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WOMEN'S SAFETY USING IOT

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Abstract - *In today's world women are less secure and have many issues regarding their security purpose. Women's Safety hence, has become a very important issue due to rising crimes against women these days. Women face a lot of challenges every day and there is a need to construct a system to ensure women's safety. Although there are many existing systems for security purpose need of advanced smart security system is increasing day by day. In order to overcome such problems smart security system for women is implemented. This system describes about safe and secure electronic system for women which comprises of Arduino Nano and sensors such as temperature sensor, accelerometer, pulse rate sensor. A buzzer, GSM and GPS are also used in this project. When the woman is in threat, the device senses the body parameters like heartbeat rate, change in temperature, and the bending movement of the victim by accelerometer. When the sensor crosses the threshold limit the device sends the location of the victim using the GPS module. By using the GSM module, the victim's location is sent to the registered contact number.*

***Key Words*: Safety System, GPS, GSM, Arduino Nano**

1. INTRODUCTION

In today's world, women come across many situations that make them feel insecure and unsafe. We come across many headlines reporting cases of sexual assault, molestation, sexual harassment, rapes, trafficking, ill treatment of women in houses, violence against women in remote areas etc. Women's Safety hence, has become a very important issue due to rising crimes against women these days. Women face a lot of challenges every day and there is a need to construct a system to ensure women's safety. Although there are many existing systems for ensuring security, the need of advanced smart security system is increasing day by day. In order to overcome such problems smart security system for women is implemented. This system describes about safe and secured electronic system for women that is designed merely to serve the purpose of providing security to women so that they never feel helpless while facing such social challenges.

2. LITERATURE SURVEY

"Smart Foot Device for Women Safety" by N.Viswanath, V.Pakyala III year, Department of Information Technology, G. Muneeswari Associate Professor, Department of Information Technology, SSN. College of Engineering, Chennai dated 2016. During this paper, a sensible device for women's safety is developed. This smart device is going to be clipped to the user's footwear and might be triggered discreetly. When one foot is tapped behind the opposite fourfold, an alert is shipped via Bluetooth Low Energy communication to an application on the victim's phone which is programmed to send a message asking for the help with the location of the device attached. The Na¨ıve Bayes classifier is used to obtain the results and this low cost device showed an overall accuracy of 97.5 percent. The primary step is that the clipping of the device to the user's footwear. The next step is the establishing the Bluetooth connection between the device and the Smartphone of the user. The device must be paired with the user's Smartphone to work in conjunction with the application. Hence, no unauthorized user can connect to the device. Since BLE (Bluetooth Low Energy) is being employed, the phone can be connected to the device without much loss within the battery life. The acceleration sensor present on the device will sense the acceleration values in x, y and z axes once every second. When the user taps her left foot from the back using the right foot, the accelerometer senses a change within the reading within the z axis and an alert is shipped to trigger the user's phone via BLE connection. When consecutive taps are detected, an alert is shipped 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. The application can further be programmed to inform authorities. [1]

"A Smart Watch for Women Security based on IOT Concept Watch Me" by M. Fathila, A. Helen, R.Rijwana, Students, Department of Information Technology, Kalaiselvi. V.G Asst.Prof, Department of Information Technology, Sri Sairam Engineering College, West Tambaram, Chennai - 600044, affiliated to Anna University, Tamil Nadu, India dated 2017. This paper introduces a new technique via smart watches. When a women or child wearing this 'watch me' are in a situation of sexual or vulnerable attack, the sensor present in it captures the heart beat rate of a person which will be high at the moment and gets activated, this will not only provide an alarm sound to the attention of nearby people, it will

automatically make an call to the registered contacts and also through GPS/GSM it will detect the nearby police station and alert them, so it will be helpful for police to arrive at the spot by tracking the location using GPS, such a system will lead to safer and better environment. The basic concept on which the whole process revolves is of triggering the heartbeat sensor when it attains the targeted heart beat rate and time period. As soon as the heart beat sensor gets activated it makes an high pitch alarm sound to alert the surrounding people to grab their attention. Then watch me immediately sends an alert signal to the nearby police station. The cops can trace the location by GPS tracker which is updated to them periodically. Then it also sends an alert message to the already saved emergency contacts so that they can get information that the person wearing watch me is under danger. [2]

