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Wearable and Embedded Device in The Role of Providing Security for Women in Public Places.

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ABSTRACT

Inappropriate behavior and different types of sexual savagery in public spaces around the globe are an everyday occurrence for women and girls. This reality reduces women's and girls' freedom of movement. In cases of violent abuse of women have steadily increased since 2009. By 2013, the number of such cases has increased by over 50 %. That's over 848 women who are harassed, raped or killed after abduction every single day. To avoid harassment against woman, we have proposed a security system which can be implemented in real life using an android application via Bluetooth. The work uses piezoelectric plate as the source to send signal which is placed in the Woman's shoe. When it is pressed, the piezoelectric plate senses the vibration and sends the signal to Mobile. The alert in turn is sent to nearby police station. This paper proposes an architecture involving the components such as piezoelectric plate, Microcontroller, LCD and regulated power supply.

Keywords: Security, Women, piezoelectric plate, Micro controller.

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I. INTRODUCTION

The main objective of this paper is to propose a model to provide security for women in public places when they met with any harassment. In earlier days, if any harassment is taking place, the person in trouble has to safeguard her alone by making noise or report to nearby police station. There are many disadvantages in this scenario like she may not get timely help. There are some existing study deals with this type problem and technologies used. The work in [1] elaborates safeguarding of disabled children because they are at more risk to all forms of child abuse [2]. The way to provide security for women in their professional life has been dealt in [3] and [8]. The study in [4] proposes an effective system for analyzing activation flow between components through Android programs. The activation flow of information is necessary for all Android analyses. Tracking of gestures and movements in mobile was discussed in [5]. The effectiveness of Bluetooth in short-range communications is described in [6]. By having this study, the proposed system is being developed.

II. PROPOSED SYSTEM

The system deals with the architecture provide security when a woman in trouble. It consists of piezoelectric plate, amplifier, low power microchip microcontroller, LCD, Bluetooth and regulated power supply. The piezoelectric plate is to sense the vibration. The vibration from the women shoe is given to the amplifier circuit. Amplifier will amplifies the vibration and provide it to the microcontroller. Microcontroller in turn will control the overall operation by recognizing the signal; if vibration threshold goes beyond the threshold level then the signal is transmitted to the android phone of women via Bluetooth. From the mobile the information about harassment and respective location is sent to the nearby police station through the android application. LCD is used for the display purpose and overall power is given by the regulated power supply. The following are the advantages of proposed system.

- Immediate help can be provided for the victim.
- User friendly.

The configuration required for implementing the proposed system are PIC microcontroller, Piezoelectric plate, Bluetooth ,Liquid Crystal Display(LCD) and Regulated Power Supply(RPS)

II.1 PROTEUS 7.0 SIMULATION TOOL

Proteus 7.0 is a Virtual System Modeling (VSM) that joins circuit reproduction, energized segments and chip models to co-reenact the complete microcontroller based plans. This is the ideal apparatus for architects to test their microcontroller plans before developing a physical model continuously.

This device permits clients to cooperate with the configuration utilizing on-screen pointers and/or LED and LCD shows and, if appended to the PC. One of the fundamental segments of Proteus 7.0 is the Circuit Simulation - an item that uses a simple test system piece joined with an occasion driven advanced test system that permit clients to use any SPICE model by any maker. Proteus VSM accompanies broad investigating highlights, including breakpoints, single venturing and variable presentation for a flawless configuration before equipment prototyping. In synopsis, Proteus 7.0 is the system to utilize when we need to recreate the association between programming running on a microcontroller and any simple or computerized electronic gadget associated with it.

II.2 CCS SOFTWARE

A compiler is a PC program (or set of projects) that changes the code composed for actualizing the proposed design in a programming dialect (the source dialect) into another scripting language (the objective dialect, frequently having a double shape known as item code). The most well-known explanation behind needing to change source code is to make an executable system.

This coordinated C advancement environment gives designers the ability to rapidly deliver extremely proficient code from an effortlessly viable abnormal state dialect. The compiler incorporates worked in capacities to get to the PIC microcontroller equipment, for example, READ_ADC to peruse a quality from the

A/D converter. Discrete I/O is taken care of by depicting the port qualities in a PROGRAM. Capacities, for example, INPUT and OUTPUT_HIGH will legitimately keep up the tri-state registers. Variables including structures might be specifically mapped to memory, for example, I/O ports to best speak to the equipment structure in C.

