7th National Conference on
"Role of Engineers in Nation Building" organized by VIVA Institute of Technology, Mumbai
(1st and 2nd March 2019)
International Journal of Engineering Research & Science (IJOER)
ISBN: [978-93-5321-411-1] ISSN: [2395-6992] [Vol-5, Issue-3, March- 2019]

SPARSH: Smart Protecting Active Relevant Security Aid

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Abstract**—***According to the population census of 2011, the revealed ratio of 2011 is 943 women per 1000 men. By the survey of national crimes records bureau, in 2016 the rape of minor girls increased by 82% and 1 women is killed every hour for domestic violence. The security of women is still a major issue. The main problems faced by the female citizen in the locality are molestation, they are assaulted. All this kind of behaviour and treatments leave a drastic effect on womens mental health. The corresponding system deals with the quick responding cost protection system for individual using which an individual going through the torture can call for help of watch automatically or by tapping watch in pattern. All they need is to carry their smartphones with themselves. This would lead to change of seeing the security of women with the positive sight in an individual life. This device consists of tap module (piezo sensor) if the user is in situation where the phone is snatched then the patterned taps would directly send the message to the selected contacts, pulse detector sensor for checking whether the smart watch is weared by the user, Bluetooth module for connecting the smart phone with the smart watch.*

Keywords—Bluetooth Module, BLE – Bluetooth Low Energy, GSM Module, Pulse Sensor, Smart Phone, Tap Module (Piezo Sensor).

I. INTRODUCTION

According to the survey of National Crime Records Bureau, Chennai held highest rate of crime against women which was recorded in the 2000 (around 4,037 incidences). Chennai is marked as city with high rate of crimes against women and it is also the capital of southern state of Tamil Nadu however crime rate against women noted through the survey in Delhi was 17.6/100,000 females in 2000 (2,122 incidents) and 151.13/100,000 females in 2013 (11,449 incidents)[8].

Crimes that are happening against women consists of rape, dowry deaths, sexual harassment and kidnapping, torture by husband, relatives, assault on a woman, and sex trafficking [9].It is very true that women in India are given a place of Goddess Lakshmi in the Indian society however we also cannot ignore the negative aspect of women position in India. Women plays many vital roles in their whole life some of the roles are mother, a sister, a wife, young girls, and girl baby children. [10].

Women's all over world are facing an even subjected to unethical harassment. Security of woman is still a measure issues as the number of crimes and harassment is increasing day by day. In this age of technology, mobile phone is one of the gadget that almost everyone likes and is used to keep in touch with family and friends. All they have to do is to carry device or the phone everywhere, which can be done easily. The main goal of paper is to develop a wearable wristband for safety protection of women and girls.

The aim of system is achieved by the analyzing the physiological signal in combination of body position and gesture. The harrassments and the bad behaviour against the women can be reduced with the help of corresponding project. This is hardware device consumes less power. Thus the corresponding system quick responding cost protection system for an individual and especially for women using which a woman in anguish can call for help just with the help of watch automatically or by tapping watch in pattern. It has an ability to help women with technologies that are embedded into a compact device. This device consist of tap module (Piezo sensor), pulse sensor, Bluetooth module. All this combines and makes this device a cost effective along with the worldwide competition of the smart watch.

II. PREVIOUS WORK

M. Mahajan, et. al. [1] proposed a system in which the system is turned ON when switch is pressed in instances of attack, manually by the woman. This switch triggers a microcontroller that activates an on-body shock circuit. The microcontroller triggers the on-body camera and audio module to capture the image and audio respectively. Image and audio are stored in a micro

