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GSM HAIRBAND BASED ON WOMEN'S SAFETY

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ABSTRACT

The project represents a detection system for the women safety using GPS and GSM modem .The system can be interconnected with flex sensors and alert the concern person. This detection and messaging system is consists of a GPS receiver, Microcontroller and GSM modem. From the satellites, GPS receiver gets the location information from in the form of latitude and longitude. Then the information is processed by the microcontroller and this processed information is send to the user using GSM modem. A GSM modem is attached to the MCU. The working function of GSM modem is to send an SMS to the predefined mobile number. In dangerous situation, when no one was there to help her, the GSM rescue her. By pressing the switch the entire system will be activated then immediately a SMS will be sent to concern person with location using GSM and GPS. With the help of GPS we can track her location. It cannot be easily find that the GPS is placed inside the hair band. So it will give the legal evidence for the crime that happened to women.

Keywords—*Detection, GPS, GSM, Microcontroller*

I. INTRODUCTION

In recent years, the number of incidents occurring to women has grown with ever-increasing rate and women harassment has grown day to day, it is beyond doubt that women are not safe outside particularly Maharashtra and in other State according to the national crime record bureau [NCRB] harassment at the workplace at public transport and other places among other states. Maharashtra is in third position with 2910 cases. There occur many such heinous events against women's development in a different region. In most cases, rape cases do not justice due to the lack of timely identification of guilty persons thus it accelerates the rate of rape incidents in society. To overcome the drawbacks of women's safety applications, an algorithm is to develop that works similarly like a security application. So that we will protect the women from that events.

The intelligence, identifying solutions and intellectual ability of human beings is increasing vigorously, whereas safety concerning ever-increasing updating technology (IOT).Security is the condition of being protected against danger or loss. In general, security is nothing but the safety. Security is given to people or things which are in danger. Individuals or actions that encroach upon the condition of protection are responsible for the breach of security. To identify the security of situation we have variety of techniques. The best way to prevent the women from the violent crime like robbery, sexual assault, rape and domestic violence we need to develop a technology which is very useful to the people who are in danger and it also be the evidence against the

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crime or the incident happened to women. This project provides a solid evidence of the crime by tracking their location.

.II.EXISTING SYSTEM

Most of the system makes use of an embedded system based on GSM and GPS technology. The thefting of vehicle is avoided by installing this. In this GPS module is attached to a button in the vehicle. Whenever any problem occuring the vehicle , the switch which is attached to GPS should be pressed during the theft, GSM module attached to that GPS send the location of the vehicle to the organization.

The panic button in the encoder module is another existing system for the safety of women, whenever she was in danger , she can press the panic button it can give the dual alert like sending message to the registered mobile number and also it allows the buzzer to ring in that area.

III.LITERATURE SURVEY

Animal Islam, et.al [1], titled their project as a design and implementation of women auspice system by utilizing GPS and GSM has examined only the present situation. The system is portable and the system but it is complicated. The amount of batteries is used in the above system and three pushbuttons are implemented. Then microcontroller will receive it and send to the specified phone number as an SMS. The location of the user will be continuously traced until user switch off the system when rescued. In addition, to control the whole system they have used a PIC16F887A microcontroller powered by A4 batteries.

Daniel Clement, et.al [2],title their project as AVR Microcontroller Based Wearable Jacket for Women Safety .The paper has proposed a jacket in which a portable device is placed in it. It composed of a switching unit, GPS Module, GSM Module, LED Module, and Buzzer Module. The main purpose of the project is to create and design a portable device which resembles a normal jacket. By using two-switches we can control the two independent system of the prototype. By pressing the first switch the device will get activated immediately the location of the victim will be tracked with the help of GPS and emergency message. The receiver will receive victim's updated location in the form of coordinates which can be used to find exact location using GOOGLE MAPS.

IV. PROPOSED SYSTEM

This project is designed with Arduino and it presents a GPS and GSM modems for the safety purpose of the women. The system can be interfaced with the alarm system and alert the surrounding people. This detection and messaging system is consists of a GPS receiver, Microcontroller and a GSM Modem. From the satellites, GPS receiver gets the location information from in the form of latitude and longitude and share the latitude and longitude address through the short message service(SMS).The Microcontroller processes this information and this processed information is sent to the user using GSM modem A switch which is allotted to her. By pulling the flex sensor and pressing the switch, the entire system will be activated then immediately a SMS will be sent to whose number is programmed inside it like parents, police or to their concerned person with location using GSM and GPS.

