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"ABHAYA"- A WOMAN'S SELF DEFENCE DEVICE USING RASPBERRY PI 3B

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Abstract— According to the Indian Constitution, Women also have the right to live independent, glorious lives like men. Currently, Women all over the world are deciding their precious and self-place. Women constitute almost fifty percent of the country's population, who are physically, socially and mentally afflicted. Women safety has always been an issue even in these modern times with so much advancement in technology. Every day, every woman, young girls, mothers and women from all walks of life are struggling to be safe and protect themselves from the roving gaze of the horribly insensitive men who molest, assault and violate the dignity of women on a daily basis. The streets, public transport, public places in particular have become the dominion of the hunters. Women are beginning to feel insecure due to the incidents happening with them like crimes, molestations, kidnapping etc. As a result, it poses a serious threat to women's empowerment as well as a country's fiscal development. Thus, to avoid this kind of harassments, our project, primarily focuses on women safety module device is implemented for self-protection. The device provide multi-way safety measures such that self Defence, Tracking Information and Evidence Tracking. For Self Defence, it causes an electric shock to the attacker by pressing a switch. For Tracking Information, the device includes with GSM and GPS which send a message with location of the user to the person who link with phone numbers and email. For an advance level of technology ,the device contains a camera to take an evidence which can be activated when the system is activated , it automatically start capture the incident and it will be send a mail of the captured image immediately to the corresponding person and also it send a SMS . Hence this device provide the safety measure and given hope to women/girl feel free to grow in their field. The proposed system also provide the multiple sensors to activate the system at any situation.

Index Terms— rasprry pi, GPS module, Pi camera, smart mobile application, push btoutns.

I. INTRODUCTION

In the present scenario, women are keeping pace with men in every walk of life. Women constitute almost fifty percent of the country's population. In today's world everyone are concerned about women's safety. The safety of Women matters a lot whether it is at home, outside the home or at work place. According to National Crime Records Bureau of India state that the rate of crime against the women increase gradually. In India we worshipped a women as goddess but on other side women's are facing lots of problems. At the end of 2019, there are 1, 45,000 rape cases were pending in Indian court. Due to such crimes, Women safety has become a suspected subject in India. It is becoming a major problem in the development and progress of the country. In a country like India, there is a steady growth in cases related to gender abuse, harassments, assaults most of which have no reports against that violence. They cannot step out of their houses at any time of the day, cannot wear clothes as per their will, nor can they even go for work in peace. There is some kind of inhibition that women are subjected to which not only takes away their sense of freedom but also shatters their confidence and dreams.

The main motive of this device for women is not to tolerate any kind of violent attack such as eve teasing, molestation, kidnapping etc. Every woman needs to be taught the self-defence methods and their morale also needs to be elevated. This will not make women feels insecure in facing adversity. Mobile phone is one of the most commonly used gadget for contacting police, friends or family in danger situation. In turn, women need to carry at least one safety weapon for protection against any crimes. Earlier, Women used to carry a pepper spray in her handbag for self-defence technique. Many legal self-defence tools have been proposed such as Credit card knife, tactical pens, self-vigilant alarm, silver self-defence key cases etc. for women to fight against criminal.There is no force more powerful than a woman determined to rise. Swami Vivekananda once said, **"There is no chance of the welfare of the world unless the condition of women is improved. It is not possible for a bird to fly on one wing".**

Our paper describes about a "Self Defence Device" for Women's security. Women should not suffer any crimes against them. Therefore, we proposed a device which is low cost, easy maintenance and easy to carry. Our main focus is to propose a device in extensive or wide-ranging productions so that not even a single woman should feel unsafe while roaming alone or going out alone. In a public places like railway station, bus station, airports, malls, park each and every place, women can carry this device. For protecting them, we introduce a device which proposed to safeguard themselves at emergency period. The safety of women is a increasing Emergency in India and other countries. The primary issue in the handling of these cases by the police lies in constraints preventing them from responding quickly to calls of distress.