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SD card as a proof for legal actions. Hand-held controller is now triggered and receives location coordinates from the GPS receiver and transmits these in the form of an SMS to the pre- decided phone numbers. S. Ahir, et. al. [2] proposed a system that contains a device that is in the form of band which is always active; the victim needs to tap on the screen twice when she feels the need of it or she feels someone is abusing her. After tapping on the screen, the device will start sending the current latitudinal and longitudinal coordinates to the ICE contacts and the police control room. D. Prashanth, et. al. [3]proposed a system that contains an application present in the users mobile. When the user is going from one place to another, the dynamic GPS tracking is kept on. After the Login there is a Google map with navigation enabled. When travelling is started, then the list of emergency contact users with the same application can see the users who are cureently using this application through the GPS Tracking system. When in distress the user needs to press the SOS button then an alert message which contains the name of the user, GPS Location and a help message is sent to the emergency contacts. T. Khandelwal, et. al. [4] proposed a system that contains a corresponding consists of wearable device that contains sensors that read body temperature and pulse rate continuously and sends it to Arduino board that is also there in the device. All computations and machine learning algorithms execute in cloud continuously via gateway. The prediction on actual data is done whether danger is there or not. At Arduino, GSM Modem (Global system of mobile communication) is present. That GSM Modem calls and sends messages to the emergency contacts if prediction of danger is there along with the location of the victim that is taken using GPS that is there in the device. G Harikiran, et. al. [5] proposed system consists of Smart phone connected to a Smart Band through Bluetooth Low Energy (BLE). The device establishes its connection and communicates with smart phone through a specially designed application. The help message is sent to the family members and the nearest police station through the GSM facility that is inbuilt in the phone. D. Chitkara, et. al. [6] proposed a system that contains a device that is in the form of a glove consisting of electronic circuitry. The palm side of the glove will constitute conducting leads within the glove and conductive film above the glove which will transfer the electric shock waves to the attacker. The device has been made such that the oppressor does not die with the amount of shock generated, but is rendered weak with muscular contraction in his body. N. Viswanath, et. al. [7] proposed system consists of footwear device. Since BLE (Bluetooth Low Energy) is being used, the phone can be connected to the device without much loss in the battery life [8]. The acceleration sensor is present on the device for recording the acceleration. When the user taps her left foot from the back using the right foot, there is observed a change in the reading in the z axis and an alert is sent to trigger the user's phone via BLE connection. When consecutive taps are detected, an alert is sent to the user's smartphone via the established BLE Connection. On receiving the alert from the device, an application on the smartphone is programmed to send its location to four contacts that the user can preset on the application.

III. OVERCOMING LIMITATIONS

Limitations that are observed in the previous papers are stated as follows: The main component is internet, Once the internet connection is lost then there is no such usage of technology that has been proposed [4][3]. The shock management system utilized is not that self-sufficient for using it as reliable object during the time of attack [1].

The limitations of the system can be overcome by the suggested system. The corresponding system is a wrist wearable device. The corresponding consists of two types of detection manual detection and automatic detection. It also contains two types of warnings i.e. Soft warning and hard warning. If the watch is provided as a new product to the user, user has to provide the daily routine locations via application to the wearable device.

If the user goes to the location that is not specified into the system then wrist wearable device will gives an alert on it using vibration if the button that is given on device is pressed by the user then that current location would be stored into the system via application that is installed into the smartphone.

The device is on the wrist of the user or not, can be detected with the help of the pulse sensor. If the pulse is detected by pulse sensor as well as the user is in new location then the user has to press the button in time and if the device alert is crossing declared time and still button is not pressed then the hard warning would be sent to three contacts that the user has set to send the warning at beginning stage.

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If the pulse is not detected and the user is in new location and watch is vibrated for more than declared time then notification is sent to application. Although after sending notification, if the user is not pressing button in 5 minutes then the soft warning is sent to the contacts that are stored as the emergency contact numbers in the device.

Smartphone and the device should be connected all the time via BLE (Bluetooth Low Energy); if the connection is lost then the notification is sent to mobile to establish connection and because of the certain reasons, if user wants to disable watch then user can shutdown system with the help of application securely.

It is not necessary that the user is got attacked in the new location, it can also possible to happen that the user would get attacked in the old locations. In this case the user has the manual option of tapping. If user is getting attacked then the user has to tap the watch thrice or more than thrice in two seconds on the hard surface. This tapping would be detected using a tapping module which is known as piezo sensor. Once the device detects tapping then the messages to those contacts would be directly sent via application.

