



REAL TIME SAFETY SYSTEM FOR WOMEN

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ABSTRACT

In today's world, women and girls still feel unsafe to travel alone whether it is a day or night. Now-a-days women are been attacked by men irrespective of their ages. Women are facing various problems which include robbery/theft, rape, molestation, eve-teasing and various other difficulties. Keeping this in mind, a device has been modeled which offers a hands-on help to the women in danger with a single press of a switch/button. This device helps the women in danger to be easily located with the help of global positioning system (GPS) and also messages and calls are given to alert their respective emergency contacts which are already stored in the microcontroller using global system for mobile communication (GSM). Hence this device serves handy when any women traveling outside feel insecure about her surroundings. The benefit of this system is that it provides the exact location (both longitude and latitude) of the person in danger.

Keywords: global positioning system, global system for mobile communication.

INTRODUCTION

In today's world, women and girls still feel unsafe to travel alone whether it is a day or night. Now-a-days women are been attacked by men irrespective of their ages. Women are facing various problems which include robbery/theft, rape, molestation, eve-teasing and various other difficulties. Keeping this in mind, a device has been modeled which offers a hands-on help to the women in danger with a single press of a switch/button. This device helps the women in danger to be easily located with the help of global positioning system (GPS) and also messages and calls are given to alert their respective emergency contacts which are already stored in the microcontroller using global system for mobile communication (GSM). [11] Hence this device serves handy when any women traveling outside feel insecure about her surroundings. The benefit of this system is that it provides the exact location (both longitude and latitude) of the person in danger.

RELATED WORKS

Dhruv Chand, Sunil Nayak, Karthik S. Bhat, Shivani Parikh, Yuvraj Singh, Amita Ajith Kamath have designed a mobile application called as WoSApp (Women's safety system).[5] This application works with the change in position of the mobile and this is done either by shaking the mobile or by pressing any button. When this action is performed by the affected person, it sends a message which includes a list of emergency contacts along with the location to the police control room. [1] This application can be easily installed in the mobile and can be further developed with technology

Remya George, Anjaly Cherian.V, Annet Antony, Harsha Sebastian, Mishal Antony, Rosemary Babu. T has designed a surveillance system which monitors the random movement of all the people in a particular place and also recognizes unsafe environments by considering the inputs recorded by the cameras. [11] This system has been designed in such a way that it considers few features in order to determine insecure

environments. It also employs an algorithm to determine with certainty the number of people in a particular area. Some analysis has been performed with respect to the features such as chaotic situation analysis, gender detection, face detection and gsm module along with an alarm system. The main disadvantage of this system is that it can be used only within a limited range.

Abhijit Paradkar, Deepak Sharma has proposed an intelligent security system which has been designed with various modules that can be used for specific purposes or situations. Various modules include database module, SOS key press module ,voice recognition module, auto receiving call module, GPS and gsm module, intrusion detection module, area zone module, fake call module, electric shock or self-defense module, audio and video recording module and call 100 or other emergency number module. [1]Each module works separately but has been embedded in a single system or an android device and can be activated according to the requirements of the user. The main advantage of this system is that many modules have been embedded into a single device. The major limitation of this system is its memory requirements.

B. Vijaylaxmi, Renuka.S, Pooja Chennur, Sharangowda. Patil has modeled a system in the form of a wrist band or a watch with a switch. When the user is in danger, she presses the switch. [12] This action alerts the police control room and sends alert messages to a few predetermined contacts. This system includes additional supports such as shock mechanism to protect the user. Sensors like piezoelectric sensor to determine the pressure, temperature and strain and body posture sensor to indicate the gesture of the user. This system is compact but these additional supports may attack the user itself which serves as a major disadvantage

Santhosh Krishna. B.V., Akshyalakshmi, A.M., Megaraj Begam. N., Janani .N have designed a manual system for defense. [13] This system has four options to switch it on. When the user is in danger, he/she can press the switch which is used to activate the system, if this



impossible, then the user can activate it by the movement of wrist such as twisting the wrist in different directions and this wrist movement is sensed by the flex sensor. If the user is unable to move his/her wrist then the pulse detector is used to monitor the variation of pulses of the user. If there is variation in pulses then a camera is turned on which automatically records and this video is telecasted live to the control room. It also includes a false detection system which notifies the control room that the user is being attacked by the intruder

V. Sudarvizhi, B. Krithiga has designed a human recognition and self defence system which is divided into two.[14] They include prevention of the incident and communication of the incident. The first system includes many modules like electric shock, spray model, pressure sensor, pulse rate detector and security alarm. The latter system is used to alert the control room using gps and gsm module. When the switch is pressed, the system starts to respond accordingly. [8] The advantage of this system is low power consumption and lesser components.

