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SMART AND UBIQUITOUS DEFENSE MONITORING SYSTEM BASED ON IOT

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Abstract - *The project presents a versatile security system that is designed merely to serve the purpose of providing security to individuals so that they never feel helpless while facing social challenges. The idea behind this project is to develop a smart device that it's completely comfortable to use as compared with the already existing security solution. An advanced system can be built that can detect the location and health condition of a person that will enable us to take action accordingly based on a device like Global Positioning System(GPS), Temperature sensor ,Heart beat sensor, Passive Infrared Sensor, and Arduino UNO which is embedded into a garment. This system is able to intimate cops and family members when the affected person is in an unconscious state with the help of sensors.*

Key Words: **Versatile Security System, Global Positioning System, Arduino UNO,Passive Infrared Sensor .**

1. INTRODUCTION

Today women weren't allowed to maneuver freely even within the streets without concern concerning their security. Parents were worried about their security because today's society is not at all safe for girls. Day by day the women harassment increases. We can't amendment the society completely however we will increase the safety of women by exploitation trendy technology. Nowadays though there are many apps evolved for women safety via smartphone it is activated only by touch or one click or shake. It is not possible to have mobiles on our hand in all circumstances. This concept is used to provide security to women when they are exposed to external challenges and harassments in the society. It works automatically based on the heartbeat rate which is increased due to the fear, anger, anxiety, and other kinds of reactions which will trigger the sensor.

1.1 Need for the project

Though the good phones have inflated quickly, it is not possible to have the phone all the time in our hand to make a call or click on it, so here we tend to introduce a brand new technique via good watches. When a girl or kid sporting this 'watch me' is exposed to sexual or vulnerable attack, the detector gift in it detects the guts beat rate of someone which will be high at the moment it will automatically make a call to our registered contact and also through GPS/GSM it will detect the nearby police station and make a ring there thus it'll be useful for police to arrive shortly at the spot by pursuit the GPS, such a system can result in safer and higher environment.

1.2 Objective of the project

We design and implement a reliable system to protect women from being harassed by providing last mile connectivity even in situations where the mobile phones are out of cellular coverage. In this, we have developed a prototype for women safety by using GSM/CDMA mobile communication and global positioning system (GPS). The system will identify the location through GPS when the heartbeat rate faster than normal and the body temperature increases then sends a message comprising the location URL to the registered contacts and message on the first registered contact to help the women in dangerous situations. The unique feature of this system is that it continuously sends the message every two minutes until the application is stopped. When a woman or child wearing this is exposed to sexual or vulnerable attack, the sensor present in it detects the heartbeat rate of a person which will be high at the moment activated, then through GPS/GSM it will detect the nearby police station and sends an alert message. So it will be helpful for the police to arrive soon at the location and help individuals.

1.3Scope of the project

The project is divided into two functions one is Prevention of Incident and another one is Communication of that incident through wireless. The SMS information can be sent to various people like Cops, Doctor, and Family Members. Sorted information will be sent to the concern people. To defense from the attack, the vibration sensor is embedded and they can track the individual who is danger through the website and try to safeguard the person from attack.

2. LITERATURE SURVEY

A literature survey shows the varied analyses and analysis created associated with the project and also the results already printed, taking into consideration the varied parameters of the project and also the extent of the project. It is the most important part of the report as it gives a direction in the area of research. The goal of the literature survey is to fully specify the technical details associated with the most project in an exceedingly compact and unambiguous manner.

2.1 Smart security solution for women based on internet of things (IOT)

This paper suggests a brand new perspective to use technology for ladies safety.848 Indian girls are pestered, Raped, Killed a day. That's a way beyond HUGE number. The need for a tool that mechanically senses and rescues the victim is that the venture of our plan during this paper. We propose to possess a tool that is that the integration of multiple devices, the hardware includes of a wearable "Smart band" that incessantly communicates with a good phone that has access to the internet. The application is programmed and loaded with all the desired information which incorporates Human behavior and reactions to totally different things like anger, concern, and anxiety. This generates a proof that is transmitted to a good phone. The computer code or application has access to GPS and electronic messaging services that are pre-programmed in such some way that whenever it receives emergency signal, it will send facilitate request along with the location coordinates to the nearest Police station, relatives and the people in the near radius who have application. This action permits facilitate outright from the Police still as Public within the close to radius UN agency will reach the victim with nice accuracy.