To aid in the removal of these distress, this project introduces the position sensor, vibration sensor and camera and this project that can act as a rescue device and protect at the time of danger. To detect the location of person that will enable us to take action accordingly based on GPS , GSM device, a multiple sensors can be proposed in Working principle of the device is to activate the system , it can tract the location of the user using GSM (Global System for Mobile Communication) and Raspberry pi based module is interfaced. For Tracking Information, the device includes with GSM and GPS which send a message with location of the user to the person who link with phone numbers and email. For an advance level of technology ,the device contains a camera to take an evidence which can be activated when the system is activated , it automatically start capture the incident and it will be send a mail of the captured image immediately to the corresponding person and also it send a SMS . For Self Defence, it causes a electric shock to the attacker by pressing a switch. This device is a real-time, portable, securable system that consists of a button that triggers the Raspberry-Pi, which sends the alert message, victim's current location with a recorded image of the crime and also produces a high frequency alarm to draw the attention of others. Although this device has been designed primarily for women security, it can also benefit other members of the society including elderly people, a girl child or anyone who faces an unsafe situation

The key contributions of the paper include:

- Face detection is included. Pi camera which captures the images and recognizes the unauthorized faces and it will be send a mail to the corresponding registered contacts
- An Electric shock generator is provided in the device for the self defence

BLOCK DIAGRAM

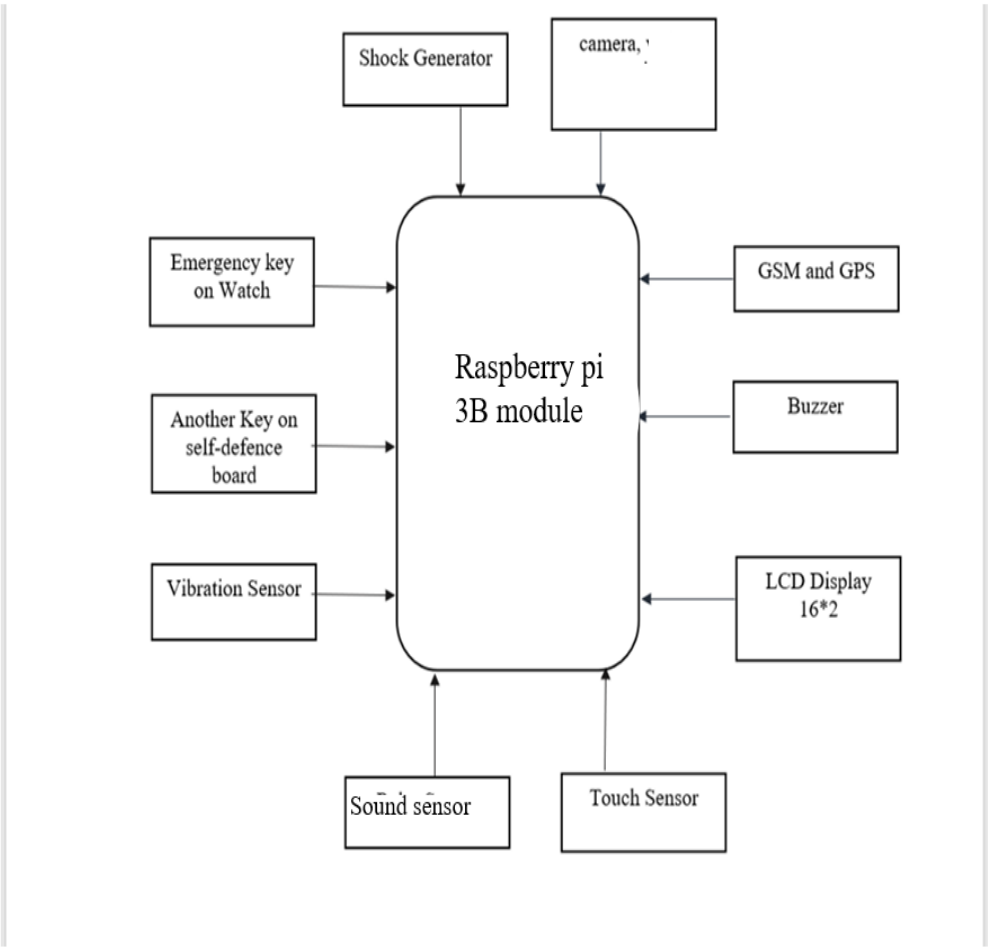


Fig: Block diagram of "ABHAYA"- A Woman's Self Defence Device using Raspberry pi.