Android, as a framework, is a Java-construct working framework that keeps running with respect to the Linux 2.6 bit. The framework is exceptionally lightweight and full included. Android applications are produced utilizing Java and can be ported rather effectively to the new stage. One of the additional energizing and convincing elements of Android is that, on account of its design, outsider applications—including those that are "home developed"— are executed with the same framework need as those that are packaged with the center framework. This is a noteworthy takeoff from most frameworks, which give implanted framework applications a more noteworthy execution need than the string need accessible to applications made by outsider designers.

II.3 ARCHITECHTURE

MICRO CONTROLLER

A solitary chip that contains

- Processor (the CPU)
- Non-unstable memory for the system (ROM or blaze)
- Volatile memory for info and yield (RAM)
- Clock
- An I/O control unit. the idea manages some current innovations the work in[9], Likewise called a "PC on a chip"

Billions of microcontroller units (MCUs) are installed every year in countless from toys to cars.

For instance: a solitary vehicle can utilize 70 or more microcontrollers. Microcontrollers are intended for installed applications, as opposed to the microchip utilized as a part of PCs or other broadly useful applications. PIC microcontroller chips from Microchip are the world's littlest microcontrollers

Additionally, every application is executed inside its own string utilizing an extremely lightweight virtual machine.

II.4 PIC MICROCONTROLLER

Peripheral Interface Controller (PIC) was initially outlined by General Instruments. In the late 1970s, GI presented PIC 1650 and 1655 – RISC with 30 instructions.PIC was sold to Microchip Features: minimal effort, independent, 8-bit, Harvard structure, pipelined, RISC, single gatherer, with altered reset and intrudes on vectors.

Explanation behind Using Pic

- Variety of decisions (8-bit to 32-bit)
- Affordable (Low Cost)
- Low Power
- Reasonable Size
- Convenient Packaging
- Through Hole (Dip)
- Surface Mount (SMD)

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Microcontroller Features

- High-Performance RISC CPU.
- Only 35 guidelines to learn.
- Operating rate.
- Interrupt capacity.
- 8-level profound equipment stack.
- Direct, Indirect and Relative Addressing modes.
- Special Microcontroller Features.
- Precision Internal Oscillator.
- Power-Saving Sleep mode.
- Wide working voltage range (2.0V-5.5V).
- Industrial and Extended Temperature range.
- Power-on Reset (POR).
- Power-up Timer (PWRT) and Oscillator Start-up Timer (OST) .
- Brown-out Reset (BOR) with programming control choice.
- Low-Power Features.
- Standby Current.
- Operating Current.
- Watchdog Timer Current.
- Peripheral Features.
- 24/35 I/O pins with individual heading control.27.
- Analog Comparator module with.

II.5 PIEZOELECTRIC PLATE

The fundamental rule utilized as a part of Piezo electric plate is piezoelectricity. It is a marvel of inside collection of charge in precious stones in light of outside mechanical power connected on it. The material utilized as a part of piezoelectric component is lead zircon ate precious stone. These precious stones create quantifiable piezoelectricity when they are distorted about 0.1% of their unique measurements. This concept used in exiting system that describes [7]. These precious stones promptly discharge the present when the introduction of gem is aggravated by mechanical vibrations. These signs are thusly given to Op-Amp.

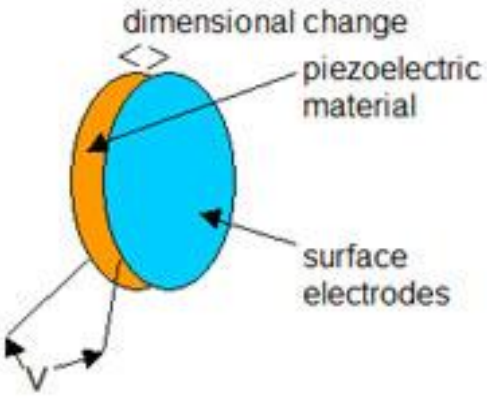

Figure 1. Piezoelectric plate

II.6 REGULATED POWER SUPPLY

Controlled force supply is an electronic circuit that is intended to give a steady dc voltage of foreordained quality crosswise over burden terminals independent of air conditioning mains vacillations or burden varieties. Alternately at the end of the day it changes over unregulated AC into a steady DC. With the assistance of a rectifier it changes over AC supply into DC

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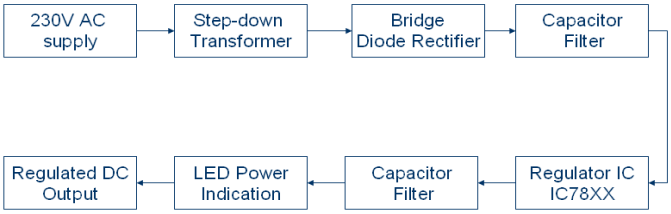

Figure 2. Regulated Power Supply

II.7 LIQUID CRYSTAL DISPLAY

LCD (Liquid Crystal Display) screen is an electronic presentation module and locate an extensive variety of utilizations. A 16x2 LCD showcase is extremely essential module and is regularly utilized as a part of different gadgets and circuits. These modules are favored more than seven fragments and other multi portion LEDs.