"Smart Security Solution for Women based on Internet of Things (IOT)" by G.Harikiran, Electronics and Communication dept. BVBCET Hubli-23, India, K.Menasinkai, S.Shirol, ECE Department, BVBCET, Hubballi-31, India dated 2016. This system proposes a wearable "Smart band" which continuously communicates with Smart phone that has access to the internet. The application is developed and filled with all the required data which includes Human behavior and reactions to different situations like anger, fear and anxiety. This creates a signal which is transmitted to the smart phone. The access is provided for the software or application to GPS and Messaging services which is programmed in such a way that whenever it receives emergency signal, it can send help request along with the location co-ordinates to the nearest Police station, relatives and the people in the near radius who have the application. The device is connected to the smart phone through a specially designed application that acts an interface between the device and the phone. The data collected by the smart band such as the pulse rate, temperature of the body along with the motion of the body is continuously monitored by the application which is pre-installed in the phone. The app is programmed in such a way that it uses the GPS of the smart phone to track the co-ordinates and monitor the movement for easy tracking. The help message is shipped to the family members and the nearest police station through the GSM facility that is inbuilt in the phone. The application provides a social platform so that people who have this particular app installed on their devices get the messages instantaneously so that they too can contribute in justice being delivered just in time. This feature is performed by using internet facilities of the phone of the user. Control Unit collects information which is received from smart wrist unit and GPS receiver. All these information is send by GSM module, from control unit to base station. The data from human using body temperature sensor, pulse rate senor and switches is collected by Wrist switch. The RF module sends data from wrist unit to the control unit. [3]

"A Novel Approach to Provide Protection for Women by using Smart Security Device" by K.Seelam Asst.Prof. Department of EIE, K.Prasanti Asst.Prof. Department of EIE, V.R. Siddhartha Engineering College dated 2018. This paper explains safe and secured electronic system for women which comprises of an Arduino controller and different sensors. When the women is in dangerous situation, the device percepts the body parameters like heartbeat rate, change in temperature, the movement of victim by flex sensor, MEMS accelerometer and the victim's voice is sensed by sound sensor. When the sensor exceeds the threshold limit, the device gets activated and traces the location of the victim using the GPS module. The victim's location is sent to the registered contact number by GSM module. The principle behind this is to detect body parameter signals from the respective sensors which are in contact with the women who are in threat condition and hence after detection of the signals, the sensor sends the output electrical signals to the controller. The sensors which are involved in the proposed system are flex sensor, temperature sensor, MEMS accelerometer, sound sensor, pulse rate sensor. Each sensor is used to detect signals of human (women) who is in abnormal situations. When the values of any sensor crosses the threshold limit it is indicated that the women is in threat and according to victim condition, when 4 sensors out of 5 sensors crosses the threshold limit the buzzer is activated. Hence the GPS transmits the location to the Arduino and then the Arduino transmits the signal to the GSM. Finally the alert message "I am in danger" along with the latitudinal and longitudinal location is send to the registered contact number. Thus activation of sensor and buzzer traces the location of victim using GPS and with the help of GSM 800L used sends the message of location to the corresponding contacts with a 10secs delay. [4]

"Design of a Women's Safety Device" by D.Chitkara, Department of Electronics and Communication, B.Parshuram Institute of Technology, affiliated to Guru Gobind Singh Indraprastha, University Delhi, India, N.Sachdeva, Y.Vashisht, Department of Electronics and Communication, Northern India Engineering College, affiliated to Guru Gobind Singh Indraprastha, University Delhi, India. The device has been made in the form of a glove and is completely electronic. The person using the glove only has to activate the circuitry installed within the glove to attack the oppressor and protect herself from any danger. The circuitry is mounted within the