II. WORKING MODALITY

Women in an anxiety can just press an emergency key. Women feel secured while using this device. While pressing an emergency key, a message as "IN DANGER" is sent to the particular registered numbers. This represents that Women is in trouble and "soon help is on its way!". A buzzer alarm can also be pressed by victim. This buzzer alarm excites for a specified period of time and makes beep sound to alert the nearby police stations, surrounding people etc. so that victim can get help from them. Another key is embedded in a self-defence board. After pressing that key, victim's location will be tracked and sent to registered contact numbers. These will be in the form of longitude and latitude values and this value are sent as messages. These messages are sent through GSM. These modules depicts us to give the information about victims address through Google maps. Along with these feature face detection also is added to the device which increase the security. The device contains a camera to take an evidence which can be activated when the system is activated, it automatically starts capturing the incident and it will send a mail of the captured image immediately to the corresponding person and also it sends an SMS. Hence this device provides the safety measure and gives hope to women/girl. It helps them to feel free and secured to work in their field. This system comprises of sensors, transmission modules and control modules co designed for particular applications. In addition to this, non-lethal shock will be given to the attacker. This is for self-defence against the attacker until the police arrive. This device also contains touch sensor to detect the touch by an attacker.

FLOW CHART

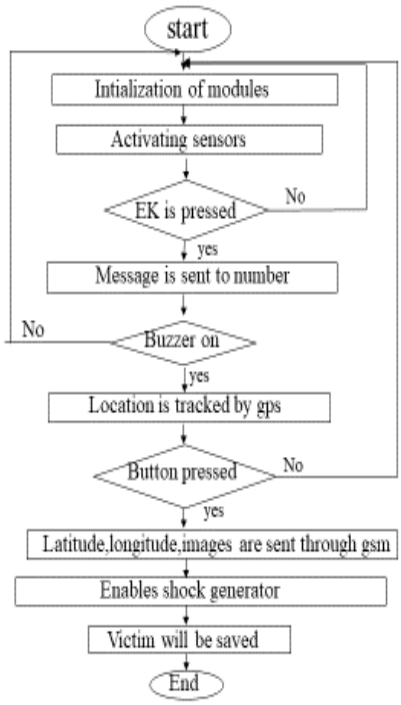


FIG **:** Flow chart of "ABHAYA"- A Woman's Self Defence Device using Raspberry pi 3B.

III.METHODOLOGY

The project is provided for the safe and security purpose of Woman. When the Woman is in panic situation, she can press emergency key which is embedded in a watch. Just by pressing an emergency key, a message "IN DANGER" will be sent to the registered number. The Woman can also press buzzer as to alert surrounding people and can get help from them. Another button will be pressed by the Woman which is embedded in a self-defence board. After clicking this button, location will be tracked with the help of GPS. Location in the form of longitude and latitude values is sent to the registered number by GSM. The Woman keeps her finger on pulse sensor which is used to measure heartbeat rate values and further, those values are sent to the registered number. Registered numbers can be the contact number of police, family members, relatives or friends. Until the registered number person arrives to save the Woman, she can enable the shock generator. Thus, non-lethal shock can be given to attacker and she can save herself. Touch sensor is mainly used to capture or record the physical touch on a device which enables device to detect touch, especially by a person. Soon the Woman can press emergency key and inform police so that they can reach quickly to save them and punish the attacker. Also face detection is provided in this device which captures the images of unauthorized persons and send it to the mailThis project aims for vanishing of harassments, which Women suffer every day.