J. Suganthi, N.V. Umareddy, Nitin Awasthi have designed a portable telemedicine system which provides emergency help to the patients till they reach the nearby hospital. This emergency system works on the principle of FTC Find treat-care technique. Most of the telemedicine systems are expensive; hence this system has been developed in a simple way so it can be affordable by everyone. This system is designed with GSM/GPRS, GSM, sensors and P2P. This system is used to diagnose mobile heart patients, elderly people and accident cases and hence provides immediate emergency help to them. It is used to provide first aid to the patients and then take them to the nearby hospitals. This portable telemedicine emergency system is user-friendly, compact and is affordable by common people.

PROPOSED METHODOLOGY

In order to overcome the disadvantages of the existing system which employs RFID technique, a system has been designed with GSM/GPS module which provides high accuracy output.

The proposed system describes a quick responding, cost protection and compact system for an individual especially for women and girls. This system serves handy and can be used by women in distress at any time. When the women are in danger, the system can be activated with a single press of a switch or a button. This system can be popularly called as self-defense system as it provides additional helping hand to the women which gives courage to them. A manual switch called the emergency switch is attached with our system during an emergency situation the women can press this switch. When the emergency switch is pressed, the system gets activated. The microcontroller controls the function of the GSM modem for the intimation to the list of emergency contacts via call and SMS. Microcontroller gets the values of the latitude and longitude from the GPS receiver as inputs and transfers it to the preprogrammed list of emergency number via SMS through GSM modem. After

which a call is also made to the list of emergency contacts one after the other.

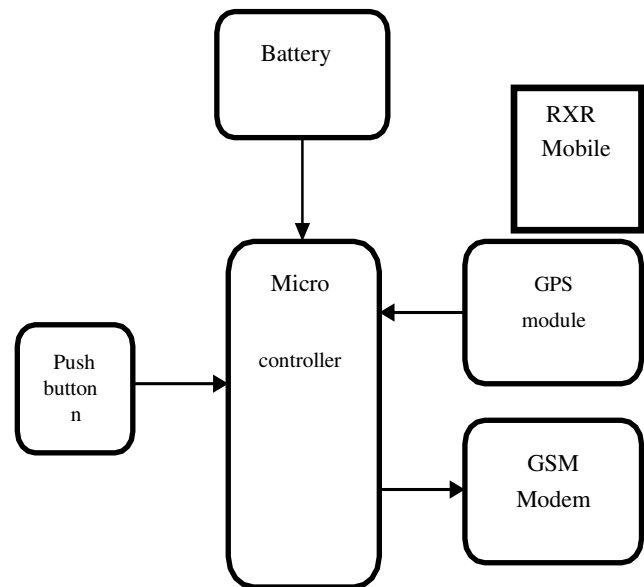


Fig: Block diagram for the proposed method.

It consists of three main modules. They are
Microcontroller

- GSM module
- GPS module
- GPS module

The hardware and software used are

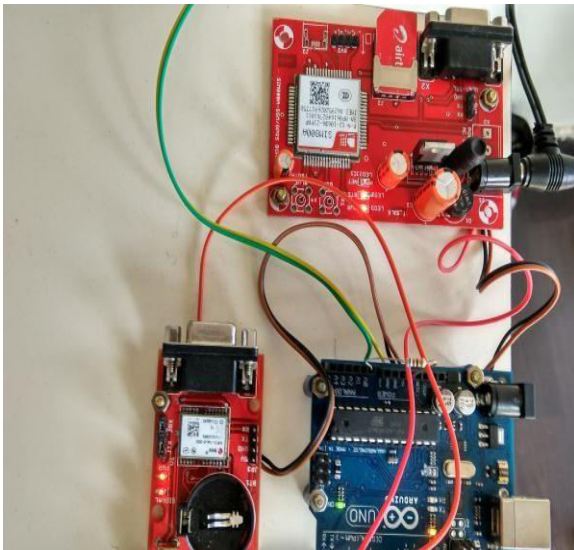
- Arduino UNO Microcontroller
- GSM Modem
- GPS module
- Battery 12V