glove between the protecting and insulating layers of the glove. The outer portion of the circuit has been well insulated, so that it does not cause any danger to the wearer and the person using it is completely safe. The conductive layer on the palm side on activation gives a daunting shock to the oppressor. The shock will be tight and frightening and only muscle contraction will take place. The shock is not lethal but has a profound impact on the muscular activity of the oppressor. Thus the wearer can easily overpower any aggressor with absolute ease and no apprehension. 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. The device has gone through long periods of testing with constant improvisations in design and outcomes. The device is ready for effective implementation. The palm side of the glove is the conducting layer which can be activated by the wearer on encounter of any violent activity. The device is in the form of a glove consisting of electronic circuitry. The circuitry is situated near the wrist portion of the glove safely secured and fully insulated. 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 glove will be insulated in a manner such that it would not harm the person wearing the glove. [5]

"SMART GIRLS SECURITY SYSTEM" by Prof. B.Chougula , A.Naik , M.Monu , P.Patil and P.Das KLE's College of Engineering and Technology, Belgaum, Dept. of Electronics Communication. The paper explains the security system which is designed to serve the purpose of providing security to women so that they never feel helpless while facing such social challenges. The system contains various modules such as GSM shield (SIM 900A), Arduino ATMega328 board, GPS (GY-GPS6MV2), screaming alarm (APR 9600), a set of pressure sensors for activation and power supply unit. The developed system is to design a portable device which resembles a normal belt. When the threshold value of the pressure sensor crosses, the device will get activated automatically. The location of the victim will be tracked immediately with the help of GPS and emergency messages will be sent to three contacts and one to police control room every two minutes with updated location. The screaming alarm unit will be triggered and will send out sirens to call out for help. The system is also capable of generating an electric shock to harm the attacker which may help the victim to escape [6]

"PROTECTION FOR WOMEN USING IoT SMART DEVICE WITH LOCATION AND PARAMETERS" by K.Priyanka, PG Student, Department of ECE, PGPCET, Namakkal S.Purushothaman , A.Vaniprabha, C.Sathiyavel Assistant Professor, Department of ECE, PGPCET, Namakkal. In this proposed system the women security is achieved based on the IoT device which is connected to the number of mobile phones or systems. In the previous implemented systems used the GSM and GPS modules to send the location and the alert messages to only predefined mobile numbers. This developed system we send the message and the location to all connected IoT devices. The proposed system consists of power supply, Pulse rate sensor, Temperature, Flex sensor, Sound sensor and Accelerometer sensor, Microcontroller, WIFI shield enabled with GPS, GSM, LCD, and Buzzer. The information of the victim is updated from the sensors. The heart beat rate is given from the pulse rate sensor, body temperature is given from the temperature sensor, sound from the victim is sensed from sound sensor, the body flexibility is from flex sensor and the movement of body is captured by the accelerometer sensor. Then this values are checked with the threshold value which is predefined in the controller when it reaches that value. Then the microcontroller will send the information to the GSM and IoT device using WIFI shield which having the internet connection to the device and to all the the connected devices such as mobile phones and proper translation of location information by clicking the Track On Map option in the IoT device screen. So we can easily recognize the location and the victim's current status when she is normal or abnormal from the body parameters. It is also very useful for adults and unhealthy people [7]

"Women Safety Measurement Tracking System Using Raspberry Pi" by R.Meghana, K.G. Rashmi, H.Keerthana, S.Saranya UG Scholar, ECE, Department, RR Institute of Technology, Bangalore. L.Niranjan Asst. Professor, ECE, Department, RR Institute of Technology, Bangalore. In this paper, the proposed belt model will provide Women need to be safe, so they can do this late at night jobs. The proposed model contains various sensors Continuous measurement of different parameters. The Raspberry Pi controller as the primary source for receiving input signals from the sensors so that the sensors receive input signals from threatened or dangerous or abnormal people in case. The sensors used are temperature LM35 sensors, MEMS accelerometers, heartbeat sensors, flexible sensors and acoustic sensors. GSM is used to send an alert message to the registered contact number. Track the location of people (females). The principle behind this is to detect the body parameter signal from the corresponding sensor in contact with the negative in a threat state such that after detecting the signal, the sensor sends an electrical signal to the controller. The Raspberry Pi receives the signal from the sensor as an analog input signal, so it

