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Research Article

Smart Tool for Women Safety

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ABSTRACT
In Global scenario, the prime question in every girl's mind is about her safety and harassment issues. 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. This project suggests a new technology to protect women. This project focuses on a security for women so that they will never feel helpless. The system consists of various modules such as GSM, GPS, memory card, shock circuit, buzzer, camera, Arduino module. So, we invented a wrist band for women to avoid these problems. The basic approach in this project is to give shock to the person, who is trying to abuse her and also intimate instant location with a message from a predefined numbers like nearest police station and friends also to her mobile. Based on the Person's emotions like fear, pulse rate and temperature it will send messages.

Keywords: safety

Introduction

In Global scenario, the prime question in every girl's mind is about her safety and the harassment issues. 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. This project suggests a new technology to protect women. This project focuses on a security for women so that they will never feel helpless. The system consists of various modules such as GSM, GPS, memory card, shock circuit, buzzer, Pulse sensor, Arduino board. In this project we are using wireless technology for security purpose. The wrist band for women safety means that allow users to protect while traveling odd hours or when they feel helpless. This project is based on women's security as it is reported that everyday there is many cases about women harassment. Although an out in the market but for non-android users, I thought an idea for developing a project based on women security using Arduino board.

It gives the Electric shock to the attacker.

and posses a rapid frowth of tumors t is likely to develop into a high-grade brain tumor that is a malignant brain tumor.

In recent years, acts of a violence and assault against women are rising. With the escalation of female employees in industries and other sectors of the commercial market, it is now- coming to a necessity for females to travel at late hours and visit distant and isolated locations as a part of their work. However, the exponential increase in assault and violence against women in the past few years is posing a threat to the growth and development of women. Protection isn't the only measure that can suffice against this increasing abuse. A security solution that creates a sense of safety among women needs to be developed. In instances of attack, it is largely reported that women are immobilized. Therefore, there is a need of a simpler safety solution that can be activated as simply as by pressing a switch and can instantly send alerts to the near ones of the victim. This project focuses on a security system that is designed uniquely to serve the purpose of providing security and safety to women. The objective of research work is to create a portable safety device for women, which provides following facilities.

1. Alerts family and friends by sending emergency message.
2. It gives the Electric shock to the attacker.

Purpose

In Recent years, acts of a violence and assault against women are rising. With the escalation of female employees in industries and other sectors of the commercial market, it is now- coming to a necessity for females to travel at late hours and visit distant and isolated locations as a part of their work. However, the exponential increase in assault and violence against women in the past few years is posing a threat to the growth and development of women.

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developed. In instances of attack, it is largely reported that women are immobilized. Therefore, there is a need of a simpler safety solution that can be activated as simply as by pressing a switch and can instantly send alerts to the near ones of the victim. This project focuses on a security system that is designed uniquely to serve the purpose of providing security and safety to women.

All in one intelligent safety system for women security, in this paper the authors have reviewed of various existing systems on women security.

- The GPS module tracks the longitude and latitude to trace an exact location of a user and sends the pre-stored emergency message including location to the registered contact numbers.
- The Audio Recording module starts the recording of the conversation for five minutes and stored as evidences. The message goes in queue if network problem and send when network gets available.
- Mobile based women safety application. In this paper some app created to know whether a woman is safe or not? Which indicates the present state of affairs of the woman by touching the option, which also indicates the location of the endangered woman they gave a phone call, video forwarding, fake calls, and location of the person, first-aid details, and application having the instructions that is the way to use the application.
- An advanced system can be built that can detect the location and health condition of person that will enable us to take action accordingly based on electronic gadgets like GPS receiver, body temperature sensor, GSM, Pulse rate sensor.
- The idea to develop a smart device for women is that it's completely comfortable and easy to use as compared with already existing women security solutions such as a separate garment, bulky belts and infamous mobile apps that are just very abstract and obsolete.
- The Smart band integrated with Smart phone has an added advantage so as to reduce the cost of the device and also in reduced size. The GPS and the GSM can be used of a smart phone.
- We can make use of number of sensors to precisely detect the real time situation of the women in critical abusive situations.
- The heart rate (a normal heart rate for adults ranges from 60 to 100 beats per minute) of a person in such situations is normally higher which helps make decisions along with other sensors like motion sensors to detect the abnormal motion of the women while she is victimized.
- For self-defense we are using shock circuit, especially for the women for self- protection. When the culprit attacks, he will get shock because of the shock circuit.

