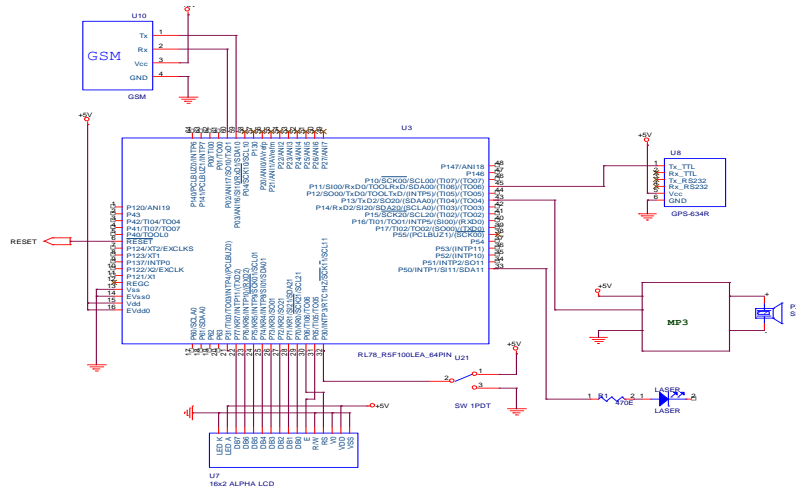
Fig 6.1 Project circuit

When the microcontroller is powered up, the program stored in the ROM of microcontroller starts executing and microcontroller functions as power the program.in this project the microcontroller keeps in checking the signals are arriving at the input port, if there is no signal from it no function is taken place.
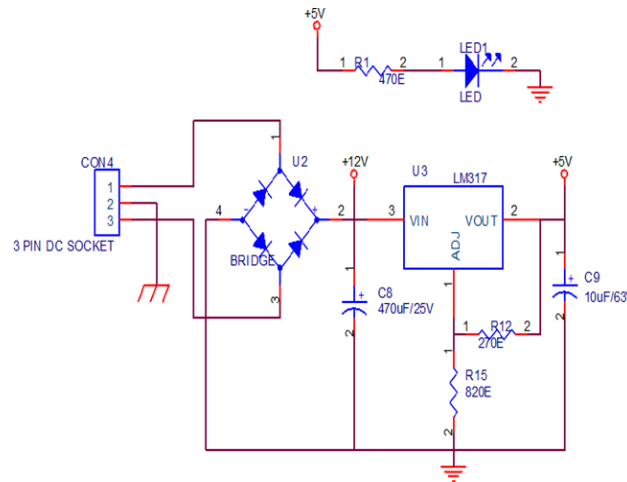
6.1.2 POWER SUPPLY

Fig 6.2 Power supply circuit

➢ As per this project design, a 5V regulated power supply is required.
➢ All the modules were selected to work with the supply of 5V.
➢ LM317 adjustable regulator is used to generate 5V regulated power supply.
➢ A 12V, 2A SMPS AC and also DC adaptor is used as an external power supply.

6.2. SOFTWARE IMPLEMENTATION

Integrated development environment Cube Suite offers the best in simplicity, usability, and security for the repetitive editing, building and debugging that represent software development. Easy to install and operate, Cube Suite offers a highly user-friendly environment featuring unusually tiny build times and graphical debug functions. The robust line up of expanded functions and user support functions ensures a true environment for all users.

The programmer is easily controlled by the computer Software through the USB bus offering friendly interface and powerful features to users. USB High speed and high SPI performance, support up to 1Gb SPI Flash.

•In circuit Programming: Program on board SPI Flash.

•Off line Programming: Program SPI Flash in the socket.

Main purpose of using this software is,

•CubeSutie+ has the capacity to generate the program by itself.

•Renesas flash programmer is used here to dump the program into the IC.

7. RESULT ANALYSIS

Whenever we switch on the power supply a welcome message "women safety belt" is displayed. GSM and GPS modules are activated when power supply is made on. A text SMS is sent to indicate about the activation of the process. A voice output arrives to alert the surrounding crowd. An electric shock would strike at the criminal during the audio output. Current traced location is sent to parents and police in the form of message which is demonstrated through LED.

Fig 7.1: GSM Activation and Initialization

Fig 7.2: GSM activated and sending text message

Fig 7.3: Voice Output during attack

Fig 4.7: Latitude and Longitude

8. CONCLUSION

The proposed design will deal with critical issues faced by women and will help to solve them with technologically sound equipment and ideas. The merit of this work is it not only provides safety and it also provides security by means of self-defense mechanism. The crime against the women can be now brought to an end with the help of real system implementation of the proposed model. We can use this safety device in hand bags, luggage, vehicle etc. By using Nano size materials, the kit size gets reduced. Using wireless GPS module and wireless panic button the carrying of the kit can be avoided. Voice Outputs can be stored in different languages.

9. REFERENCES

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