A Robust Women Secure System with Raspberry Pi and Internet of Things

Thorramamidi Mounika[1], V. Naveen[1], MD Javeed[1]

[1]Department of Electronics and Communication Engineering, Sree Dattha Institute of Engineering and Science, Hyderabad, Telangana, India.

Abstract

In today's world, women come across many situations that make them feel unsafe. Women from various walks of life face situations that make them feel threatened in different environments. Sixty-six per cent of women has reported sexual harassment in the year 2010 in New Delhi. It has also been proven that in urban environments, women are more prone to experience harassment especially in developing countries. In such situations, the aid of a safety device that will inform the victim's family members or the authorities (in severe situations) may help women feel safer, confident and reduce the chances of harassment. Though there are a few Smartphone based solutions for the same, it might not be possible for the victim to reach for her phone in some situations without the knowledge of the perpetrator. In this approach, the focuses 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.

Keywords: Raspberry Pi, Free fall sensor, TSOP sensor, Buzzer, LCD, Internet of Things

1. Introduction

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. Captures the images/video of the attacker to maintain a proof for legal actions.

2. Related Work

Authorin [1] implemented such device which is a portable one and can be activated as per the requirement of the individual which will locate the victim using GPS(Global Positioning System) and with the help of GSM(Global System for Mobile communication) emergency messages can be sent to the respective locations as per the design. The gadget provides an alarm system, call for help, and electric shock to get rid of the attacker. In [2], a new perspective to use technology to protect women was suggested. The system contains a normal belt which when gets activated, tracks the location of the victim using GPS and sends emergency messages using GSM, to the three emergency contacts and the police control room. A GPS and GSM based vehicle tracking, and

women employee security system is discussed in [3]which provided the combination of GPS device and specialized software to track the location of the vehicle as well as provide messages and alerts with an emergency button trigger. The information of vehicle position provided by the device can be viewed on Google maps app. Author in [4] proposed a system with the push of one button, people can alert selected contacts that the person is in danger and share the location. With this personal safety app, you'll never walk alone. The personal safety application needs the name and number of the person who is to be contacted in times of emergency. Users can add multiple people's mobile numbers in the emergency contacts list. These are the people who will receive notifications in case of an emergency. All it needs is the user's action to trigger an SOS button provided and it shoots messages as fast as the device can manage. This app also provides necessary first-aid measures that should be taken at the time of emergency situations.

In[5], literature focus is on creating a safety system that brings about a solution that ensures both defence and creation of a seamless pathway to initiating legal procedures, if any; must be taken by the victim. We expect to create a partial wearable that can provide a complete security solution and become a utility that softens the restlessness among women and their family members. The objective of this literary work is to create a safety system in the form of a portable safety device for women that do the following tasks:

1. Alerts family and police and gives location coordinates of the woman being attacked.

2. Incorporates a defensive mechanism by giving a mild shock.

3. Proposed Methodology

In the recent past, issues on women harassment are accentuating at great heights, creating anguish and distress among the women of today. As a matter of grave concern, we proposed a Raspberry-Pi based device that proves constructive to the women in danger and helps them to fight such odds. The main objective of the system is to intimate an instant location and a help message through an Android app to a registered number of contacts and the police, so that untoward incidents could be prevented and to provide real time evidence for swift action against the perpetrators of the crime.

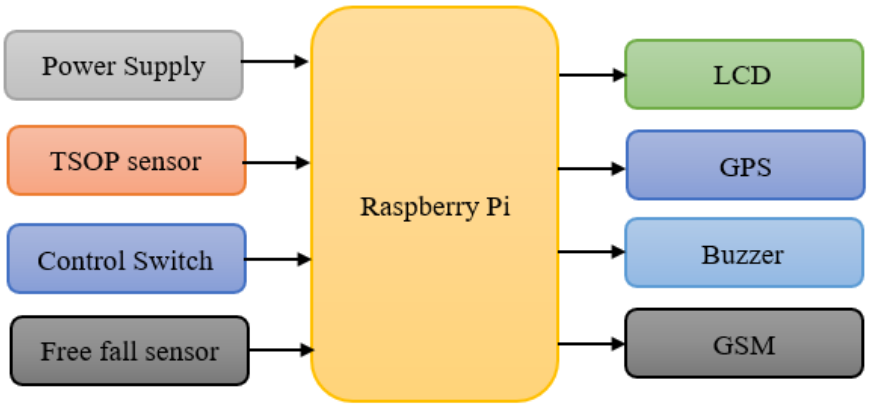

Figure 1. Proposed block diagram of women security.