Step 1: Initialize the Raspberry pi
Step 2: Deployment of modules and activation of sensors
Step 3: if EK = pressed, then
Step 4: message sent = "IN DANGER" to Registered number
Step 5: no alert message sent
Step 6: if Buzzer is pressed,
Step 7: alert the nearby people
Step 8: GPS for location tracking
Step 9: Camera captures the image and detects the authorized and unauthorized faces
Step 10: longitude, latitude, images values sent to RN

Step 11: Shock Generator enabled for time being,
Step 12: Police, friends, family arrives;
Step 13: Victim will be saved

III. HARDWARE SETUP

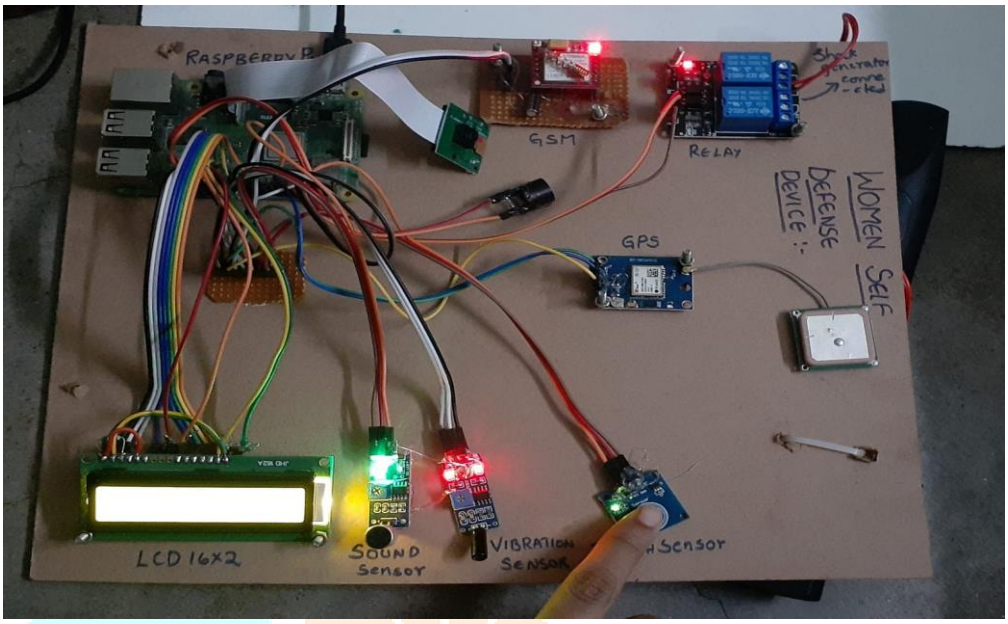


Fig: Hardware Implementation of "ABHAYA- A Woman's Self Defence Device using Raspberry Pi 3B

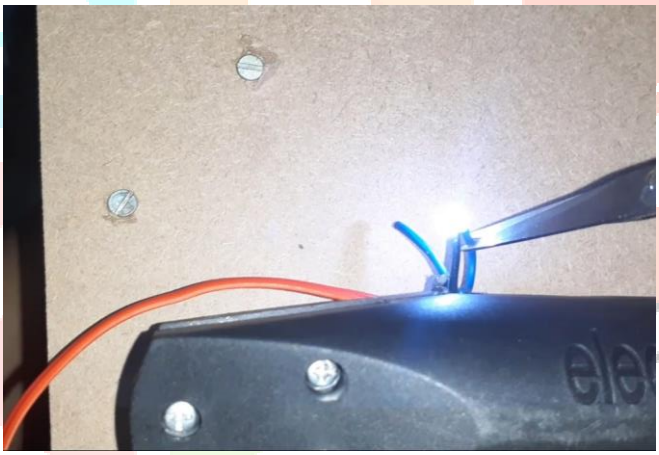


Fig: Shock Generator (Back view setup)

IV. SIMULATION

Booting the Raspberry Pi for the first time

- insert SD card in to raspberry pi b+ board
- On first boot you will come to the Raspi-config window
- Change settings such as timezone and locale if you want
- Finally, select the second choice: expand_rootfs and say 'yes' to a reboot
- The Raspberry Pi will reboot and you will see raspberrypi login:
- Type: pi
- You will be asked for your Password
- Type: raspberry
- You will then see the prompt: pi@raspberry ~ $
- Start the desktop by typing: startx
- You will find yourself in a familiar-but-different desktop environment.
- Experiment to start a new python project.

