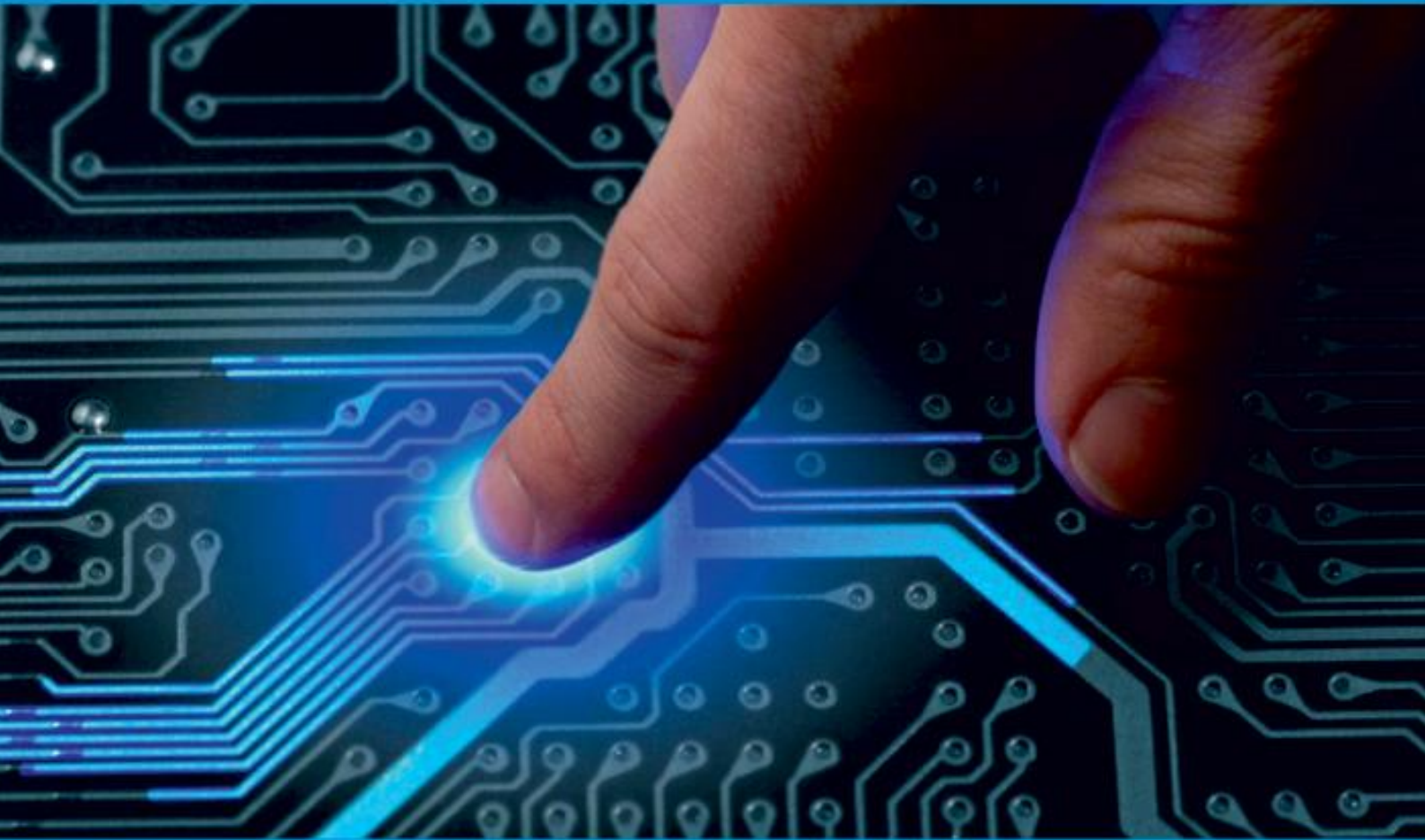




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# Smart Solution for Women Safety using Internet of Things

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**ABSTRACT:** Women in today's society are up against a myriad of challenges regarding their safety. The application that is being suggested has access to monitor position, and it will transmit notifications to neighbouring police stations as well as the phone numbers that are being scanned. This application is not only used for situations such as assaults and any perverts tormenting females, but it also helps them from any bad condition or any health problem like abruptly collapsing. For example, this application helps them from any bad condition. The victim's position can be tracked using GPS, and communications can be sent to the local police station along with the victim's relations' phone numbers. Additionally, the location of the victim can be sent to the nearby police station. This application assists women in overcoming their anxiety associated with getting out and engaging in activities that they enjoy.