2.2ARaspberry PI based smart ring for women safety

In this paper, it is implemented in the form of a smart ring and comprises of Raspberry Pi Zero, Raspberry Pi camera, buzzer and button to activate the services. This device is extremely portable and can be activated by the victim on being assaulted just by the click of a button that will fetch her current location and also capture the image of the attacker via Raspberry Pi camera. The location and the link of the image captured will be sent to predefined emergency contact numbers or police via smart phone of the victim thus preventing the use of additional hardware devices/modules and making the device compact.

2.3 A Radio Identification based continuous spectrum sensing protocol for safety of women in cognitive radio networks

In this paper, we have developed a prototype for women safety by using radio identification based cognitive radio, GSM/CDMA mobile communication and global positioning system (GPS). The system will identify the location through GPS when a woman activates her mobile phone either by a click or press of a button for few seconds before she outrages any incident and sends a message comprising the location URL to the registered contacts and also a recorded call message on the first registered contact to help the women in dangerous situations. The unique feature of this system is that it continuously sends the message every two minutes until the application is stopped. Continuous location tracking information via SMS helps to find the location of the victim quickly and rescue them safely. Extensive simulation work is done using NS2 simulator to validate the performance of the system.

2.4 Touch me not-a women safety device

In this paper, we have developed an idea to design a device which may be connected to the vesture. It will be a button which can be bind able to the vesture. This button is connected to the system that has 2 modules, one which may be used once somebody makes some style of unethical movement and also the different one which can be used when you sense danger. The first module is used simply to record that's creating a brief video to capture the attacker, whereas the second is used throughout times of danger to send your location to family or friends yet because it alerts the closest station house, specified facilitate will reach as before long as doable. The tools that we will be using include microcontrollers, GSM and GPS modules for the hardware section, python for the software section.

3. SYSTEM DESIGN

Systems design is that the method of process the design, modules and knowledge for a system to satisfy fixed necessities. Systems design may be seen because of the application of systems theory to develop. The modules are Temperature Sensor, Heart Beat sensor, Global Positioning System, Passive Infrared Sensor.

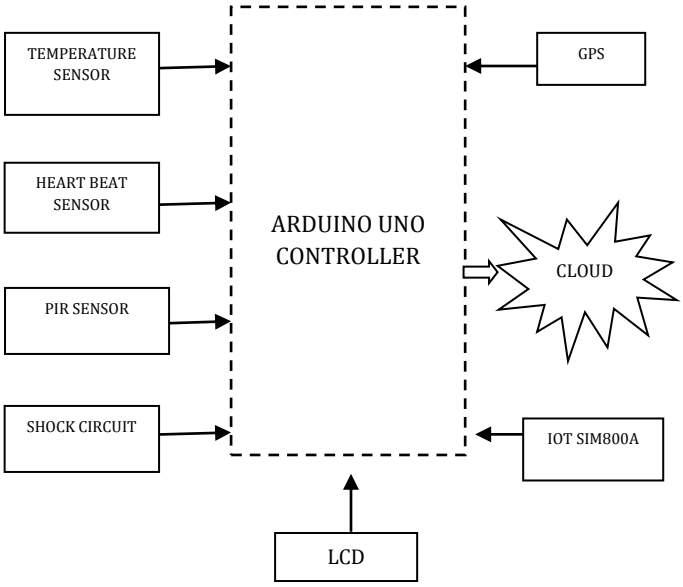

Fig -1: System Architecture

3.1 ARDUINO UNO

The Arduino Uno may be a microcontroller board supported the ATmega328 (datasheet). It has fourteen digital input/output pins (of that six may be used as PWM outputs), six analog inputs, a sixteen rate ceramic resonator, a USB association, an influence jack, an ICSP header, and a reset button. It contains everything needed to support the microcontroller; simply connect it to a computer with a USB cable or power it with an AC-to-DC adapter or battery to get started.

3.2 PIR (PASSIVE INFRARED SENSOR)

In a PIR-based motion detector (usually called a PID, for Passive Infrared Detector), the PIR sensor is typically mounted on a printed circuit board containing the necessary electronics required to interpret the signals from the pyroelectric sensor chip. A Passive Infrared sensor (PIR sensor) is an device that measures infrared (IR) lightweight divergent from objects in its field of reading.PIR sensors area unit usually utilized in the development of PIR-based motion detectors.

3.3 TEMPERATURE SENSOR

In a Temperature Sensor LM35 may be an exactitude IC temperature sensing element with its output proportional to the temperature (in Celsius). The sensing element electronic equipment is sealed and thus it's not subjected to a chemical reaction and alternative processes. It conjointly posses low self -heating and doesn't cause quite zero.1oC temperature rise installation. The operational temperature vary is from -55°C to 150°C.