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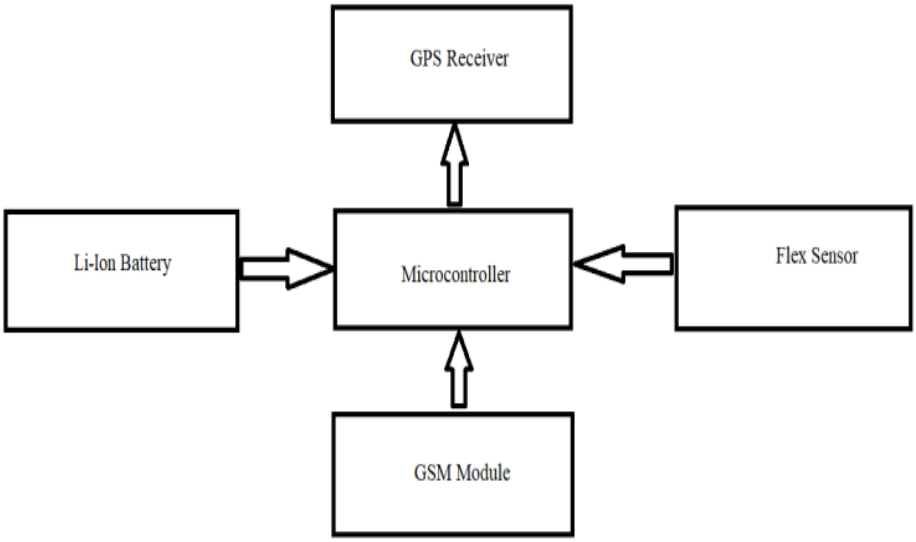
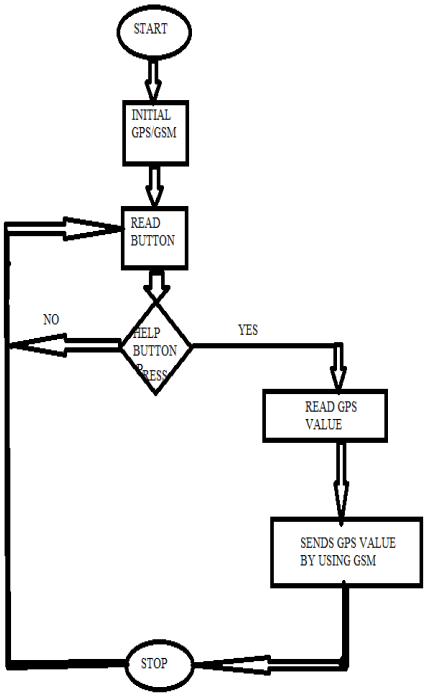
BLOCK DIAGRAM





SYSTEM SPECIFICATION

- Microcontroller
- Li-Ion battery
- Flex Sensor
- Power Supply
- GSM Modem
- GPS Receiver

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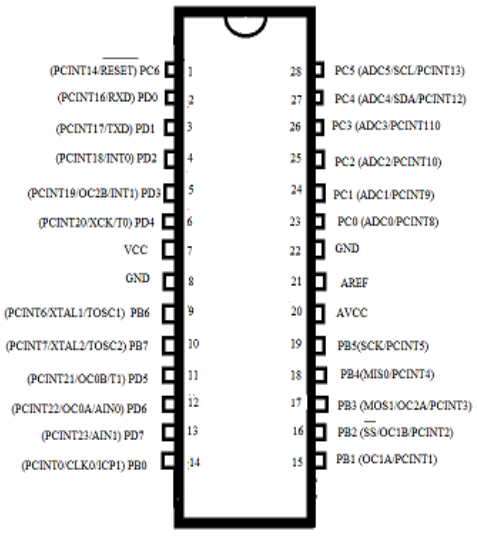
MICROCONTROLLER

Generally, Microcontroller is used to control the functions and applications of motor appliances, robots , home appliances etc.,The Atmel AVR core has 32 general purpose working registers in the instruction set. All the 32 registers are directly connected to the Arithmetic Logic Unit (ALU), in a single instruction, two independent registers is allowed to accessed and executed in one clock cycle. The output architecture is more code efficient while achieving throughputs up to ten times faster than conventional CISC microcontrollers. The ATmega328/P have the following features and it is provided inside of the microcontroller: 32Kbytes of In-System Programmable Flash with Read-While-Write capabilities, 1Kbytes EEPROM, 2Kbytes SRAM, 23 I/O lines for general purpose, 32 working registers for general purpose, Real Time Counter (RTC), three flexible Timer/Counters with compare modes and PWM, 1 serial programmable USARTs, 1 byte-oriented 2-wire Serial Interface (I2C), a 6- channel 10- bit ADC (8 channels in TQFPand QFN/MLF packages) , a programmable Watchdog Timer with internal Oscillator, an SPI serial port, and six software selectable modes of power saving. The Atmel AVR providing high speed processing operation for an embedded system.