Motivation

The world is becoming so much more unsafe for women. The recent Delhi incident in which a 23-year-old physiotherapy intern was brutally beaten and raped in a bus she was travelling has put everyone on the defines. It is dangerous to be out there and not know how many prowlers are on the loose. It is high time that we equip ourselves to deal with such daunting situations. Neither women nor their families need to worry about the time or places when they go out.

All they need is a device that can be carried around easily and worn whenever the woman feels unsafe.

The existing devices are either bulky (like a Taser gun or Stun gun) or require user intervention i.e., depend on the user to switch it on and use it. But the unfortunate fact is that whenever a person is attacked, their ability to think logically is lowered making the person quite vulnerable to the judgements made from such state of mind. So, the important feature incorporated in the device is its capability to act without any assistance from the user.

Scope

This project focuses on a security system that is designed uniquely to serve the purpose of providing security and safety to women. The objective of research work is to create a portable safety device for women, which provides following facilities

1. Alerts family and friends by sending emergency message
2. It gives Shock to the attacker.

Literature Survey

Sutar Megha et al [1] , The Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act, 2013 is a legislative act in India that seeks to protect women from sexual harassment at their place of work. Today women are playing an important role as a president, prime minister, speaker of the Lok Sabha and even in the field of aeronautics, military, IPS, IAS, etc. Even today women have achieved top positions in job and society, yet they are facing problems such as physical harassment and the sexual assault. The cases of harassment and rapes on women are increasing hence security issue for such woman is more important. So, it is essential to develop a system to provide security to women. In this he devised a system allows women to protect

themselves from attackers. In recent days the attacks on women are increasing and sometimes they are not even able to take their mobile and dial-up to police, this system will help women in such situations to inform about attacks and also in giving their exact location to a nearby police station for necessary action. In this, the author designed a device, in that, by pressing the button of the device a message along with her location will be transmitted by the system to the police station and her few relatives, so that they will get aware of her current situation. He told that with that message she is also for their defensive purpose they can able to give a shock to the attacker it will be more helpful to women at that critical situation, this system is designed as the defense equipment, it will them to attack the attacker. So, she has some time to rescue herself from that attacker, in this paper the author proposed a device consists of LPC controller, GPS, ARM controller, GSM and shock circuit. Women under a dangerous situation can press the emergency button. So that, the location along with the helping message can be transferred to the emergency number. In addition, shock circuit is activated and the generated current shock can be imposed to the attacker. In this the Shock circuit can be operated by driving and isolator circuit. By these, any women can protect them from situations that can harm them.

Anup CJ et al [2], The amount of violence against women has increased by many folds due to the greater exposure of women in every field of life. Women were previously restricted to the four walls of the houses and after globalization, they have got the chances and opportunities to stand equally in all sectors at compare with male. Women are now a day's cab drivers and they are also the CEO of top companies. It is a good sign that the patriarchal mindset of the society has changed to some extent but not to the extent it was supposed to. It is the same mindset that restricts women to go out and work making them as a tool for domestication. It is the same mindset that treats males as superior than female and always try to dominate the womenfolk. There are different kinds of tools that are being used by the male- dominated society to prove their domination over the female. Eve teasing, sexual harassment, rape, domestic violence against women are these weapons used by the male to display the male superiority. This is one of the prime reason violence is increasing in India and women safety is a concern in India. In this paper, the author supposed to told a remedy to safeguard women from these situations by designing a gadget like a typical belt. This design consisting of GPS, GSM, Zapper, Buzzer circuit. When women feel unsecured, they can use the gadget which is having an emergency button. Controller in that activates the GPS, GSM in order to identify the location and to transfer the misery message to the trusted people and to the control room during the time of the attack with their exact location. Zapper circuit produce shock which has high voltage to give a non-deadly stun to the aggressor. Buzzer also gets activated which produces boisterous yelling sound to get nearby individuals for help. Hence, they are escaped from the danger.

Shreyaasha chaudury et al [3, Safety of Women in India has become a major issue in India now. The crime rates against women in the country have only risen to a great extent. Women think twice before stepping out of their homes, especially at night. This is, unfortunately, the sad reality of our country that lives in constant fear. Women in India have been given equal rights as men; however, people do not follow this rule. They contribute to the growth and development of our country; still, they are living in fear. Women are now on respected positions in the country, but if we take a look behind the curtains, we see even then they are being exploited. Each day we read about horrific crimes being committed against women in our country. In our daily life, where you don't hear the news of a crime against women in India. In fact, there are at least five news articles that tell us about the horrific details of the various crimes. It is extremely painful to watch the status of women's safety in India, especially in a country where women are given the stature of goddesses. To avoid situations like this, in this the author designed a device with a sensor called IoT to protect women from danger.