generates output parameters for each sensor. The sensors are used to detect the signal of a person (female) who is in an abnormal situation. If the value of any sensor signal exceeds a threshold limit indicating that the woman is in a threat state and depends on the victim condition, the buzzer is activated when 4 of the 5 sensors exceed the threshold limit. Therefore, the GPS sends the location to the Raspberry Pi, which then sends the signal to GSM. Finally, the registered contact number will receive the alert message "I am at risk" and the latitude and vertical position. Thus, the activation of the sensor and buzzer uses GPS to track the victim's location and, with the help of the GSM 800L used, sends the location message to the corresponding contact with a 10 second delay [8]

"SMART INTELLIGENT SECURITY SYSTEM FOR WOMEN" by G.Miriyala B. Tech, Department of ECE D.M.S.S.V.H College of Engineering, Machilipatnam, Andhra Pradesh, India, P.Sunil Assistant Professor in E.C.E Department D.M.S.S.V.H College of Engineering, Machilipatnam, Andhra Pradesh, India R.Yadlapalli, V.Lakshmi Pasam, T.Kondapalli, A.Miriyala B. Tech, Department of ECE D.M.S.S.V.H College of Engineering, Machilipatnam, Andhra Pradesh, India. The proposed system is designed to create a portable device which resembles a band on wrist which consists of Pressure switch, Raspberry pi 2, GSM modem, GPS receiver, Screaming alarm, Tear gas, and Live Steaming Video. If the Pressure switch is applied, then the device will be activated automatically with in a fraction of milliseconds. Immediately the location of the victim will be tracked and messages will be sent to emergency contacts. The screaming alarm unit will be triggered and will produce siren sound to call out for help. The attacker can be harmed with the help of the Tear gas so that victim can escape. The faces of the attacker can be detected by Live Streaming Video will make to process the situation of the victim using a preferred IP address. Live streaming video using webcam Tear gas release and are incorporated in the spectacles which act as a new weapon for smart technology. [9]

"Smart Band for Women Security Based on Internet of Things (IOT)" by S.More, R.Borate, S.Dardige, S.Salekar, U.G.Students, Department of Computer Engineering, NES College of Engineering Pune, Maharashtra, (India) Prof. D. S. Gogawale, Professor, Department of Computer Engineering, NES College of Engineering Pune, Maharashtra, (India). The Main purpose of the system is to provide security and safety. For that one smart band and android application is developed. The project automatically works on pulse sensor and temperature sensor. The pulse readings of that women are used by the application to protect her. If she is in any danger situation then emergency message is send to the family member and nearby police station with the GPS location of victim. Also this emergency message is send on application so it is provide social platform.. In this paper we will include comparing of data from the sensors with the training dataset, if variation occurs then message will be send to nearby police, family, friend along with the GPS location to provide the security to the women in danger. The women will be held with wearable pulse rate sensor and temperature sensor. The the sensor per 10 sec will be sent to the server. The server will consist of training data set with normal values of pulse rate and temperature according to the age group. If any abnormal value is encountered then an alert message will be sent to the women holding the wearable device, considering few situations like she might be in stress or jogging. If women doesn't respond in given time then 3 alert messages will be send to her family member, her friend, nearby police station along with her GPS location. But if her reply says that she is Ok then the flow of system will stop in normal working way. [10]

3. PROPOSED SYSTEM

For the implementation plan of the system, the different sensors which are used in the system are implemented and tested separately. The implemented system includes three sensors, ADXL Accelerometer, Pulse Rate Sensor and Temperature Sensor LM35.These are implemented using Arduino Nano. A threshold value is set for all the sensors. This value fluctuates when the victim faces any danger and is captured by the sensors. The system also includes a buzzer which buzzes when the threshold value is crossed by any one of the sensors. The sensors are connected to an LCD display. When the sensors cross the threshold value then a message is displayed on the LCD screen. The system also uses GSM module to send SMS on the registered contact numbers. It also uses GPS system to send the location of the victim to the registered number.

