Multiple Application Self defence device
An Wireless Device

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Abstract – **The harassment on women and other attacks have become a part of daily news. This increase in crime rates at less crowded places with lack of surveillance and cops makes safety hard. Hence we propose a system in which technology can be used to defend ourselves from such situations and also to get timely help. The smart tracker and self-defence device is a system that is controlled by a single controller. PIC is the microcontroller used in the device. The device has an emergency push button which can be pressed at the time of danger. When the button is pressed 4 functions take place simultaneously. An electrode at one end of the device discharges a non-lethal shock to attack the criminal. The GPS module used collects the exact location of the victim from coordinates. This information is sent along with a distress message to the nearby police station and the registered numbers through GSM modem. An alarm is also ringed when the button is pressed. This is helpful to get help from nearby people and also to alert the user about depression of the switch.**

KEYWORDS- *PIC16F877A IC, GPS MODULE, GSM MODEM, NON-LETHAL SHOCK.*

I. INTRODUCTION

As the safety issues of women has now become a major concern. Numerous moral and ethical solutions have been proposed by media and society. But it takes a long time to make a moral impact until then we may use technology that can help the victim not just as an evidence after the crime has occurred, but as a self-defence device to prevent such crimes. Thus there is a need for a simple self-defence device that can be used at the time of emergency. Here we propose such a device that can help a victim to prevent, alert and send instant location to the concern people. This is achieved through a shock generator, GSM, GPS, alarm and controller module. This device can be envoked by pressing a single push button. Thus the device has a single input and multiple outputs. The outputs include an alarm that starts ringing when the button is pressed and a shock generator circuit that generates a non-lethal electric shock that can be used to attack the criminal temporarily . Also the instant location of the victim is shared using GPS and GSM modules.

II .HARDWARE DESIGN

Embedded systems are usually low cost and are easily available off the shelf for most applications. They usually have low design risks, since it is easy to verify the design using tools fueling the growth of embedded systems.
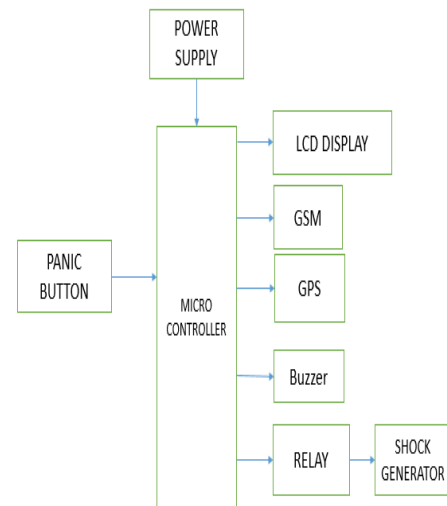
Embedded systems have received a major shot in the arm as the result of three developments. The first was the development of standard run-time platforms like java, which enabled their use in myriad ways that were unimaginable in the past. The second was the coming together of embedded systems and the Internet, which made possible the networking of several embedded systems to operate as part of a large system across networks. The third was the emergence of several integrated software environments, which simplified the implementations of these applications. During operation, the design structure may be changed as per our tasks. For example, consider two transistors; we can mould them using other passive elements as emitter coupled circuit, Darlington pair, etc., as per instruction.The most common designs are, Event-driven which switches tasks only when an event of higher priority. Needs servicing, called preemptive priority, or priority scheduling. Time-sharing designs switch tasks on a regular clocked interrupt, and on events, called round robin. PIC16F877

Various microcontrollers offer different kinds of memories. EEPROM, EPROM, FLASH etc. are some of the memories of which FLASH is the most recently developed. Technology that is used in pic16F877 is flash technology, so that data is retained even when the power is switched off. Easy Programming and Erasing are other features of PIC 16F877. The Pic16f877ais 40 pin compatible and instruction set compatible. It includes the resources of the standard 8052

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such as four 8-bit I/O Ports, three 16-bit timer/counters, full duplex serial port and interrupt sources. The Pic16f877afeatures a faster running and better performance 8-bit CPU with a redesigned core processor without wasted clock and memory cycles.

III . SOFTWARE DESIGN

The Pic16f877a is a fast PIC compatible microcontroller with a redesigned processor core without wasted clock and memory cycles. Typically, the instruction executing time of Pic16f877a is 1.5 to 3times faster than that of traditional 8051, depending on the type of instruction. In general, the overall performance is about 2.5 times better than the original for the same crystal speed. Consequently, thePic16f877a is a fully static CMOS design; it can also be operated at a lower crystal clock.

