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An IOT based voice recorder for women's safety

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ABSTRACT

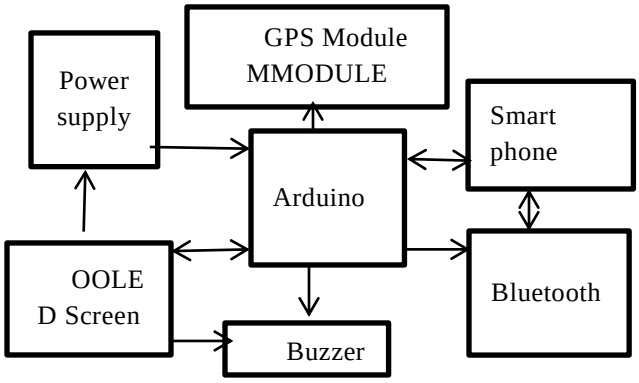
Women security is need of the hour now-a-days. In India, there are many cases in women harassment. Safety of women matters a lot whether at home, outside the home or in working place. Last few crimes against women especially rape cases where very dread and fearful. Because of such crimes, women safety in India has become a doubtful topic. In the current global scenario, the prime question in every women mind is to move freely on the streets even in odd hours without worrying about the society. In existing project, many sensors were used to sense the victim's current situation and to send the location, but in some cases, it may give wrong information. There are many android applications are available in the market. Those applications were failed because of low battery and issues in network. A smart wearable device is proposed with different modules such as GSM, GPS, Buzzer, shock mechanism circuit, voice recorder, PIC controller and Position sensor.

INTRODUCTION

The IOT is a system of interrelated computing devices, mechanical and digital machines, objects, animals or people that are provided with unique identifiers and ability to transfer data over a network without requiring human to human or human to computer interaction [1]. Experts estimate that IoT will consist of about 30 billion objects by 2020[2]. As of 2016, the vision of the Internet of things has evolved due to a convergence of multiple technologies, including wireless communication, real-time analytics,

EXISTING METHOD

There are some creative devices in market related to the project, out of that a block diagram of "The Personal Stun-A Smart device for women safety" device is shown below.



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GPS MODULE

Global Positioning System (GPS) is a satellite navigation system used to verify the ground position of an object is shown in the figure2.1. Today, GPS receivers are enclosed in several industrial product like vehicles, mobile phones, watches and GIS device. The GPS system includes 24 satellites deployed in space about 12,000 miles on top of the Earth's surface. They orbit the earth once every 12 hours at an extremely quick pace of roughly 7,000 miles per hour(11,000 kilometers per hour). The satellites are equally opened up so four satellites are accessible via direct line-of-sight from anyplace on the globe. Each GPS satellite broadcasts a message that features the satellite's current position, orbit and an actual time.

Figure2.1 GPS

ARDUINO

Arduino is for making computers which can sense and control more of the physical world than desktop computer. It's an open-source physical computing tool which is used in a development environment for writing software for the board.It is based on a simple micro-controller board. In existing project Arduino Uno is used.The Arduino Uno is based on the ATMega328, a microcontroller board is shown in the figure2.2.It has 14digital input/output pins of which 6 can be used as outputs, 6 analog inputs, it consist of 16 MHz ceramic resonator, a USB connection, a power jack, an ICSP header, and a reset button.It supports the micro-controller, simply connect it to a computer with a USB cable or power it with a AC-to-DC adapter or battery to get started.

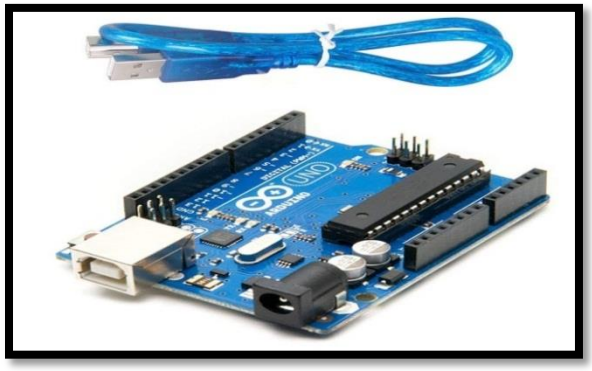


Figure2.2Arduino Uno ATmega328

BLUETOOTH

Bluetooth is a low-cost radio solution providing links between computers, cell phones and other portable devices and connectivity to the Internet is shown in the figure2.3. It will help users to connect a telecommunications devices and wide range of computing easily and simply, without the need to take or buy any connect cables. Bluetooth Module is used for connecting in the device with mobile in the existing device.

