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RESEARCH ARTICLE

SAFETY ASSURED SMART CLOAK FOR WOMEN

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ABSTRACT

The sad reality is that we live in an increasingly violent society in which the fear of crime is ever-present. Personal safety has become an issue of importance for everyone, especially for women. Where awareness fails we need efficient devices to assure our safety. Our aim is to create a complete safety features enabled portable device which will give true right for everyone to live their freedom to the fullest. This system consists of 2 sections, one is a smart belt & other is a smart bag both are wearable and user-friendly gadgets .These devices are handy made for portable use in almost any circumstance. Our first line of defense is personal safety feature is that it sends an emergency message to your chosen contacts with the push of a single button, We start by sending text message; one Guardian we designate will receive a message, with a link to a map showing your location via GPS. It will be sending the alert messages continuously for a particular amount of time to the nearby police station (normal mode) and to the railway help line number (train mode). As part of keeping our privacy, the device will contain the Hidden Camera detector. This device utilizes unique and intelligent technique that interferes with the 1.2/2.4GHz signals of wireless camera. I t can disable almost all types of existing spy cameras working at wireless video, in dressing rooms and Bluetooth cams, great for protecting your privacy in today's city life. We have also incorporates an anti theft alarm for the smart bag & also to the belt with NFC technology. As an ultimate form of defense , we have incorporated a teaser section along with belt, that produces shock whenever there is necessary.

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INTRODUCTION

Today in the current global scenario, the prime question in every girl's mind, taking into account the ever rising increase of issues on women harassment in recent past, is only about her safety and security. The only thought haunting every girl is when they will be able to move freely on the streets even in odd hours without worrying about their security. Every single day single women, young girls, mothers and women from all walks of life are being assaulted or violated. The streets, public transport, public spaces in particular have become the territory of the hunters. While the ones already hunted down weep in silence, the rest fight their way to a basic life with dignity. The sexual violence statistics against women are very high according to the World Health Organization studies. Almost 35% of women regardless where they live experiences sexual assaults. This is what inspires ever find to design and develop a Belt band, a safety band for women. This band is user friendly, since it is a portable one. The women safety gadget allows sending an emergency message or alerting to friends, family, or police with one press. It also generates an electric shock to injure the attacker for Self defense and there is a hidden camera detector which also provides security. So, the proposed system explains an innovative idea for women security which has become mandatory now a day.

Block Diagram

Cloak

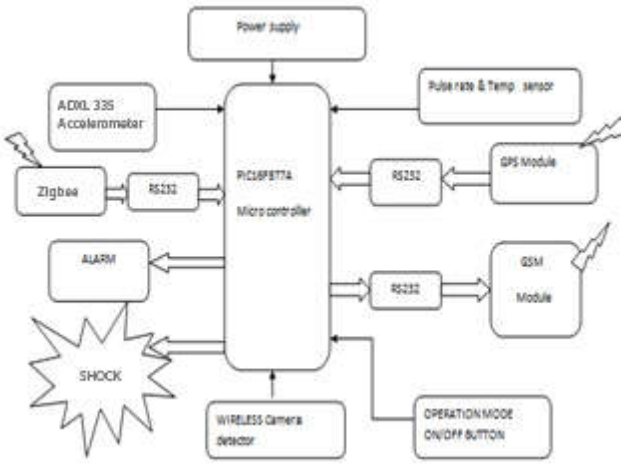

Fig. 1. The block diagram of cloak section

Purse Module

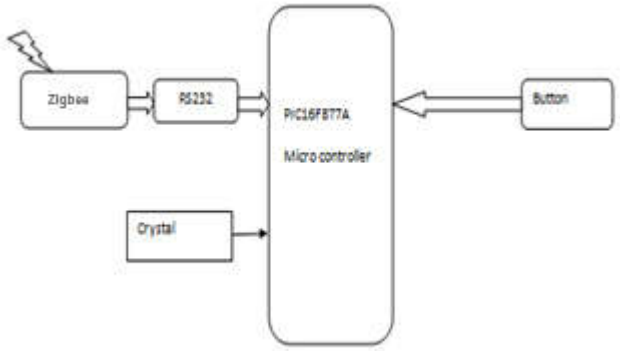

Fig. 2. The block diagram of the purse module

The above figure consists of the following sections.

- PIC microcontroller
- ADXL 335 Accelerometer
- GSM module
- GPS Receiver
- RS232
- RF camera/Bug detector
- Zigbee
- Pulse rate sensor
- Buzzer

***PICmicrocontroller*:** The PIC micro-controller PIC16F877a is one of the most renowned microcontrollers in the industry. It has a total number of 40 pins and there are 33 pins for input and output. The cost of this controller is low and its handling is also easy. Its flexible and can be used in areas where microcontrollers have never been used before as in coprocessor applications and timer functions etc. PIC has 5 ports, A,B,C,D,E: In that A and E can be used as both analog and digital pins.

ADXL335Accelerometer: The popular ADXL335 accelerometer from Analog devices is capable of measuring acceleration in all 3 axes(X, Y & Z) and has a sensing range of +/-3g. Output is in the form of analog values so the interface with a microcontroller is extremely easy. You just need to do an ADC conversion.