The reasons being: LCDs are efficient; effortlessly programmable; have no restriction of showing exceptional and even custom characters (dissimilar to in seven sections), liveliness et cetera.

A 16x2 LCD implies it can show 16 characters for every line and there are 2 such lines. In this LCD every character is shown in 5x7 pixel network. This LCD has two registers, to be specific, Command and Data. The charge register stores the order guidelines given to the LCD. An order is a direction given to LCD to do a predefined assignment like introducing it, clearing its screen, setting the cursor position, controlling presentation and so forth.

The information register stores the information to be shown on the LCD. The information is the ASCII estimation of the character to be shown on the LCD. Snap to take in more about inside structure of a LCD.

III. RESULTS

Bluetooth is a remote innovation standard for trading information over short separations. Bluetooth utilizes a radio innovation called recurrence bouncing spread range, which cleaves up the information being sent and transmits pieces

- Radio Chip: CSR BC417
- Memory: External 8Mbit Flash
- Output Power: -4 to +6dbm Class 2
- Sensitivity: -80dbm Typical

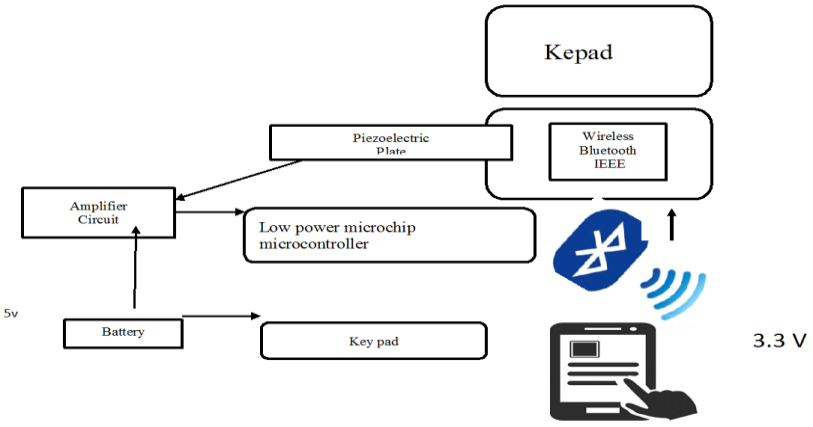

Figure 3.Proposed Architecture

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The working flow of the model is given in the following steps

Step1: click the "connect "button now the device is connected to the application.

Figure 4. Step 1

Step 2: Enter the password.

Figure 5.Step 2

Step 3: Give any four contact number including police station number for immediate help .

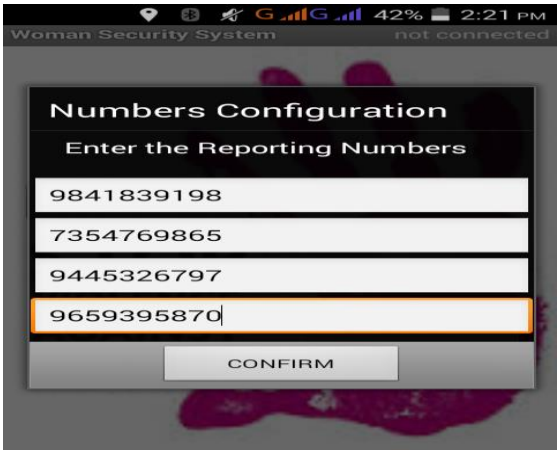

Figure 6. Step 3

Step 4: Give any four email address for further help.

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Figure 7.Step 4

IV. CONCLUSION

The proposed architecture supports to create a security model particularly for women. It employs the hardware components such as Micro Controller, Piezoelectric plate, regulated power supply and liquid crystal display. The proposed architecture of safety system will help to reduce the crime rate against women.

V. FUTURE ENHANCEMENTS

The system can be extended for child safety with greater data transfer rate. The size of final product can be reduced for compact design.

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