Fig: Interfacing of raspberry pi and LIDAR codes in VNC viewer

V. RESULTS

This section represents the performance of the project model with the use of hardware raspberry pi and to obtain results we are using python as the programming language with the use of this software we get the outcome of our project. Proposed guiding device is designed using Python software tool, Raspberry pi 3B, GPS module, GSM module and many results has been extracted for the safety purpose of Woman . The below shown figures are the results that has been extracted for the implemented design.

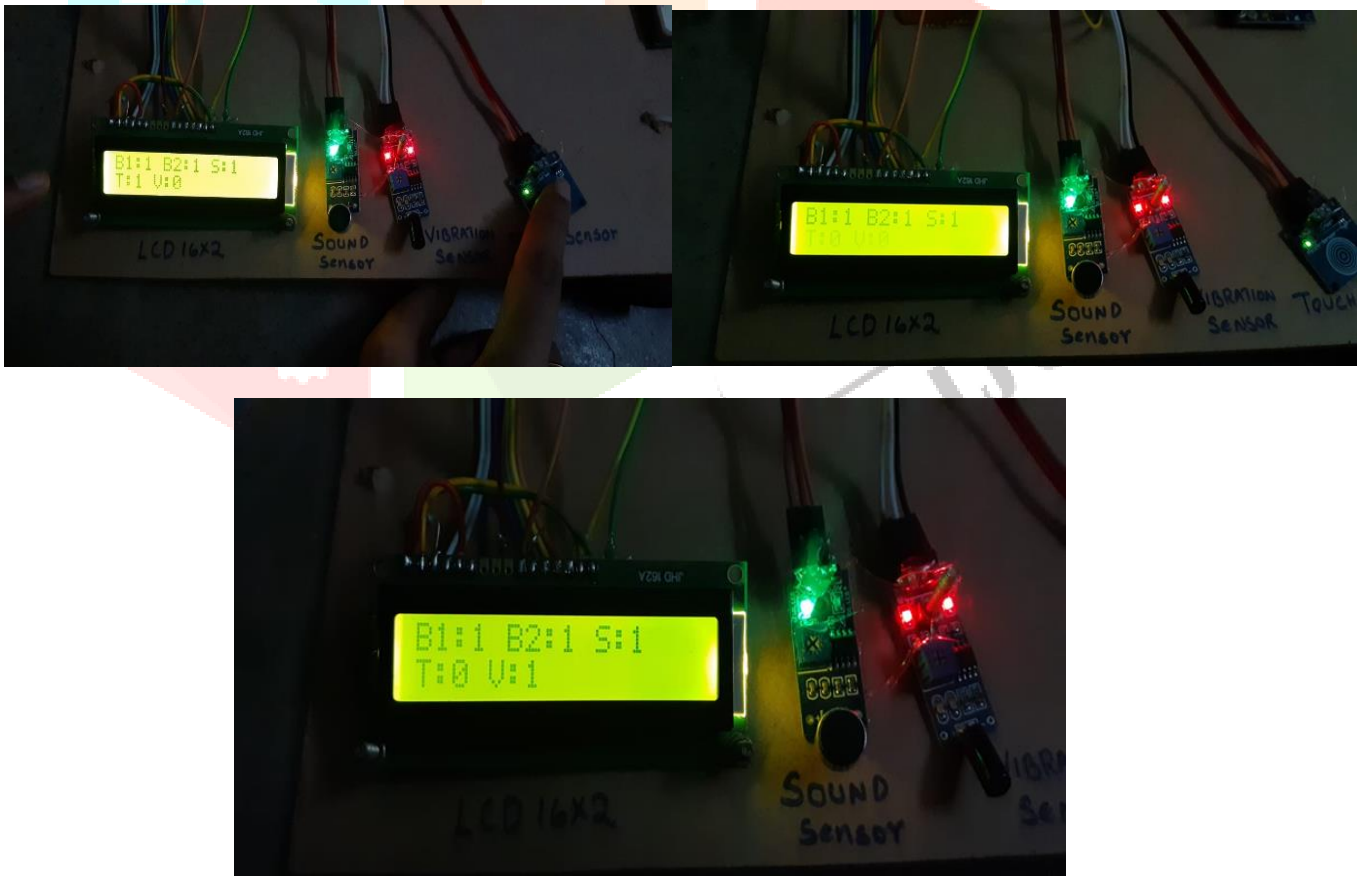
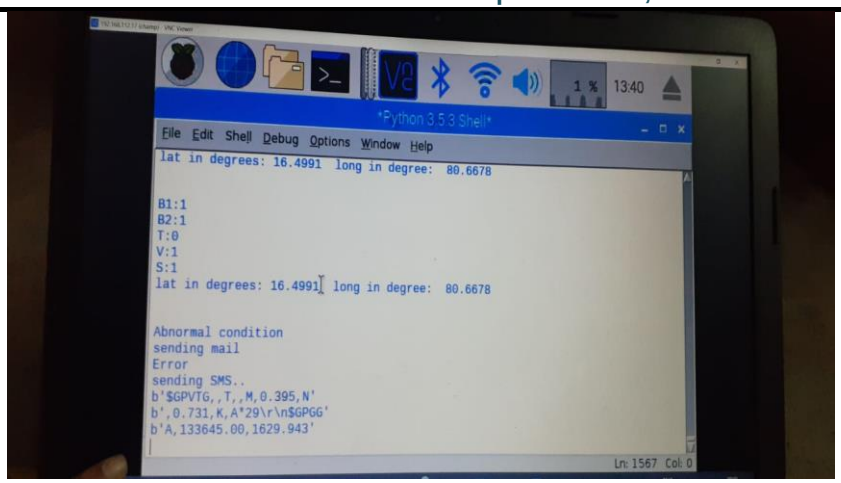
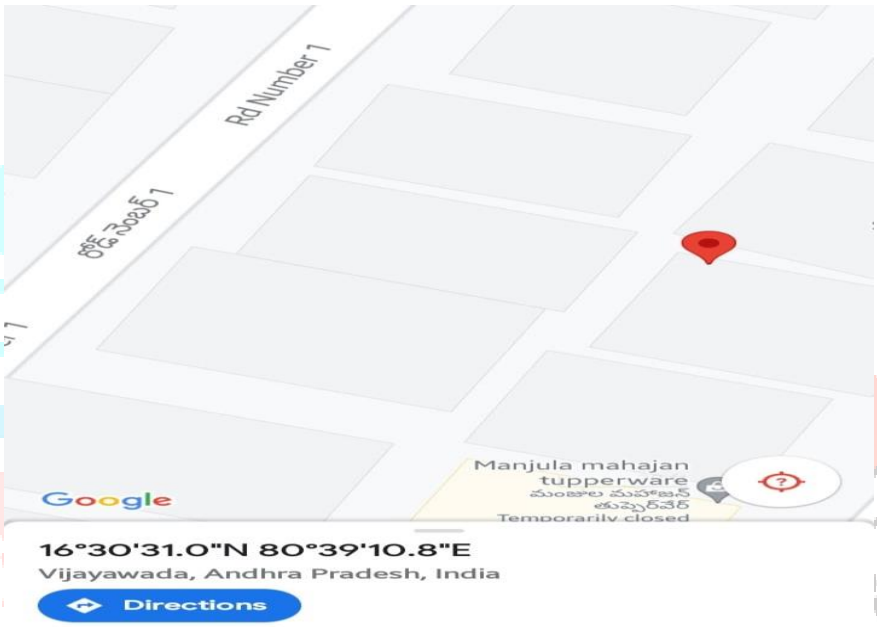