The Pic16f877a contains In-System Programmable (ISP) 128 KB bank-addressed Flash EPROM;4KB auxiliary Flash EPROM for loader program; on-chip 1 KB MOVX SRAM; 6-ch PWM outputs; power saving modes. This product is proper to used in plate display application with cost effectiveness.

No	PINS	PIN NUMBER	CONNECTION
1	RC7/RX/DT	26	GPS
2	RC6/TX/CK	25	GSM
3	RC0/T10SO/TICK	15	SHOCK GENERATOR
4	OSC1/CLKIN	13	POWER SUPPLY
5	OSC2/CLKOUT	14	GROUND
6	RB0/INT	33	LCD(D0)
7	RB1	34	LCD(D1)
8	RB2	35	LCD(D2)
9	RB3/PGM	36	LCD(D3)
10	RB4	37	LCD(D4)
11	RB5	38	LCD(D5)
12	RB6/PGC	39	LCD(D6)
13	RB7/PGD	40	LCD(D7)

The MCU can be initialized by the following code:

```
void mcu_init()
{
        TRISB  = 0X00;
        TRISE  = 0X00;
        TRISD  = 0X01; //0000 0001
        TRISC  = 0X80; //1000 0011
}
```

The serial output coding will be as follows:

```
void ser_out(unsigned char ss)
{
        TXREG = ss;
        while(!TXIF);
        TXIF = 0;
        delay(8000);
}
```

IV. ADVANTAGES

The earlier existing systems has only some part of the features proposed in this paper. Hence this device with multiple applications serves as a best self-defence and tracking device. The alarm connected with the system is useful for both alerting the nearby public to get help and also to alert the user about the key depression to prevent accidental attacks.

V. FUTURE SCOPE

The device shown here is an independent device with separate controller GPS and GSM modules. This can be modified in future as follows:

1. The entire system can be fabricated in a single IC chip which makes it light weight and portable.
2. Instead of using an independent tracking system smart phones can be used and the shock generator circuit can be fabricated seperately and connected with phone through a mobile app and separate battery in the form of a mobile case.

VI. CONCLUSION

In this project, we have proposed the designing and implementation of a safety system for women in the form of partial wearable. Going serially as per the objectives mentioned, a location tracking subsystem was successfully implemented.

VI. REFERENCES

[1] Toney, G.; Jabeen, F.; Puneeth, S., "Design and Implementation of Safety Armband for Women and Children using ARM7", International Conference on Power and Advanced Control Engineering (ICPACE), 2015, pp. 300-303

[2] Zhang Songwei; Cui Xiao, "Design and implementation of network camera based on TMS320DM365", Artificial Intelligence, Management Science and Electronic Commerce (AIMSEC), 2011 pp 3864 3867.

[3] Punetha. D.; Mehta, V. "Protection of the child/ elderly/ disabled/ pet by smart and intelligent GSM and GPS based automatic tracking and alert system" ,Advances in Computing, Communications and Informatics (ICACCI, 2014 International Conference on Year: 2014 pg2349 – 2354

[4] Dafallah, H.A.A, "Design and implementation of an accurate real time GPS tracking system.", e-Technologies and Networks for Development (ICeND), 2014 Third International Conference on Year: 2014 pg 183 – 188

[5] M.F. Saaid, M.A. Kamaludin, M.S.A. Megat Ali, "Vehicle Location Find Using Global Position System and Global System for Mobile" , 2014 IEEE 5th Control and System Graduate Research Colloquium, Aug. 11 - 12, pp. 279-285

[6] Pham Hoang Oat, MichealDrieberg and Nguyen ChiCuong, "Development of Vehicle Tracking System using GPS and GSM Modem", 2013 IEEE Conference on Open Systems (ICOS), December 2 - 4, 2013, pp. 89-95.

[7] BharathPatil, RadhikaPatil, Dr. Andre Pittet, "Energy saving techniques for GPS based tracking applications", Integrated Communications, Navigation and Surveilance Conference (ICNS), 2011, pp. J8-17.

[8] LihChiehPng, Liangquan Chen, Song Liu, and Wei KuanPeh, "An Arduino-based Indoor Positioning System (IPS) using Visible Light Communication and Ultrasound", 2014 ICCETaiwan, pp. 217-218

[9] Cabal-Aragon, J.; Pomarico-Franquiz, J.; Shmaliy, Y.S.; VeraAlmanza, O "Embedded microcontroller using GPS asecurresource for disabled people" Instrumentation and Measurement Technology Conference (I2MTC) Proceedings, 2014 IEEE International,pp: 226-229

[10] http://ncrb.gov.in/MAPS-2014/ALL-MAPS- 2014 Viewed on 15/08/2015.