Women's Safety Device With GPS Tracking and Alerts using Arduino

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Abstract: **This Project presents a women safety detection system using GPS and GSM modems. The system can be interconnected with the alarm system and alert the police station and relatives. This detection and messaging system is composed of a GPS receiver, Arduino board and a GSM Modem. GPS Receiver gets the location information from satellites in the form of latitude and longitude. The arduino board processes this information and this processed information is sent to the user using GSM modem. A GSM modem is interfaced to the MCU. The GSM modem sends an SMS to the predefined mobile number. When a woman is in danger and in need of self-defence then she can press the switch which is allotted to 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.**

Index Terms – **GPS; GSM; Arduino Board; Microcontroller etc.**

1. INTRODUCTION

As the threat against the women increases rapidly, here we propose a system in order to provide a security precaution, so that women never feel helpless while facing social challenges. At present days, Women's security plays an important role; it has always been a concern for many people and committees around the world. It becomes apparent when we look out wherein the identity of woman has been misunderstood by a few individuals, so an attempt must be made in order that which doesn't harm their social status. This paper quite concerns to a wireless technique in the form of embedded device namely Arduino for women and children. This model can be designed in such a way that detects the location of victim and allows the rescue system to take action accordingly, based on the electronic gadgets like GPS, Buzzer. A prototype which is easy to use and provides a help for the victim. The system that which resembles normal cloves which when turned on it tracks the location of victim using GPS services to necessary emergency contacts and police control room. Thus this helps the victim against attacker for self defence. It is an unfortunate observation that there has been a substantial increase in crimes against women in the past decade. With a variety of software applications now in action, to help women, the statistics have not lowered. According to the National Crime Records Bureau (NCRB), in India, 93 women were raped everyday in the year 2014.Also 3,37,922 cases of crime against women were reported in year 2014 alone [1]. The current practices In female security broadly fall into different categories ranging from android applications developed for mobile phones, and extend to fashionable apparels that can be wore and carried in day to day life. However, our focus is on creating a safety system that merges the benefits of existing techniques and brings about a solution that ensures both defense and creation of a seamless pathway to initiating legal procedures, if any; have to be taken by the victim. We intend to create a partial wearable that can provide a complete security solution and become a utility that eases the apprehension among women and their family membersThe modified system is to design portable device for the security of women. It consists of power supply, Arduino, touch sensor, tear gas, GPS and GSM modem[5]. It is a distinct aid product designed to keep the user and their associate safe 24/7.It is filled with features for both everyday safety and real emergencies [3]. Our aim is to provide you with firmest and natural way to connect your nearby hand [1]. It share the current location and a heartache message to the cops and the emergency contacts, so that disastrous circumstance can be avoided.[2]This is very useful to police department to compress the law-breaking, which are abuse. Emergency alert can prevent the victim from any physical or sexual assault [4].The device called as "Virtual Friend" is especially designed for the women in suffering. It is a device used for the women in confused situation. The basic approach of the use of arduino is sending and receiving data by the GSM shield provided in the arduino board. The current location of the object is identified by the GSM network using Arduino UNO by initiating the user's smart phone At once the Arduino UNO gets the directs of the current location the Arduino transfers the coordinate details to the user's smart phone via Arduino GSM shield. The SOS light is a signal used to alert the

person walking by and it gives the sign of universal help to the victim. The alarm buzzer is activated if the woman is in threat location. At times of critical situations the woman can send message or make a call to the registered contacts via GSM and GPS. Even the device is lost, the call and the message is sent till the user picks up or view the text message. This is exactly where the government needs to step in and try and diminish cost and infrastructure issues for the corporations working in this direction. The problem with the app is that they trend to clumsy.

2. LITARATURE REVIEW

[1] Authors here discuss about the present scenario of security to women is very less and in order to provide security to women is very essential. Hence to provide the security, an application is to be built and given with sufficient data like human behaviour. It has to be accessed to GPS services. This application can detect the location and check the condition of women health by which actions can be taken accordingly. Hence this proposed system help in dealing with the problem faced by women which can be solved with technical knowledge.

[2] Nowadays the important issue in the society is women safety. In this paper the model will help to protect the women from the attackers. The proposed model contains various devices like GPS, GSM and panic button. Here GPS is used to detect the location of the device. This paper model is proposed a band which will provide to a women so that they can do work at late night. In this paper to ensure a security to a women in the society by providing sending of threats and sends a notification to their relatives and nearest police station.