FIG:Touch sensor ,Sound sensor and Vibration sensor is activated and values are displays on LCD



http://maps.google.com/?q=16.5085,80.6530, when we tap the link which is sent to the mail, it shows the current location of the victim



Shows the current location of the victim.

FACE DETECTION

Unauthorized person faces are detected on the

VI. CONCLUSION AND FUTURESCOPE

In the epoch of present situation, our major intention is, "Women should always feel free to walk anywhere at any time. They should not suffer any kind of harmful situations". This project aims for Safety of Women. The Main purpose of the system is to have a fast process, at low cost of development, with an acceptable quality and an accurate tracking system. Many people cannot afford security device as expenses are more. Our intention is to provide large scale production of this device. So that anyone can carry this device like School girl children, women drivers, employed Women etc. The proposed system is developed to keep women from being criminalized. The system's main objective is to act fast and at a low cost. This paper will allow women to immediately identify themselves with the authorities concerned when she is in danger. GPS monitoring, SMS alerting, image capturing and even use of voice data is the purpose of the technique used. The warning will be sent both manually and automatically. This model can be additionally evolved further to make a wearable gadget. The design can be made more compact and lighter in weight so that it can be easily portable and user friendly.

This model can be additionally evolved further to make a wearable gadget. The design can be made more compact and lighter in weight so that it can be easily portable and user friendly. Technique of automatic SOS messages can also be developed without Human intervention in upcoming days. The Future Scope of this device lies in adapting this to the safety of the children, Vehicle Location tracking System, for physically challenged Girls and also for old age people.

REFERENCES

[1] Navya R Sogi, Priya Chatterjee, Nethra U, Suma V, "SMARISA: A Raspberry Pi based Smart Ring for Women Safety using IoT", Proceedings of the International Conference on Inventive Research in Computing Applications (ICIRCA 2018), pp. 451-454.

[2] Naeemul Islam, Md Anisuzzaman, Sikder Sunbeam Islam, Mohammed Rabiul Hossain, Abu Jafar Mohammad Obaidullah, "Design and Implementation of Women" in 2019 International Conference on Electrical, Computer and Communication Engineering (ECCE), 7-9 February, 2019

[3] Wasim Akram, Mohit Jain, C. Sweetlin Hemalata, "Design of a Smart Saftey Device for Women Using IoT", International Conference on Recent Trends in Advanced Computing 2019, ICRTAC 2019, pp.657- 662.

[4] Prof. Sunil K Punjabi, Prof. Suvarna Chaure, Prof. Ujwala Ravale, Prof.Deepti Reddy, "Smart Intelligent System for Women and Child Security", 2018 IEEE, pp. 451- 454.

[5] CHarikGiran, KarthikMenasinkai,SuhasShirol, "Smart SecuritySolutionfor Women based on Internet Of Things(IOT)", 2016 IEEE, pp.3551-3554.

[6] Sindhu.K, Dr. R. Subhashini, Dr.S. Gowri, J.S Vimali, "A Women Safety Portable Hidden Camera detector and jammer", International Conference on Communication and Electronics Systems (ICCES 2018), pp.1187-1189.

[7] A. Z. M. Tahmidul Kabir, Al Mamun Mizan, Tasnuva Tasneem "Safety Solution For Women Using Smart Band And CWS App" 2020 17th International Conference on Electrical Engineering/Electronics, Computer, Telecommunications and Information Technology (ECTI-CON).

[8] Srinivas K, Suresh Kumar U S, Sri Nidhi D V, Meenakshi G, Vinutha " SMART SAFETY BELT" IRJET 2021.

[9] Bysani Sai Yaswanth, Darshan R S ,Pavan H, Srinivasa D " Smart Safety and Security Solution for Women using kNN Algorithm and IoT" IEEE 2020.

[10] Muskan , Teena Khandelwal, Manisha Khandelwal, Purnendu Shekhar Pandey, "Women Safety Device Designed using IoT and Machine Learning",2018 IEEE, pp. 1204- 1210.

[11] Md. Raseduzzaman Ruman, Joybrota Kumar Badhon, Saikat Saha, "Safety Assistance and Harassment Prevention for Women", Proceedings of the 20195th International Conference on Advances in Electrical Engineering (ICAEE), PP. 346-350.

[12] Tejonidhi M. R, Aishwarya, Chaitra K. S, Dayana M. K, Nagamma H, "IOT Based Smart Security Gadgets for Women's Safety", 2019 1 st International Conference on Advances in Information Technology,pp.348-352.

[13] J.K.Thavil, V.P.Durdhawale, P.S.Elake, " Study on Smart Security Technology for Women based on IOT", International Research Journal of Engineering and Technology (IRJET) Volume: 04 Issue: 02 | Feb 2017.