Operation

In this system, control switch, TSOP and free fall sensor are interfaced withRaspberry Pi as input when women feels that she is in danger these input sensors will detect and send a signal to Raspberry Pi then buzzer will on and the message regarding the particular event is disclosed in LCD. In addition, GSM and GPS modules also utilized to improve

the secure concern by sending an SMS and the location map to near by police stations and to guardian as well.

4. Software Requirements

According to the latest TIOBE Programming Community Index, Python is one of the top 10 popular programming languages of 2017. Python is a general purpose and high-level programming language. You can use Python for developing desktop GUI applications, websites and web applications. Also, Python, as a high-level programming language, allows you to focus on core functionality of the application by taking care of common programming tasks. The simple syntax rules of the programming language further make it easier for you to keep the code base readable and application maintainable. There are also several reasons why you should prefer Python to other programming languages

4.1. Cloud

Cloud storage is a model of computer data storage in which the digital data is stored in logical pools.The physical storage spans multiple servers (sometimes in multiple locations), and the physical environment is typically owned and managed by a hosting company. These cloud storage providers are responsible for keeping the data available and accessible, and the physical environment protected and running. People and organizations buy or lease storage capacity from the providers to store user, organization, or application data. Cloud storage services may be accessed through a co located cloud computing service, a web service application programming interface (API) or by applications that utilize the API, such as cloud desktops to storage, a cloud storage gateway or Web-based content management system.

5. Conclusion

This type of idea plays an important role towards providing the fastest way of safety for women. The proposed design will deal with critical issues faced by women in the recent past and will help to solve them through using safety devices. This work was focused on developing a smart low-cost device to help women, feel them safer and prevent the occurrence of rape, harassment and other dangerous situations. The project would aid in enhancing the safety and security of all despondent and badgered women and children. It can be concluded that the system helps to support gender equality by providing a safe environment to women in the society and allows them to work till late nights. Anyone before doing a crime against the women will be deterred and it helps to reduce the crime rate against the women.

References

[1] J. J. Jijesh, S. Suraj, D. R. Bolla, N. K. Sridhar and A. D. Prasanna "A method for the personal safety in a real scenario," In Proc. of International Conference on Computation System and Information Technology for Sustainable Solutions, Bangalore, pp. 440-444, 2016.

[2] Ch. Basavaraj, A. Naik, M. Monika, P. Patil and P. Das, "SMART GIRLS SECURITY SYSTEM", International Journal of Application or Innovation in Engineering & Management (IJAIEM), Volume 3, Issue 4, April 2014, pp. 281-284.

[3] B. Poonam, M. Akshay, D. Kamble, S. Makode and R. Kahane, "Women Employee Security System using GPS and GSM Based Vehicle Tracking", International Journal for Research in Emerging Science and Technology, Vol. 2, No. 1, Jan. 2015.

[4] M. Sridhar, S. Pamidi and A. Sriharitha, "A Mobile Based Women Safety Application (I Safe Apps)", IOSR Journal of Computer Engineering, Vol. 17, No. 1, pp. 29-34, Jan. 2015.

[5] M. Mahajan, K. T. V. Reddy and M. Rajput, "Design and Implementation of a Rescue System for Safety of Women", In Proc. of International Conference on Wireless Communications, Signal Processing and Networking, Chennai, India, Sep. 2016.

[6] P. Revathi, K. B. S. D. Verma and V. Anurag, "IoT based Women Security Alert System using Raspberry Pi", International Journal of Advanced Computing Techniques and Applications, Vol. 5, No. 2, pp. 80-84, Dec. 2017.