Software used are

- Arduino IDE
- Embedded c

SIMULATION MODEL

The hardware design consists of three modules. They are MCU, GSM module and GPS module. The hardware is designed as a real time system used for women's safety. The proposed system used as a safety system is shown below:



Real time safety system hardware design

The proposed system helps the women to a greater extent. Single press of it provides an additional support like a helping hand thus encouraging women to come up in life.

The proposed system works with a single press of an emergency switch. When the women is in danger she presses the switch, the microcontroller gets the location coordinates of the user in danger and sends alert messages including the location coordinates and gives automatic calls to the list of emergency contacts. Alert messages and calls are given at a certain time interval. The output of the proposed system is shown below. women is in danger she presses the switch, the microcontroller gets the location coordinates of the user in danger and sends alert messages including the location coordinates and gives automatic calls to the list of emergency contacts. Alert messages and calls are given at a certain time interval. The output of the proposed system is shown below.

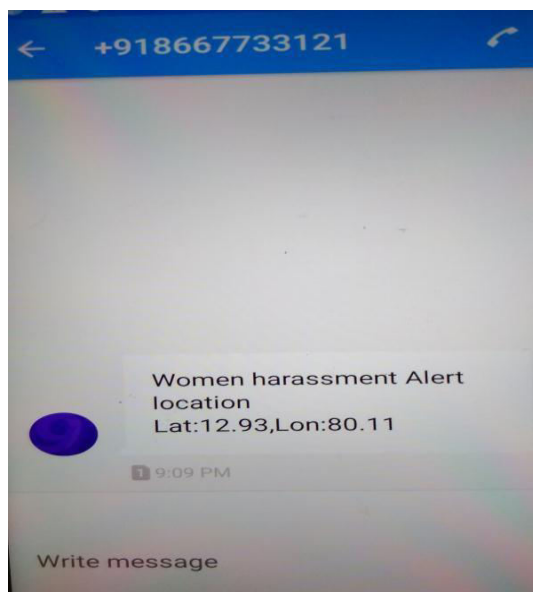
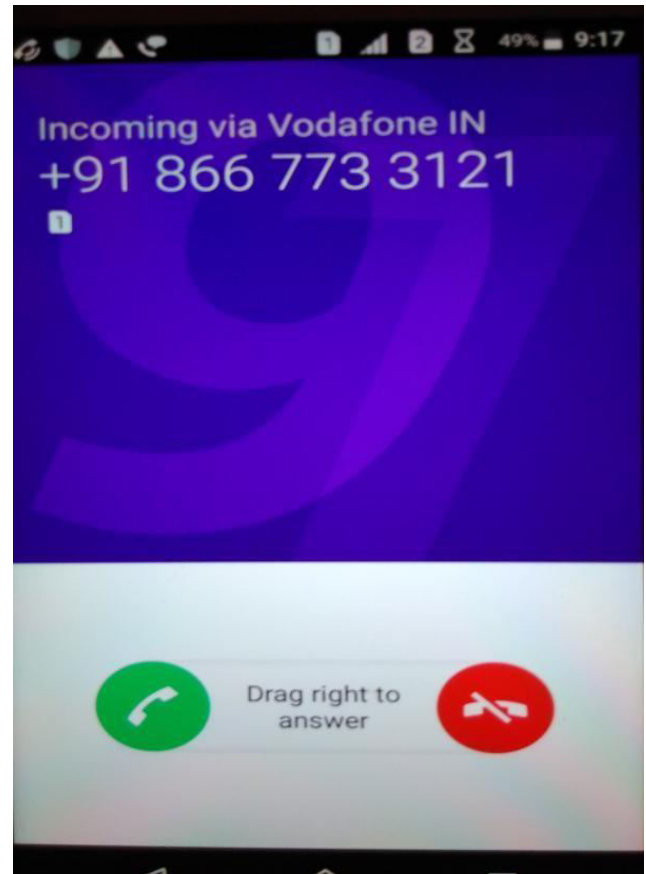


Fig: Screenshot of receiving messages.