IV. FLOWCHART OF CORRESPONDING SYSTEM

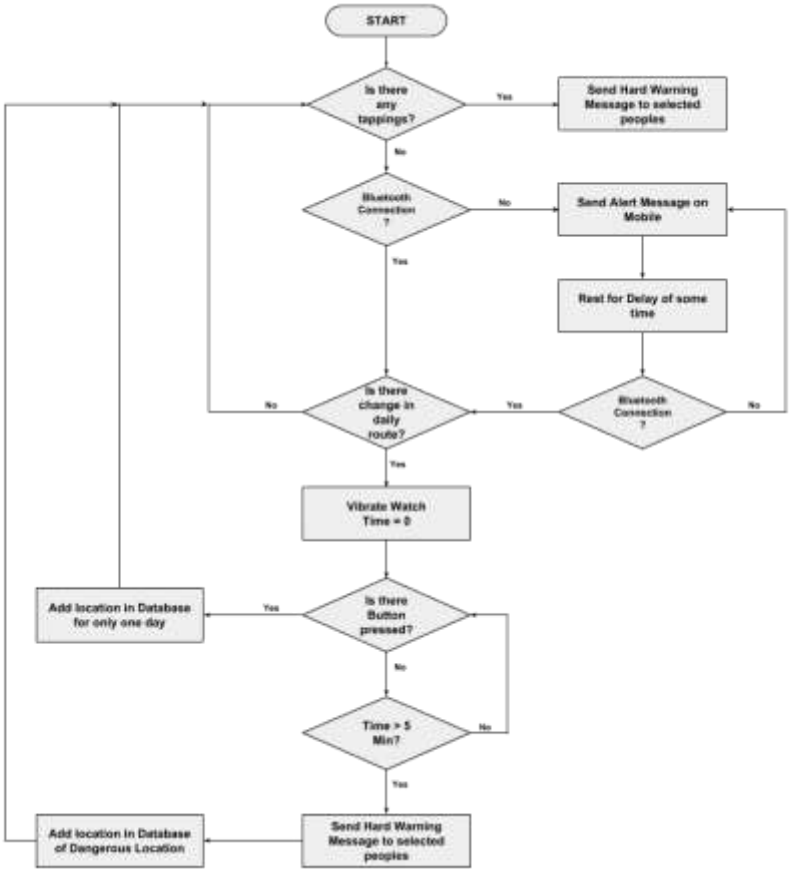

FIGURE 1: System Flow

The above fig. 1 shows the system flow of the diagram when the user installs the application and wears device on the wrist.

V. RESULT DISCUSSION

In the corresponding discussed system the working of the wrist wearable device can be achieved with the combination of hardware as well as software. The components such as BLE (Bluetooth Low Energy) can be used in the implemented system so that power is consumed less and hence the user doesn't need to worry about the power consumption. The smart aid wearer has an

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option of tapping even though the attacker has snatched the mobile phone so it basically acts as an alternate plan to inform the dear ones that person is in trouble. Thus this system can be implemented and proved as small contribution towards preserving the humanity amongst the people.

VI. CONCLUSION

The corresponding system deals with the quick responding cost protection system for an individual especially for women using which women in anguish can call for help of watch automatically or by tapping watch in pattern. It is an ability to help women with technologies that at embedded into a compact device. If they accompany the aid of the corresponding then they would receive a chance of self-defending as well as informing the dear ones the current location as well as the location of unavoidable circumstances. As a result the corresponding of smart watch would help woman to take opportunities that are provided to them through woman empowerment and employment sessions. This would increase the confidence, they would stand for themselves for defending them as well as it will act as a seed of becoming independent to grab the opportunity that are available in the markets. These opportunities would inculcate the passion of achieving the success in various steps in their life along with that the family would also be at sight of relief by seeing them safe, earning and being settled.

REFERENCES

[1] M. Mahajan, K. Reddy , M. Rajput, "Design and implementation of a rescue system for safety of women", International Conference on Wireless Communications, Signal Processing and Networking (WiSPNET), 2016.
[2] S. Ahir , S. Kapadia , J. Chauhan , N Sanghavi, "The Personal Stun- A Smart Device For Women's Safety.", International Conference on Smart City and Emerging Technology (ICSCET), 2018.
[3] D. Prashanth, G. Patel, Dr. B.Bharathi, "Research and development of a mobile based women safety application with real-time database and data-stream network", International Conference on circuits power and computing technologies [ICCPCT], 2017.
[4] T. Khandelwal, M. , M. Khandelwal, P. Pandey, "Women Safety Device Designed using IoT and Machine Learning", IEEE SmartWorld, Ubiquitous Intelligence & Computing, Advanced & Trusted Computing, Scalable Computing & Communications, Cloud & Big Data Computing, Internet of People and Smart City Innovations, 2018.
[5] G. Harikiran , K. Menasinkai, S. Shirol, "Smart Security Solution for Women based on Internet Of Things(IOT)", International Conference on Electrical, Electronics, and Optimization Techniques (ICEEOT), 2016.
[6] D. Chitkara, N. Sachdeva, Y. Vashisht, "Design of women safety device", IEEE Region 10 Humanitarian Technology Conference (R10-HTC), 2016.
[7] N. Viswanath, N. Pakyala, Dr.G. Muneeswari, "Smart Foot Device for Women Safety", IEEE Region 10 Symposium (TENSYMP), Bali, Indonesia, 2016.
[8] "https://www.newsclick.in/crimes-against-women-increased-83-over-last-ten-years-says-ncrb", last accessed on 18/01/2019.
[9] "https://www.researchgate.net/publication/308887992_WOMEN_SECURITY_SYSTEM_USING_GSM_AND_GPS", last accessed on 18/01/2019.
[10] "https://www.refinery29.com/en-us/2018/02/191526/stop-street-harassment-data", last accessed on 18/01/2018.