[3] In this paper, the author discussed about how the system is designed to ensure women's security. This system is used to locate women based on GPS technology. In this way, the signals that have been created are sent to the board, manage the signals and provide SMS services, so emergency calls can be shared with the location of the coordinates to save women from harassment.

[4] Today in this world the women are being molested, kidnapped and harassed by physically strong people. So to ensure safety and security of women the idea of smart device is built which is comfortable and very easy compared to other bulky system which already exists? This paper proposes the dangerous issues faced by the women and it will help in finding the culprit easily with help of high

technologies. And it will be easy to implement in different areas for security and surveillance of women.

[5] This paper is all about providing safety to women on designing the smart device. This device helps to identify the critical situation of women. Women safety has become major issue in day to day world. They can't have real freedom as the men as since they are not physically strong enough. Thus in dangerous situations this will act as protecting hand. This uses GPS and GSM module with Arduino device. When a woman feels insecure in any situation she can press the wireless key which provides the location from GPS and GSM. This design helps to handle the dangerous situation faced by women. This paper also helps for the further development of the design by providing the basic and the technical information.

[6] In our country there is no safety for women so this paper is designed for women in emergency and in distress. It is simple and easy to use. Many people uses smart phase which has many applications and it is useful to people if any emergency occurs then our intension is to provide you with

[7]

3. OBJECTIVE

Security is a condition for protection against accidents or losses. In general, security is a concept similar to security. The difference between the two is an additional emphasis on protecting from external accidents. Individuals or activities that violate the terms of protection are liable for any breach of security. The word "safety" is a general term for "safety", but a "safety" technique means something not only true but also safe. This project was designed by Arduino This project demonstrates women's security systems using the GPS and GSM modules. The system can connect to the alarm and warn neighbors. This messaging and messaging system has a GPS receiver, an umbrella controller, and a GSM modem. GPS receivers get location information from satellites in latitude and longitude. The microcontroller processes this information, and this processing information is sent to the user through the GSM modem. The GSM model is connected to the MCU. The GSM module sends SMS messages to a predefined phone number. When a woman is in danger and needs self-protection, she can press the switch provided. By pressing the key, the whole system will be activated, and then a SMS will be sent to locate a person using GSM and GPS.

4. PROBLEM STATEMENT

In the latest horrific incident in Jammu and Kashmir, we have shocked the nation and warned us about women's safety and security. In regards to issues, people have different means of protection. Finally, tools should be introduced to ensure women's protection with different technologies.

5. PROBLEM SOLUTION

This is a system that is provided for women's security purposes. The building system has security tools that can help women in their trouble to track emergency callers to send information through notifications during the incidents by pressing the button on the device immediately. The victim's place will be followed by GPS tracking to nearby family members and police stations.
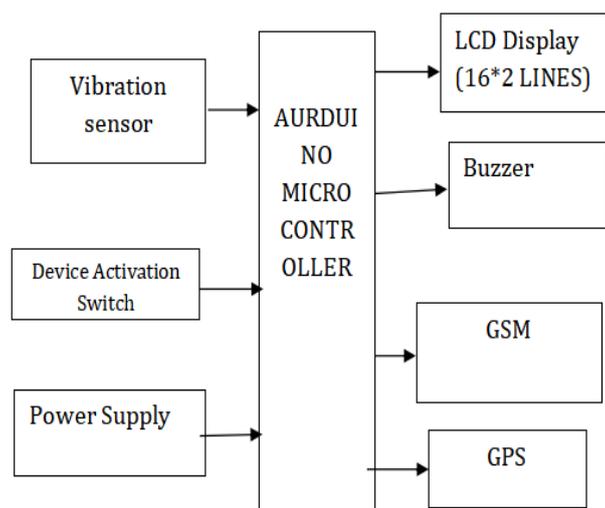
6. IMPLEMENTATION

Fig.1 Proposed Block diagram

By pressing the switch, the entire system will be activated then immediately the signals are sent to the Arduino board, it processes these signals and immediately the information is sent to the user. A GSM modem is interfaced to the Arduino. The GSM modem sends an SMS to the predefined mobile number with location of the victim using GPS and GSM. Whenever, the panic button is pressed by the victim the receiver receives the signals and the buzzer sounds and the location of the victim would be displayed on the LCD screen.