3.4 HEART BEAT SENSOR

Pulse Oximeter sensor is designed to give the digital output of heat beat when a finger is placed on it. When the guts beat detector is functioning, the beat LED flashes in unison with each heartbeat. This digital output is often connected to a microcontroller on to live the Beats Per Minute (BPM) rate. It works on the principle of sunshine modulation by blood flow through finger at every pulse.

3.5 GPS

Global Positioning System (GPS) is a satellite-based navigation system made up of at least 24 satellites.GPS works in any weather, anyplace within the world, 24 hours a day, with no subscription fees or setup charges .The U.S.Department of Defense (USDOD) originally place the satellites into orbit for military use however, they were created on the market for civilian use within the Eighties. The Global Positioning System (GPS) is a satellite-based navigation system made up of at least 24 satellites.GPS works in any weather, anyplace within the world, 24 hours a day, with no subscription fees or setup charges. The U.S.Department of Defense (USDOD) originally place the satellites into orbit for military use however, they were created on the market for civilian use within the Eighties.

3.6 IOT SIM800A

SIM800 may be a complete Quad-band GSM/GPRS answer in a very SMT kind which may be embedded within the client applications.SIM800 support Quadband850/900/1800/1900MHz; it will transmit Voice, SMS, and information with low-power-consumption. With the small size of 24*24*3mm, it will work into a slim and compact demand of client style. Featuring Bluetooth and Embedded AT, it permits total price savings and quick time-to-market for client applications. Any microcontroller access to your Wi-Fi network. The ESP8266 is capable of either hosting Associate in a Nursing application or offloading all Wi-Fi networking functions from another application processor.

3.7 ARDUINO ESP8266 WIFI

The Arduino Uno Wi-Fi is an Arduino Uno with an integrated Wi-Fi module. The board is based on theATmega328Pwithan ESP8266WiFiModule integrated. The ESP8266 Wi-Fi module is a complete Wi-Fi network where you can easily connect as a serving Wi-Fi adapter,

wireless internet access interface to any microcontroller based design on its simple connectivity through Serial Communication or UART interface. The ESP8266 Wi-Fi Module is a self-contained SOC with integrated TCP/IP protocol stack that can give any microcontroller access to your Wi-Fi network. The ESP8266 is capable of either hosting an application or offloading all Wi-Fi networking functions from another application processor.

4. SYSTEM IMPLEMENTATION

System Implementation uses the structure created during architectural design and the results of the system analysis to construct system elements that meet the stakeholder requirements and system requirements developed in early life cycle phases. The system is implemented using Embedded C, Proteus and so on.

4.1 EMBEDDEDC

Embedded C Programming Language is, widely used in the development of Embedded System is an extension of the C Programming Language. The Embedded C Programming Language uses the same syntax and semantics of C language like the main function, declaration of the data types, defining variables, loops, functions, statements, etc. The extension in Embedded C from standard C Programming Language includes I/O Hardware Addressing, fixed- point arithmetic operations, accessing address spaces, etc. Advantagesof an embedded C program are it takes less time to develop an application program. It reduces the complexity of the program. It is easy to verify and understand and it is portable in nature from one controller to another.

4.2 PROTEUS

Proteus (PROcessor for TExt Easy to USe) is a fully functional, procedural programming language created in 1998 by Simone Zanella. Proteus incorporates many functions derived from several other languages: C, BASIC, Assembly, Clipper/dBase; it is especially versatile in dealing with strings, having hundreds of dedicated functions; this makes it one of the richest languages for text manipulation.

Proteus owes its name to a Greek god of the sea (Proteus), who took care of Neptune's crowd and gave responses; he was renowned for being able to transform himself, assuming different shapes. Transforming data from one form to another is the main usage of this language.

5. CONCLUSION

In this paper, we focus on a security system that is designed merely to serve the purpose of providing security to women so that they never feel helpless while facing such social challenges. The system is built that can detect the location and health condition of the person that will enable us to take action accordingly based on electronic gadgets like GPS receiver, body temperature sensor, IOT modem, PIR sensor , heartbeat sensor, and the vibration sensor. The heartbeat of an individual in such things is generally higher that helps build choices together with different sensors like motion sensors to discover the abnormal motion of the women while she is victimized. The idea to develop a wise device girl |for ladies| for girls} is that it's utterly comfy and straightforward to use as compared with already existing women security solutions.

6. FUTURE ENHANCEMENT

In our future work, we will embed the shock attack which will help the victim to escape from the attacker and safeguard herself .The camera can be added to the device so that the attacker images can be captured and send it to cops so that we can prevent these attacks in future

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