In this paper, the author proposed an IoT (Internet of thing) based women safety device which connects devices to the internet using sensors and a suitable platform.

This IOT sensor is placed on the health monitoring equipment'sto monitor the patient's health condition. This monitors the status of the patient and sent to the doctor if they are in need of treatment.

By this way, it is useful for the doctors and it avoids the risk in the patient's life.

snehal Lokesh et al [4], Violence against women and girls does not discriminate by race, religion, culture, class or country. Worldwide, one in three women have experienced either physical and/or sexual violence, and more than 15 million girls aged 15-19 years have experienced rape. Conflict and displacement only heighten the problem. As girls and women lose their support systems and homes, are placed in insecure environments and in new roles, their risk of gender-based violence (GBV), including sexual violence, intimate partner violence and child abuse increases day by day. Areas like streets, public spaces, public transport, etc. have been the territory of women hunters. Every day and every

minute some women of all walks of life (a mother, a sister, a wife, young girls, and girl baby children) are getting harassed, molested, assaulted, and violated at various places all over the country. In this paper, the author proposed a system consist of android application, main device, and portable camera. Android application uses Phone GPS or GPS of the main device to locate the victim in the critical situation they were pressing the emergency button. The camera will be added through the photo will be captured and it will be sent to the server with ensure the data security, Main device is also attached with manually operating in pepper spray.

Swati Sharma et al [5], safety for women become a matter of concern with the violence against the women will increases, in this system the GPS tracking and messaging system plays an important role. When women are going to travel somewhere for long distances at nighttime the GPS used as a GPRS location while travelling in the cab would be accessible and simultaneously her location will be immediately sent to their relative for their rescue. The main purpose of designing such a project is that we will make small, handy equipment, which could be kept in a purse. This equipment will be having a panic switch and as soon as the panic switch is pressed the location coordinates provided by the GPS to the emergency. The panic switch is very small and it will easily

• Wrist Band for women safety: Women safety application using android mobile. In this paper system can show exact location to relatives, parents, and friends and track every time interval.

• Emergency panic button using micro controller. In this paper panic button is used for protection while emergency situation occurs.

• AVR micro controller based wearable wrist band for women safety. In this paper unified combination of wearable wrist band and mobile technology for safety of women in the society.

• This system helps to alert family members and people closest to the victim by using buzzer, GPS, GSM module.

System Study and Analysis:

Feasibility Study

Preliminary investigation examines project feasibility, the likelihood the application will be useful to the user. The main objective

of the feasibility study is to test the Technical, Operational and Economical feasibility for adding new modules and debugging traditional desktop centric applications and porting them to mobile devices. All systems are feasible if they are given unlimited resources and infinite time. There are aspects in the feasibility study portion of the preliminary investigation:

Operation Feasibility Technical Feasibility Economic Feasibility

- Operation Feasibility
- Technical Feasibility
- Economic Feasibility

Operation Feasibility

The operational issue usually raised during the feasibility stage of the investigation includes the following:

Security

You can configure the security of a server instance to be as broad or specific as required. The instance can simply encrypt the communication channel between it and a client or it can block unauthorized clients from accessing applications.

Availability

This software will be available since it is maintained at one place

Technical Feasibility

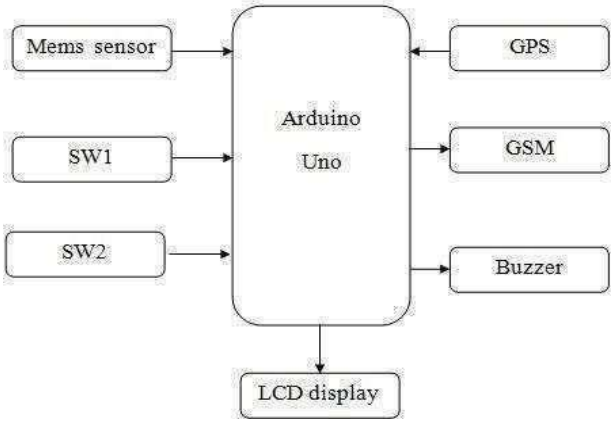
The technical issue raised during the feasibility stage of the investigation includes the following:

- Does the necessary technology exist to do what is suggested?
- Do the proposed equipment's have the technical capacity to hold the data required to use the new system?
- Will the proposed system provide adequate response to inquiries, regardless of the number or location of users?
- Can the system be upgraded if developed?