GSM module: This GSM Modem can accept any GSM network operator SIM card and act just like a mobile phone with its own unique phone number. It is a wireless MODEM and can send and receive data through the GSM network. It requires a SIM card and connectivity to the GSM network. It can also be used in GPRS mode to connect to the internet and use all the applications for data logging.

GPS Receiver: GPS stands for Global Positioning System. Global Positioning System (GPS) is a network of satellites that continuously transmit coded information, which makes it possible to precisely identify locations on earth by measuring distance from the satellites. The purpose of using GPS module in the system is, it continuously transmits serial data like position of an individual wearing sensor, in terms of latitude and longitude, date, time and speed values to processing unit.

RS232: In telecommunications, RS-232 is a standard for serial communication transmission of data. It formally defines the signals connecting between a DTE (data terminal equipment) such as a computer terminal, and a DCE (data circuit-terminating equipment, originally defined as data communication equipment), such as a modem. The RS-232 standard is commonly used in computer serial ports. The standard defines the electrical characteristics and timing of signals, the meaning of signals, and the physical size and pin out of connectors.

RF camera/Bug detector: This detector will detect hidden cameras, audio bugs, transmitting or live cell phones, WIFI or any other wireless transmitter operating in the 1MHz to 6GHz range. The detector can be used to detect or the follow frequencies lower frequency 0-120MHz, higher frequency 149 MHz-400MHz, GSM900 MHz-1900MHz, detectable image frequency 200MHz-2400MHz,microwave frequency 2400MHz-6GHz). As you get closer to the camera or audio bug you will have more indicator lights illuminated. The detection distance is a maximum of 32feet(10meters).The detector comes loaded with features such as a low battery indicator, earphones and sensitivity button, two operation modes(alarm or vibration).The detect or operates on 2AAA batteries that are not included. Dimensions are4 inches x2 and one-quarter inches x five-eighths inches.

Zigbee: ZigBee is a IEEE 802.15.4-based specification for a suite of high-level communication protocols used to create personal area networks with small, low-power radios. The technology defined by the ZigBee specification is intended to be simpler and less expensive than other wireless personal area networks (WPANs).Applications include wireless light switches, electrical meters with in-home-displays, traffic management systems, and other consumer and industrial equipment that require short-range low-rate wireless data transfer. Its low power consumption limits transmission distances to 10–100 meters line-of-sight, depending on power output and environmental characteristics. ZigBee devices can transmit data over long distances by passing data through a mesh network of intermediate devices to reach more distant ones. ZigBee is typically used in low data rate applications that require long battery life and secure networking (ZigBee networks are secured by 128 bit symmetric encryption keys.) ZigBee has a defined rate of 250 Kbit/s, best suited for intermittent data transmissions from a sensor or input device.

Pulse rate sensor: Heart rate ear clip kit contains an ear clip and a receiver module. The heart rate measure kit can be used to monitor heart rate of patient and athlete. The result can be displayed on a screen via the serial port and can be saved for analysis. The entire system has a high sensitivity, low power consumption and is very portable.

Buzzer: A buzzer or beeper is an audio signaling device, which may be mechanical, electromechanical, or piezoelectric. Typical uses of buzzers and beepers include alarm devices, timers and confirmation of user input such as a mouse click or keystroke.

APPLICATIONS

- Can be used for the safety of women.
- Can be used for the safety of children.
- Can be used for the safety of elderly aged people.
- Can be used for the safety of physically challenged people.

- Can be used as a legal evidence of crime with exact location information for prosecution.

ADVANTAGES

- Safety Device which can be carried by everyone
- Ultra low power consumption.
- Compact in size.
- Wireless connectivity.
- Easy and fast to install.
- Easy Maintenance
- Low cost with high performance.
- Works round the clock.
- Fast response.
- Environmental friendly system.

RESULTS AND DISCUSSION

The system was implemented by first designing the hardware and later the software. It was rigorously tested for its proper operation and reliability. Hardware design began by designing individual circuits and their testing. Suitable modifications were carried out at various stages as necessary. After the confirmation of the proper operation of each circuitry, the Printed Circuit Board (PCB) was designed using Protel PCB making software. PCBs are fabricated by the manual process using screen printing and chemical (FeCl) etching technique. After the holes are drilled, the mounting of components and soldering was carried out. The circuit was rigorously tested once again after mounting of all components on the PCB. Voltage levels and signals ware checked for their correctness at various stages. Some minor modifications were carried out as needed. Software design was started after the hardware was fully fabricated and tested successfully. Programs ware written in assembly language for individual modules and tested independently. After each module was tested, integration of all software modules and trouble shooting and debugging was carried out.

Full functionality of the entire system with all interface modules was finally carried out to test the system for its full functionality and features. The instrument functioned as expected and the desired results were produced.

Conclusion

This paper reviewed the emergency response system which is helpful for women in the incidents of crime. The key objective is to develop a low cost system which can store the data of the members in the particular locality and provide immediate alert in case of crime against women. This provides women security. Being safe and secure is the demand of the day. Our effort behind this project is to design and fabricate a gadget which is so compact in itself that provide advantage of personal security system. This device will probably be very useful for the women. It is certainly a short term and preventive solution. This will be proved as a multi-pronged strategy with the participation of multi stake holders of society. This system will help its users in difficult situation. This system would be highly sensitive and easy to handle. Its quick action response will provide safety and security to individual user.

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Yaswnt kanettkar.

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