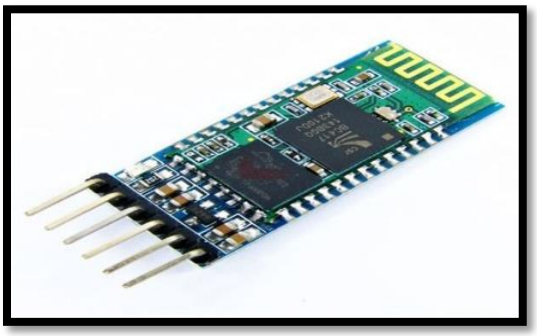


Figure2.3 Bluetooth module

BUZZER

Based on reverse of the piezoelectric effect the buzzer produces sound and is shown in the figure2.4. The underlying principle is the application of electric potential across a piezoelectric material to generate pressure variation or strain. Corresponding to a switching action, counter signal or sensor input, buzzers can be used to alert a person of an event. They are also used in alarm circuits and the need of using buzzer is to help by alerting the suspect and gathering people.

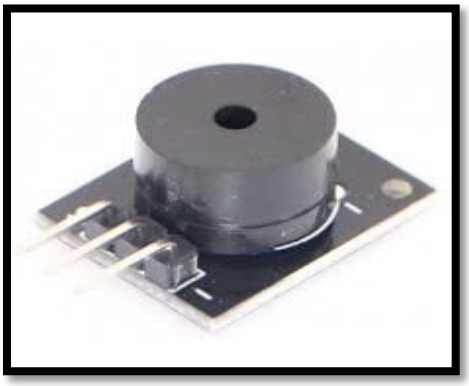


Figure2.4 Buzzer

WORKING OF EXSISTING DEVICE

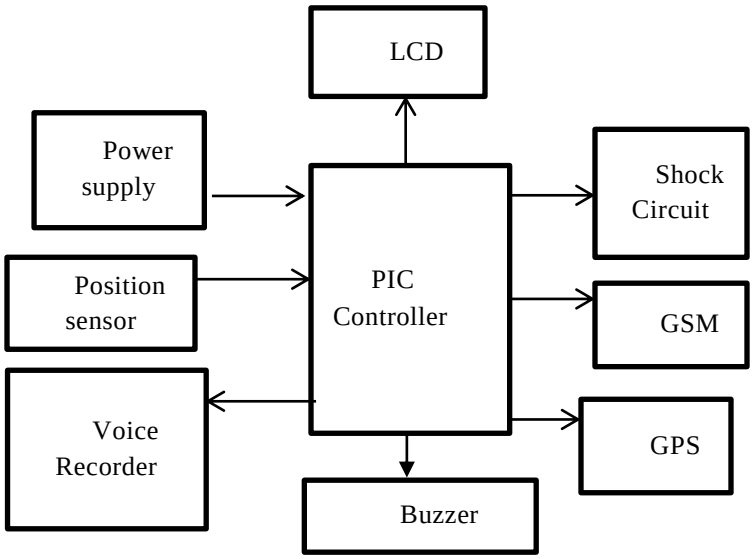
The band was usually active, the victim has to tap on the screen double time, once she feels the necessity of it or she feels somebody is abusing her. After tapping on the screen, the device can begin sending the present angular distance and longitudinal co-ordinates to the ICE contacts and to the police room. The device consists of a piezo buzzer that emits beep sound after one minute of actual activation of the device. The range of the buzzer covers up to 50 meters of radius. If the suspect tries to get rid of the band and throw it, the force sensors can begin to sense and buzzer starts ringing and therefore the location at that particular time are sent.

Bluetooth is accountable for the general information sharing. The center of the device is Arduino that controls the whole device. OLED screen is employed because it is flexible.

DRAWBACK OF EXISTING DEVICE

The existing device was designed in such a way that it sends location after tapping the screen twice, but it may fail when someone holds the victim's hand. It sends the location through the mobile application, the mobile application fails because of poor network or low battery. All other existing devices senses the health parameters using sensor like heart beat sensor, temperature sensor, pressure sensor etc. It may also send fake information to the feeded contacts.

PROPOSED METHOD



PIC CONTROLLER

PIC microcontrollers are a family of specialized microcontroller chips created by microchip technology in chandler, Arizona is shown in the figure5.1. The word form PIC stands for "Peripheral Interface Controller". A microcontroller is a compact microcomputer designed to govern the operation of embedded systems in automobiles, robots, workplace machines, medical devices, mobile radios, selling machines, home appliances, and varied alternative devices. A typical microcontroller includes a processor, memory and peripherals. Important features of PIC are wide accessibility, low cost, simple to program with integral EEPROM. It consist of collection of registers that can operate as RAM. Return addresses are saved in the stack of the PIC.

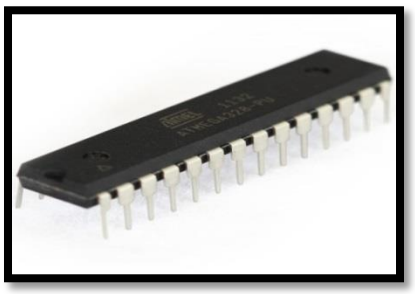


Figure5.1 PIC microcontroller

GSM

GSM is amobile communication electronic equipment is shown in the figure5.2. It stands because of international provision for cellular conversation language law of the world. GSM is an digital cellular play and facts services operates at the 850MHz, 900MHz, 1800MHz frequency bands. GSM system is utilized to be promoted as like a digital law the employment of time division multiple access technique for conversation purpose. A GSM system reduces the information, below sends it down via a duct with connecting totally different streams over patron data, every among its very own specific epoch slot. The digital law contains a capability in limitation of elevate 64 Kbps after 120 Mbps on record rates.