The above fig portrays the screenshot of receiving alert message from the user's registered mobile number. This action takes place once the emergency switch is pressed by the user when it is an emergency situation.

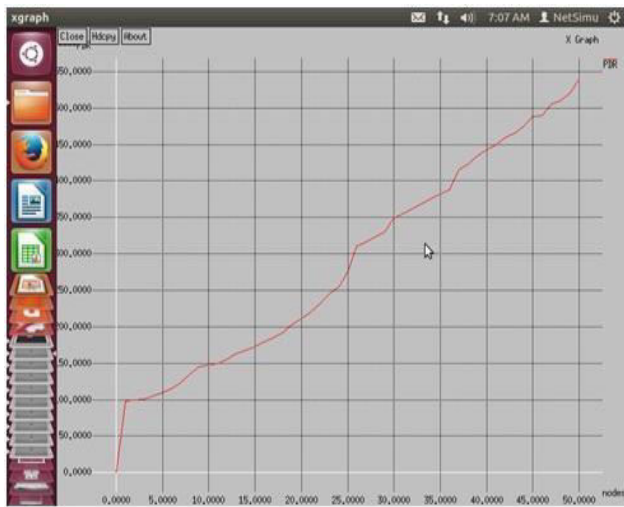


The above fig portrays the screenshot taken while receiving emergency call from the user's registered mobile number after the delivery of the message.

Thus the system works well compared to the existing method. The system has many advantages. The proposed system is portable, affordable, 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 and environmental friendly system.

COMPARISON BETWEEN EXISTING AND PROPOSED SYSTEM

The below graph for the existing system is drawn by comparing time versus nodes in which the time delay is not constant.



The below graph for the proposed system is drawn by comparing time versus nodes in which the time delay is constant. When the switch is pressed, the system sends alert messages to the list of emergency contacts and also gives automatic calls at regular time intervals. Therefore there are automatic updates about the changing location and the alert messages and automatic calls are given continuously with a certain time delay which can be programmed in the microcontroller. There is a perfect time delay maintained throughout and thus the time delay remains constant.

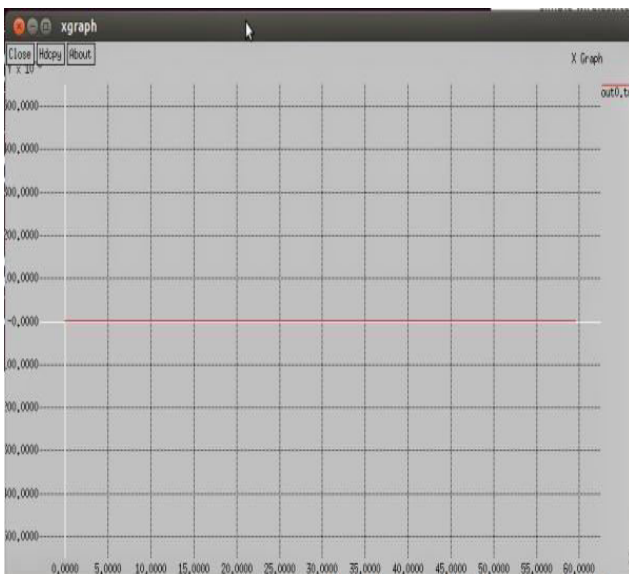


Fig: Proposed system (Time vs nodes).

CONCLUSIONS

Thus this system was developed for the welfare of women and girls. It provides a helping hand to the women in danger and can provide an additional to women travelling outside irrespective of the time. Hardware design using GSM and GPS module is designed for automatic messaging and calling system. Our system serves handy and provide self- confidence to the women in

danger. Future work can also include implementation of the system through mobile application

FUTURE WORK

The concept of the project was clearly analyzed and the literature review was done on the predecessor papers on this concept. Existing system was then reviewed and the concept and limitations of the system was pointed out. Necessary encasing of the hardware can be done to protect it from external force and damage. Future work can include by implementing the proposed work in the form of mobile application. The design can be further implemented in a more advanced way by introducing the camera to capture the image of culprit and also MIC sensors to record the audio conversations that can happen between culprit and victim

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