[14] Muskan, Teena Khandelwal, Manisha Khandelwal, Purnendu Shekhar Pandey " Women Safety Device Designed using IoT and Machine Learning" IEEE Smart World, Ubiquitous Intelligence & Computing, Advanced & Trusted Computing, Scalable Computing Communications, Cloud & Big Data Computing, Internet of People and Smart City Innovations, ISBN: M978-1-5386-9380-3, 2018.

[15] Kalpana seelam, K.Prasanti, "A Novel Approach to Provide Protection for Women by using Smart Security Device" IEEE International Conference on Inventive Systems and Control , ISBN: 978-1-5386-0807-4, 2018.

[16] Mohamad Zi kriya, Parmeshwar M G , Shanmukayya R Math, Shraddha Tankasali , Dr.Jayashree D Mal lapur " Smart Gadget for Women Safety using IoT", International Journal o f Engineering Research & Technology, ISSN: 2278-0181, 2018

[17] Jismi Thomas, Maneesha K J, Nambissan Shruthi Vijayan," TOUCH ME NOT-A Women Safety Device" International Research Journal of Engineering and Technology, ISSN: 2395-0056 Volume: 05, 2018

[18] Pragna B R, Poojary Praveen Mahabala, Punith N, Sai Pranav,Shankar Ram " Women Safety Devices and Appl i cati ons" International Journal o f Engineering Research and Technology Vol.7 Issue 07, 2018.

[19] A.Priyadarshini, R.Thiyagarajan, V.Kumar, T.Radhu, "Women Empowerment towards developing India",IEEE Conference in Humanitarian Technology Conference,21-23 Dec 2016,Agra,India.

[20] Nishant Bhardwaj and Nitish Aggarwal " Design and Development o f - Suraksha" _ IEEE International Journal of Information & Computation Technology, ISSN 0974-2239 Volume 4, 2014.

[21] Nandita Viswanath, Naga Vaishnavi Pakyala, Dr. G. Muneeswari," Smart Foot Device for Women Safety" IEEE Conference, ISBN:978- 1-5090-0931-2, 2016.

[22] D. G. Moni sha, M. Moni sha, G. Pavi thra and R. Subhashi ni " Women Safety Device and Application - FEMME" Indian Journal of Science and Technology, ISSN : 0974-5645, 2016.

[23] Dhruv Chand, Suni l Nayak, Karthi k S. Bhat, Shivani Parikh, Yuvraj Singh, Amita Ajith Kamath "A Mobile Application for Women's Safety: WoSApp" IEEE conference-, ISBN: 978-1-4799- 8641-5, 2015.

[24] Vallidevi Krishnamurthy, Saranya. S, Sharanya Srikanth, Simran Modi, "M-WPS: Mobile based Women Protection System" IEEE International Conference on Energy, Communication, Data Analytics and Soft Computing ISBN: 978-1-5386-1887-5, 2017.

[25] Dantu Sai Prashanth, Gautam Patel, Dr.B.Bharat hi " Research and development o f a mobi le based women safety application with realtime database and data-stream network" IEEE International Conference on ciruits power Aand computing technologies, ISBN 978-1- 5090-4967- 7, 2018.

[26] Sankalp Mehta, Sachin Janawade, Vinayak Kittur, Suraj Munnole, Sandhya Basannavar " An Androi d Based Appl i cati on or Women Safety" International Journal of Engineering Science and Computing, 2017.

[27] TakuKomura,RynsonW.H.Lan,MingC.Lin,AditiMajumde r,DineshManocha,Wei Wei Xu,"Virtual Reality Software and Technology",IEEE Computer Graphics and Applications,Volume: 35, Issue: 5, Sept.-Oct. 2015

[28] A.Helen,M.FathimaFathila,R.Rijwana,Kalaiselvi V.K.G,"A Smart Watch for Women Security based on IoT Concept",2nd International Conference on Computing and Communications Technologies(ICCCT),23-24 Feb 2017,Chennai,India.

[29] Ravi SekharYarrabothu,BramarambikaThota,"Abhaya: An Android App for the Safety of Women",India Conference(INDICON),17-20 Dec 2015,New Delhi,India.

[30] AkashMoodbidri,HamidShahnasser,"Child Safety Wearable Device",International Conference on Information Networking(ICOIN),11-13 Jan,2017,Da Nang,Vietnam