A. Power Supply

The Arduino can be powered either by the external source or by the USB. And the way it should get powered is selected automatically. Peripheral power can come one and the other from a battery. The connection of a 2.1mm center-positive plug connected by additive into the power jack of the board. Leads taken from a battery can be embed in the Vin pin headers of the power supply and ground.The board can function on an peripheral supply of the range 6 to 20 volts. If the supply is less than 7v, the 5v pin may supply lower than five volts. The board may be unstable. If it exceeds 12v, the voltage regulator may be overheated and dart the board. The prescribed range is 7 to 12volts.

B. LCD Display

LCDs are available to display arbitrary images which can be displayed or hidden, such as preset words, digits and 7 segment displays as in a digital clock. They use some simple technology, except that random images are made up of a large number of pixels, while other displays have greater elements.
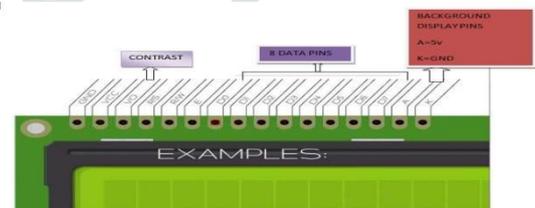

Fig.2LCD Display

C. GSM Modem

Global system for mobile communication (GSM) is a worldwide accepted standard for digital cellular communication. GSM is the name of a standardization group recognized in 1982 to create a common European mobile telephone standard that would formulate conditions for a panEuropean mobile cellular radio system operating at 900 MHz.Whenever someone sense unsafe, GSM (Global System for Mobile communication module) sends extremity message to chosen contacts and the police control room.

Fig.3 GSM

D. Global Positioning System(GPS)

GPS module acts as the satellite and receives the data frequently and transmits similarly to the RS32.It is developed by US department of defense (DOD) .The antenna input of the module receive the GPS signals, and a complete sequential data message with area , acceleration, and time information is pressed at the serial line. The module provides the current date, time, longitude, latitude, altitude, speed, and travel direction among other data and can be used in many applications including navigation, fleet management, tracking system, mapping and robotics.

Fig.4GPS

E. Buzzer

Buzzer Based on contra of the piezoelectric effect the sound is produced by the piezo buzzer. The main principle of the piezo buzzer is the generation of pressure variation which is based on the application of electrical potential across the piezoelectric. The buzzer can also be used in the alarm circuits etc.

F. Arduino

Arduino UNO It is a board based microcontroller on ATmega328P. It has a 16 MHz quartz crystal, 14 digital input/output pins, a USB connection, a power jack. It has a reset button. Simply connect it to a computer with a USB cable get started with AC to DC connection. A typical ARDUINO UNO board can be used for many applications based on the coded program. "UNO" was opted to record the release of ARDUINO software. Theversion1.0 of the arduino is the reference and now updated to later versions. The first in a series of USB ARUINO boards was the UNO board, and the reference model for the arduino platform.
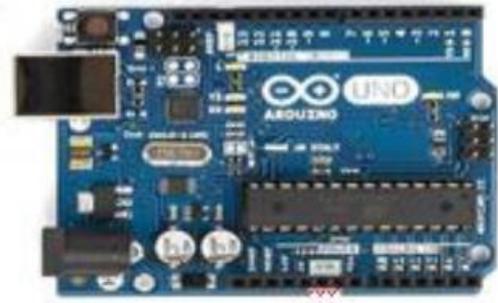