PIN CONFIGURATION



LI-ION BATTERY

One of the most safest and rechargeable battery is Li-Ion. In every battery cells both terminals are present, and these are connected to internal electrodes (physical chemical structures) . It helps to store and release electrochemical energy that is used to drive an external electrical load. The intercalation process is involved in Li-Ion battery, in which the structures of the electrode materials are interconnected to the Lithium ions. During charging the ions move from positive to negative terminal and it is reversed during discharging. Electrons and lithium ions travels in the same direction when it is driven by an external charger (when charging) or by the stored potential chemical energy (available to drive a load) when the battery is discharging. The term

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"lithium-ion battery" refers to a large and diverse family of different battery chemistries, form factors, sizes, and cell constructions. Basically all li-ion battery cells have three functional layers: the positive electrode (cathode), the negative electrode (anode), and the separator. The separator is of polymeric membrane saturated with a liquid electrolyte that enables lithium ion transport but prevents direct contact between the electrodes. The thin layers are either rolled or stacked to increase the effective surface area available for energy storage, and then packaged in an outer cell housing. Almost it charge fast, it has longer life time than other batteries and it is very cheaper than others.

FLEX SENSOR

The main purpose of the flex sensor is to determine the amount of bending. One is 2.2 inch and another is 4.5inch. The basic functions of the flex sensor are same but size may vary. They are also divided based on resistance. We an choose the flex sensor by the need of LOW resistance, MEDIUM resistance and HIGH resistance types. Choose the appropriate type depending on requirement. Here we are using 2.2inch Flex sensor that is FS-L-0055. By pulling the flex sensor it determines the amount of bending if it is high, it gives the signal to the microcontroller.

POWER SUPPLY

When one form of electrical energy is converted into other form by the supply of power. The power supply is an electronic circuits. There are three types of power supply linear, switched and battery based.

GSM MODEM

Global system for mobile communication (GSM) is used for digital cellular communication and it considered as globally accepted standard. GSM is generally used in telephones, mobile and other equipment that

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related to communication purpose. It provides a wireless data link to a network. The name of GSM is a group of standardization established in 1982 that would formulate specifications for a pan-European mobile cellular radio system operating at 900MHz create a common European mobile telephone standard .By inserting the SIM inside the modem connect or plug the antenna to the modem. Then we have to connect the modem to our computer or mobile.

GPS RECEIVER

In order to determine the user position the scientists discovered GPS, in full Global Positioning System, radio-navigation system based on space that broadcasts highly accurate navigation pulses to users on or near the Earth planet. In the United States' Navstar GPS, 24 main satellites in 6 orbits circle the Earth every 12 hours. In addition, Russia also maintains a constellation called GLONASS (Global Navigation Satellite System).The basis of the GPS is a constellation of satellites that are continuously orbiting the earth. These satellites, which are composed of atomic clocks, transmit radio signals that contain their exact location, time, and other information. The radio signals from the satellites, can be monitored and corrected by control stations and then it picked up by the GPS receiver. To plot a rough, 2D position a Global Positioning System receiver needs only three satellites, which will not be very accurate. The main function of the GPS receiver is to collect and send the latitude and longitude and altitude of the position with accurate timing.

WORKING

The GSM Hair band based On Women's Safety. In this we use microcontroller, GPS Receiver, Flex Sensor, Li-Ion battery. A small size of GSM is fixed inside the hair band .When the women lost their way or they face any trouble situation or misbehavior from others and at time when she doesn't have any sources to communicate she presses the bush button inside of the Hair band, the GSM inside the hair band gets activated and share her location to the police or their parents through the GPS.

This project mainly uses two components, GSM and a microcontroller. The women who are in danger is considered as user when sends the messages through her phones those reaches the GSM , all those messages reaches the microcontroller via the AT commands. That microcontroller takes the information in terms of bits through the Max232.Those information will be transmitted and displayed in the LCD display..

FUTURE SCOPE AND MARKET POTENTIAL

In this project we can also further implement the camera inside the hair band. The main purpose of the camera is to capture the image of the people who are harassing the women and we can also record the incidents. It will give an legal evidence against those people who are involved women harassment and they are punished by the government. For self-defense purpose we can also implement a pepper spray like a wearable earing .Why we are implementing the thing inside the hair band is that people cannot find those tracking system is placed inside those things. For increasing safety purpose for women, we can use advanced electronic technology in wearable and fashionable things.

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RESULT AND CONCLUSION

Our effort behind this project is to design and fabricate a gadget which is so compact in and very useful in emergency purpose who are in danger and provide a personal security and their concerned person need not to worry about them. The use of sophisticated components ensure accuracy and make it reliable. It can also be used for visually challenged people. It is easy to contact the person when no source is available. It should be the legal evidence of crime with exact location information for prosecution .It is easy to use and no one should recognize it. It can store the member's data of the particular locality and in case of any crime against women it provides an immediate alert. This provides women security. Being safe and secure is the demand of the day.

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[2]Daniel Clement, Kush Trivedi, Saloni Agarwal, ShikhaSingh 'AVR Microcontroller Based Wearable Jacket forWomen Safety'.