Existing System

The Block Diagram shows the women safety app and it provides the current location of the women upon the receiving of the message from the user. The GSM shield acts as an interface and sends the message to the Arduino Uno and this in turn communicates the GSM and GPS modules and give back the result to GSM shield. In this project, we are mainly using GPS, GSM, mems an Arduino micro controller. Arduino will collect the input from the switch and monitor the mems position. Women's getting any troubles with the help of a panic switch sent the alert message to the authorized person with location and buzzer ringing.

Block Diagram of Existing System



Once started the devices require the woman to constantly observing any changes of x-y-z-acceleration on the system every 1 minute, else the system now sends her location to the authorized person a buzzer continuously on so that nearby people may realize the situation. In this case, even if someone hits the woman or the woman falls down and gets unconscious, she does not need to do anything, the system does get changes continuously in acceleration within 1 minute and it automatically starts the dual security feature. This device will prove to be very useful in saving lives as well as preventing atrocities against women. The device uses GPS sensor along with a GSM modem, LCD display leads and micro controller- based circuit to achieve this system.

Disadvantages

- Circuit is complex.
- It is uncomfortable to wear daily.
- Cost is very high.

Proposed System

In Recent years, acts of a violence and assault against women are rising. With the escalation of female employees in industries and other sectors of the commercial market, it is now- coming to a necessity for females to travel at late hours and visit distant and isolated locations as a part of their work. However, the exponential increase in assault and violence against women in the past few years is posing a threat to the growth and development of women. Protection isn't the only measure that can suffice against this increasing abuse. A security solution that creates a sense of safety among women needs to be developed. In instances of attack, it is largely reported that women are immobilized.

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The design is implemented using an embedded micro controller, in a modular form to be adaptable to different types of location tracking. Based on the total design of the system, the hardware and software of the system is a real-time monitoring of the women's body condition and location details in order to provide immediate help. It also prepares the high voltage electric shock circuit to be ready to give a non-lethal shock to the attacker.

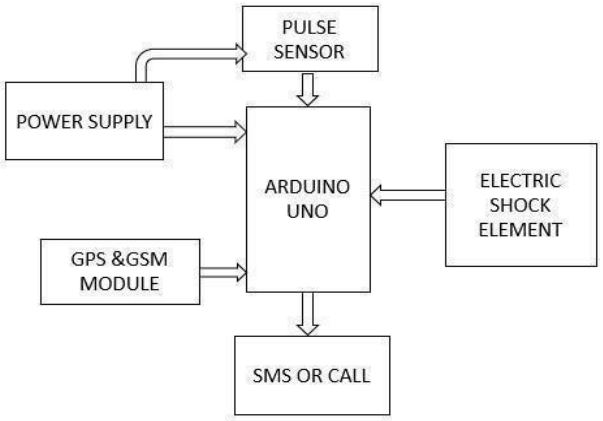

Fig.2: Block Diagram of ProposedSystem

Advantages
- Portable Can be easily carried any where
- Easy to Use
- Low cost

System Requirements

A software requirement specification (SRS) is a detailed description of a software system to be developed with its functional and nonfunctional requirements. The SRS is developed based the agreement between the customers and contractors. It may include the use cases of how user is going to interact with software system. The software requirement specification document consistent of all necessary requirements required for project development.

To develop the software system, we should have clearunderstanding of software system.

To achieve this, we need to continuous communication with customers to gather all requirements.

A good SRS defines the how software system will interact with all internal modules, hardware, communication with other programs and human user interactions with wide range of real-life scenarios. Using the software requirements specification (SRS) document on QA lead, managers create testplan.

Types

There are two types of requirements specification. They are:
- Functional requirements specification
- Non-functional requirements specification

Software Requirement
- It has been developed on Arduino Uno Development.
- The Programming of micro controller is done in embedded C using dedicated Arduino C compiler.
- Analog circuit design has been tested and verified in LT spice simulation environment with the perimeter of the tumor. This image divulges the tumor in the acquired input image with a help of dialog box.