Fig.5 Proposed Block diagram

7. EXPERIMENTAL RESULTS

The basic principle used for security system is prevention and communication by Using GPS, GSM technology. It consists of Arduino, Vibration sensor, Buzzer, GPS and GSM technology. Arduino UNO is used to control the overall process. The Arduino is programmed by mean of C languages and then compiled and stored in the flash memory.
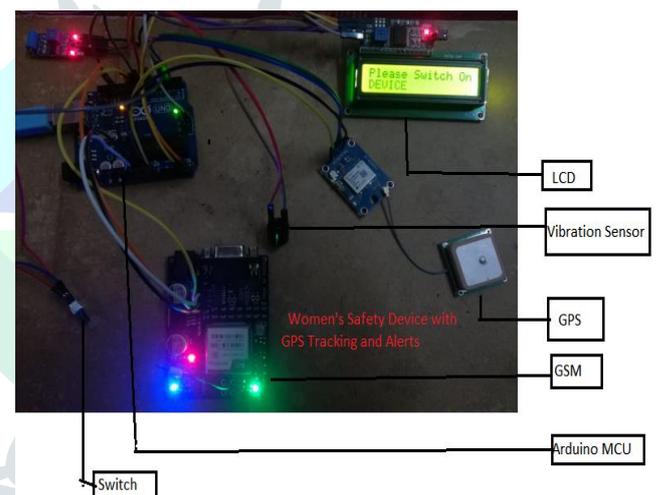

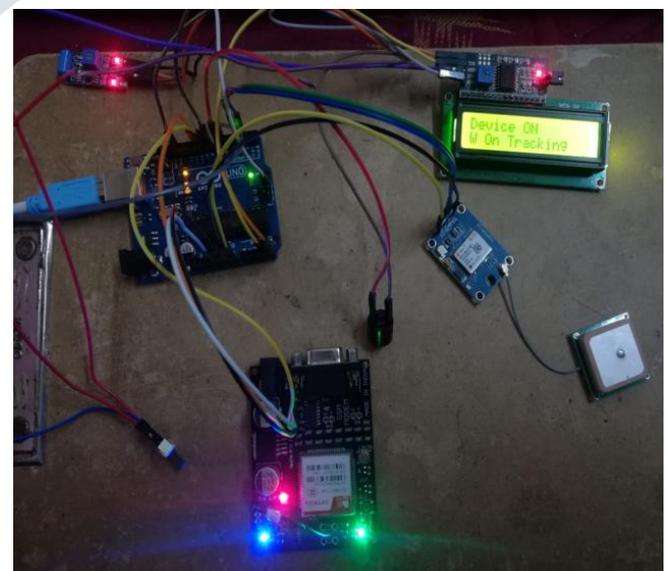
Fig.6 practical prototype model
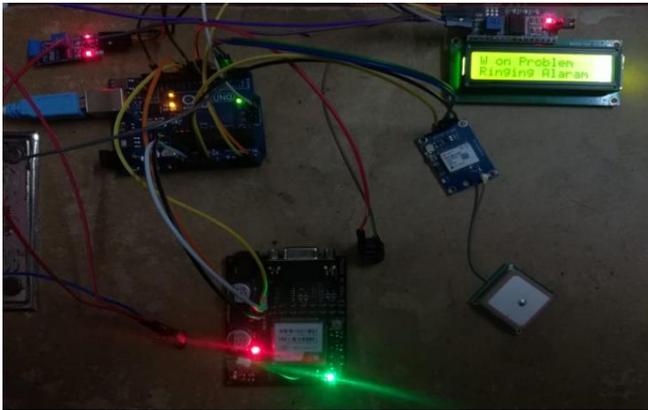

Fig.7 LCD Showing the GPS Tracking

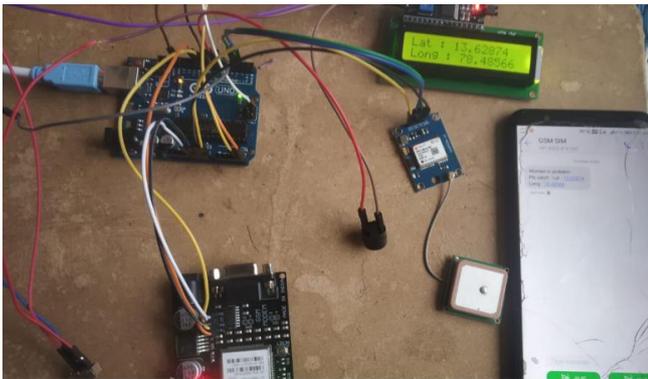**Fig.8 LCD Showing the Ringing alarm when Women Getting Problem**

Fig.9 LCD Showing the GPS Location and message displayed in mobile

8. CONCLUSION

The project grants designing about the women ,faced the lot of critical situation at present days and will assist to clarify them scientifically with compressed kit and concept. Making use of wrist band and spectacles, the mechanism like tear gas release, loud the messages with the location. From the above mentioned product can runover the suffering of every woman in the world about her assurance and security.

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