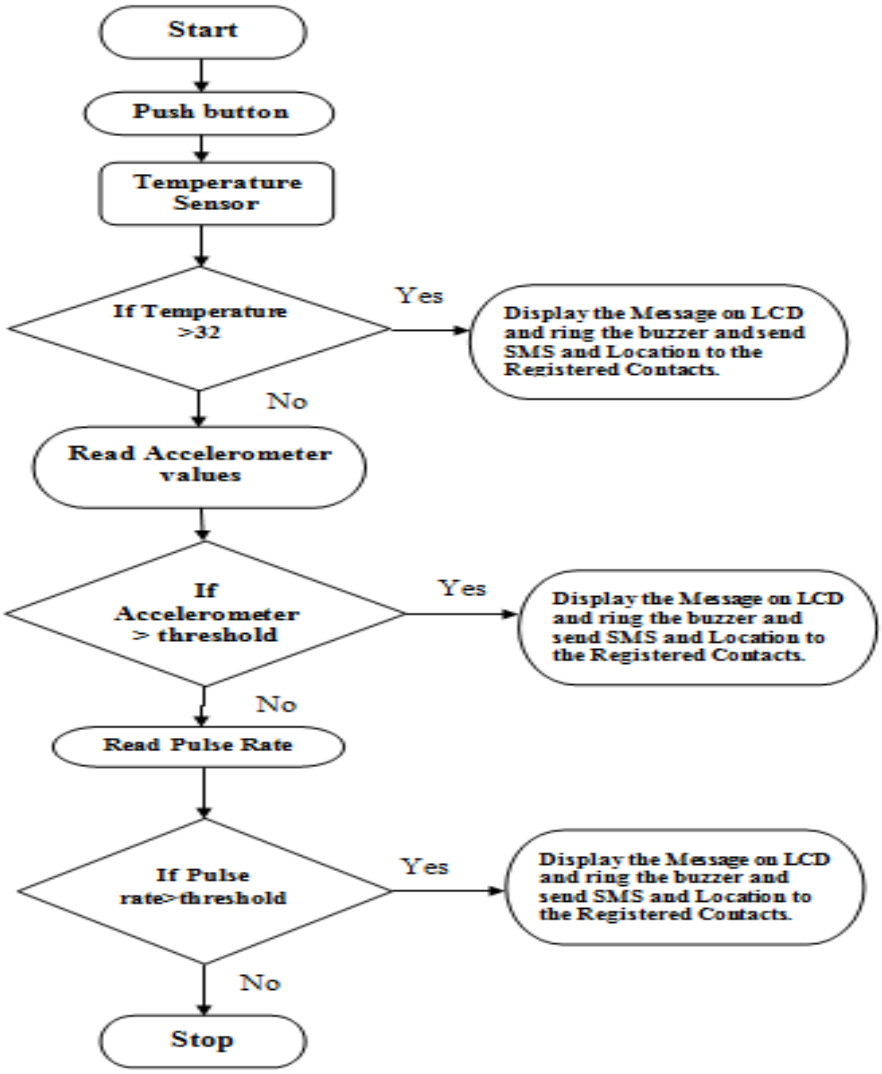

Fig 1: Flowchart

4. CONCLUSION

The main goal of this project is to ensure that every woman in the society feels safe and secure while travelling at night, on lonely roads, while going to schools, colleges, workplaces, etc. Implementing real time application and an upgraded device, we can solve the problems to an extent. With further research and innovation, it can be used to safeguard the women in critical conditions, as women are facing many problems regarding their security. This application is useful to avoid cases like rapes and any perverts teasing girls, girls being stalked or harassed. Thus we conclude that we have been able to review different techniques that have been used over years regarding women safety. On the basis of literature review carried out we proposed a system which will act as a safety gadget for the women and may help her to give the information of her whereabouts to the people around when in danger. In today's scenario, every woman faces an issue regarding her safety due to rapidly increasing harassment against women. This system will help women to overcome their fear in going out and pursue their careers and work.

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