System Design

System design is the process or art of defining the architecture, components, modules, interfaces, and data for a system to satisfy specified requirements. One could see it as the application of systems theory to product development. There is some overlap and synergy with the disciplines of systems analysis, systems architecture and systems engineering

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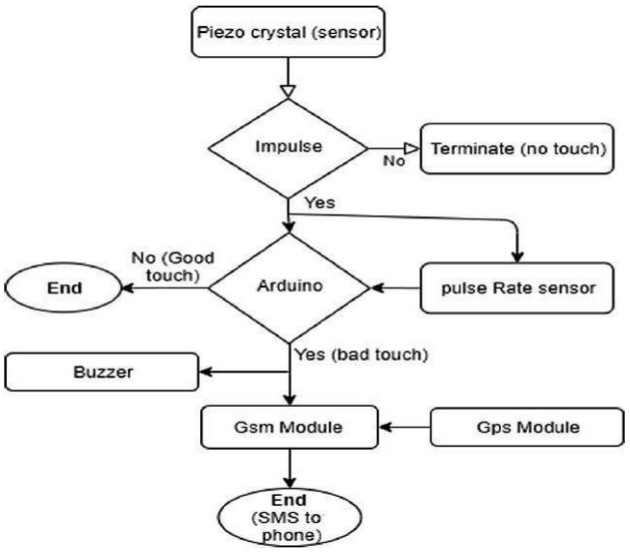
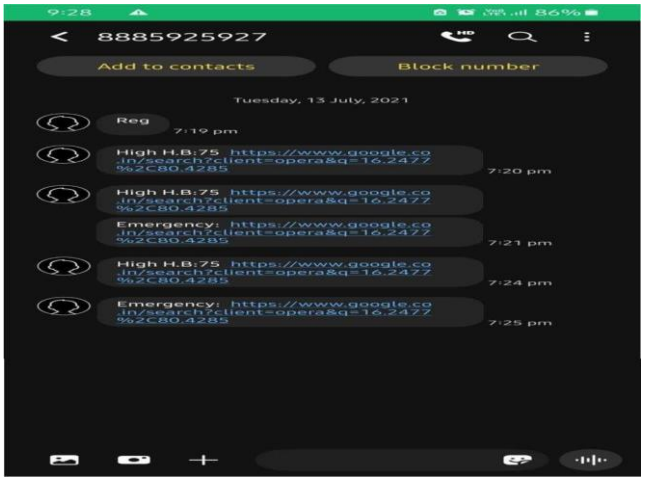
This Is the Architectural Model of Our Project. In ThatGPS, GSM Modules Are Used.



Testing

Testing can also be stated as the process of verifying and validating that a software or application isbug free, meets the technical requirements as guided by its design and development, and meets the user requirements effectively and efficiently with handling allthe exceptional and boundary cases.

Results



Received Message

Tracking location

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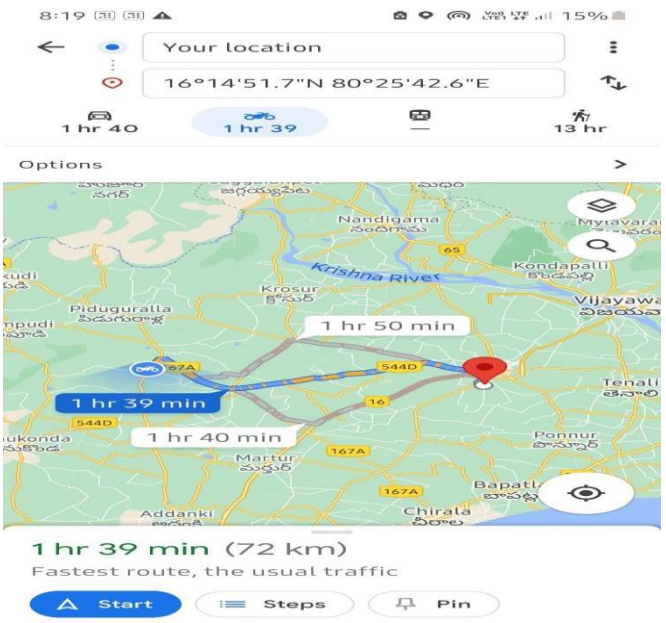

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Conclusion

This project has proposed a method to develop a portable and easily wearable device interfacing pulse monitor sensors and skin conductance sensor to sense the fear or anxiety and a bank of capacitors that are ready to shock the assailant if they come in close contact.

The proposed system is capable of constantly monitoring the state of the user's mind using the data from the skin conductance and pulse monitor sensors. The stun gun helps even the physically weak users overpower their assailants by introducing an element of surprise by shocking them though the shock is not lethal. The estimated cost of the device won't be very high since we make use of available user's smartphone (not added to the cost of the device) and a few capacitors and sensors making safety affordable.

Future Enhancements

In future, we can implement a camera on the band, in which the image of the attacker can be captured easily and act as solid evidence against the crimes. An additional pepper spray if used makes it a short-term preventive solution againstthe attack.

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