Figure5.2 GSM

GPS

Global Positioning System (GPS) is a satellite navigation system used to verify the ground position of an object is shown in the figure5.3. Today, GPS receivers are enclosed in several industrial product like vehicles, mobile phones, watches and GIS device. The GPS system includes 24 satellites deployed in space about 12,000 miles on top of the Earth's surface. They orbit the earth once every 12 hours at an extremely quick pace of roughly 7,000 miles per hour (11,000 kilometers per hour). The satellites are equally opened up so four satellites are accessible via direct line-of-sight from anyplace on the globe. Each GPS satellite broadcasts a message that features the satellite's current position, orbit, and actual time.

Figure5.3 GPS

LCD SCREEN

A liquid-crystal Display (LCD) is a flat-panel display or other electronically modulated device that uses the light-modulating properties of liquid crystals is shown in the figure5.4.Liquid crystals don't emit light directly, instead employing a backlight or reflector to provide pictures in color or monochrome. LCDs are available to display images (as in general purpose computer display) or fixed images with low information content, which can be displayed or hidden, like preset words, digits, and seven-segment displays, as in a very digital clock. Small LCD screens are used in portable consumer devices like digital camera, watches, calculators, and mobile telephones, as well as smart phones.

Figure5.4 LCD screen

APR VOICE RECORDER

APR 9301 is a single chip Voice recorder and Playback device for 20 to 30 seconds voice recording and play back is shown in the figure5.5. It is an ideal IC for automatic answering machine, door phones etc. This IC has data storage capacity and requires no software and microcontroller. It provides high quality voice recording and play back up to 30 seconds.The IC requires minimum components to create a voice recorder. The IC has non volatile flash memory technology with 100K recording cycles and 100 year message retention capacity. The IC utilizes the Invox proprietary analog / multi level flash non volatile memory cells that can store more than 256 voltage levels. It requires a single 5 volt supply and operates in 25 mA current.

Figure5.5 APR voice recorder

POSITION SENSOR

Position sensors detect the piston position of pneumatic actuators using a direct, non-contact method is shown in the figure5.6. They continuously supply data via analog outputs or IO-Link, enabling flexible machine concepts and making it possible to solve tasks in areas such as quality monitoring and process control. The sensors are mounted externally on the cylinder, ensuring they are fast to install – even in existing machines.

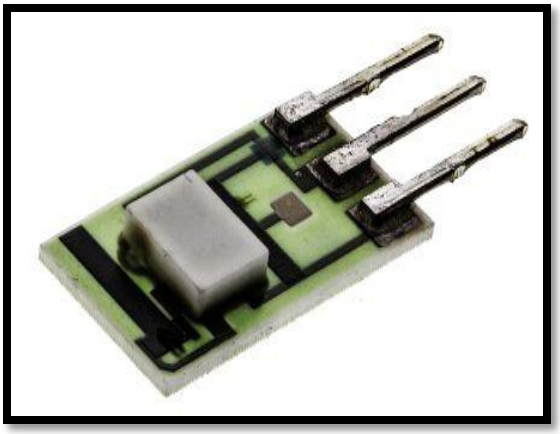


Figure5.6 Position sensor

WORKING OF PROPOSED METHOD

A Smart device that can be worn by any individual in their wrists. The existing device will be always active in every situation. If she feels the need after tapping the device current location is shared to police station and contact feeded. This device also have position sensor which senses the position of the victim and if the position is abnormal it also sends the location. Position sensor is used in case of any trouble in tapping the device. The buzzer starts beeping continuously after the device sends the location. At the same time voice recorder starts recording the victim's voice, which is helpful in future investigation. A shock circuit is also connected in this device which will generate electric volt and provide immediate defence.

FUTURE SCOPE

In future, it is possible to add shooting of video at the time of the emergency that helps in reaching the criminal very easily. It also provides an evidence against the criminal. The project will save the photos and videos on the drive so that it will be easy for further any used. We can also capture and send photos to the registered number in the applications along with the location.

CONCLUSION

Supportive device with smart system had been used to converse if attacked. There were highest chances to reduced crime by this system. Shock preventive tools were used for anticipation of event, alarm bell used for notifying will be supportive methods to alertthe hostility. Message through GPS and GSM technology is the additional part to help the individual. For immediate action against the criminal, voice recorder information can be used. A shock circuit is very helpful in providing defence. Fear or anger of user has to be considered by using Camera application infuture which will generate the message to the control room and an alarm will be activated. The system can perform the real timemonitoring of desired area and detect the violence with a good accuracy.

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