**KEYWORDS:-** Internet of Things, Women Security, Body sensors, Arduino, Raspberry pi, GPS.

## I. INTRODUCTION

The Internet of Things, also known as cloud computing and sensors, is a term that refers to the physical objects through which all technological devices are networked. The Internet of Things maintains a very high level of confidentiality. Developing a protection system that is smart-based can be of great assistance to individuals. Because of the way the instruments were designed and developed, there is an automated reaction even though there are no initiating controls. People who use this approach have a better chance of overcoming challenges such as ensuring the safety of women and building smart cities. For reasons relating to safety, a number of instruments, including GPS, vibration sensors, inclination sensors, heartbeat sensors, and flow sensors, are utilised. The position can be determined with the help of the Satellite. IoT is used to transmit the position and communication to neighbouring police station if there is any significant change in the heartbeat level. A heartbeat monitor is used to determine the heartbeat level. If there is any form of intimidation, there is a possibility that there will be bending, inclinations, disturbance, and any bending will be detected by the tilt sensor. If there are different alterations than the message is sent, there will be bending. In the system that is being suggested, components such as Arduino and Raspberry pi3 are utilised.

The application that is being suggested provides a protection system that is intended to assist women in carrying out their work in a comfortable manner, as well as allowing them to go to the locations of their choosing and carry out their work in a comfortable manner. Bodily monitors and Satellites are used to trace a person's position and communicate with the local police headquarters as well as with family members.

## II. LITERATURE SURVEY

The use of network mobile solutions for biofeedback monitoring, as demonstrated by Orlando Pereira et al. (2010), substantiates the theory that body monitors should be utilised. This effort includes the implementation of the SHIMMER firmware as well as the software for bluetooth. This effort has some restrictions, such as the requirement that bluetooth be constantly connected to the phone and the inability to use it if the phone is misplaced [1]. The research conducted by Mirjam Juttila et al. (2014) validates the novel idea of a sensing garment that can be worn by toddlers. This task includes the Creation of a Safety Vest, the Implementation of a Gateway, and the Development of Sensing Web Elements. The fact that the apparatus that was used was of such a large scale meant that it could not be transported to locations that were accessible to everyone [2]. In his paper titled "Development Of Prototype Smart Home Intelligent

"Illumination Management Infrastructure Using Sensors Onboard A Mobile Computing System," published in 2016, Samuel Tanga provides evidence that supports the idea that sensors are useful. It is now possible to implement the "Luminaire controlled by the Arduino microcontroller" system. The fact that wireless or internet connectivity is required in order for this concept to be implemented presents a challenge [3]. The risks associated with information security can endanger people's lives, specifically in the medical industry. [4].

When a piece of software has more functions as well as an increased level of protection, the amount of time it takes to execute the software increases, and the software itself becomes less usable [5]. An additional layer of protection can be added to the application through the use of fingerprint identification, which also helps to prevent erroneous positives [6]. The Dynamic Cognitive System demonstrates how the application can be secured against flaws and assaults originating from the social network [7]. In his work that was published under the title "Secure lone Distress Alert system for female security using IOT," Parthsethi et al(2018) provides evidence that supports the use of alarm systems. "Central controller, GSM module, GPS module gesture control System, smart phone communicating". There is no automated recognition, which is a limitation of this effort, so the user must manually press on the mobile device [8]. The research conducted by Phooshkar Rajiv et al. (2016) validates the hypothesis that "Email in email-based Remote access and surveillance system for smart home infrastructure" should be used. This effort includes the implementation of "Email from embedded device to user and respond processing." The application is quite pricey, and neither GPS nor GMS are utilised in this work, which are two of the work's constraints [9]. In their study titled "IoT and cloud computing based dam surveillance and alert system in mines," Enji Sun et al. (2011) provide evidence that Internet of Things and cloud computing are viable concepts. The constraints the fact that it is not automated. It should be activated by movement that comes from the outside [10].

Zhen Yan et al. (2014) provides evidence that supports the hypothesis that his work makes use of the Internet of Things. His work includes the incorporation of a model of a system for the Internet of things. The subpar quality of the work and the lengthy amount of time required to put it up are both limitations of this work[11]. Alessio Botta et al. (2015) provides evidence that supports the hypothesis that cloud computing and the Internet of Things can be integrated: A questionnaire. This effort has included the implementation of RFID and portable devices, as well as cloud processing. The fact that the system has such inadequate functionality is one of the constraints of this effort. It is prohibitively expensive for those with limited financial resources [12]. In his study, Luigi Atzori et al. (2012) demonstrate that the novel idea of the social Internet of Things is correct. It is his contention that the cloud and the Internet of things are intertwined. The fact that the operation of the system is not specifically described in this book is one of its flaws [13]. In his work, S.Sicari et al. (2014) demonstrate that the newly proposed concept of "security and confidence in the internet of things" is valid. He asserts that this effort includes security, confidence, privacy, and identification measures all of which have been implemented. This study has some shortcomings, such as the fact that it demonstrates security and identification of the Internet of things; however, it does not demonstrate how devices are networked [14]. In his study, Andre Gloria et al. (2017) demonstrate that the novel concept of IOT pathways is valid. In this body of work, the idea of Internet of Things interfaces as well as numerous communication mechanisms have been incorporated. This work has some shortcomings, such as the fact that it requires a significant amount of laborious effort to accomplish, and the implementation of the application itself is also very expensive [15]. The research done by Carolyn Whitzman et al. (2009) demonstrates that his novel concept of women's protection is accurate. He asserts that there should be some safety precautions that the women in the community should take in order to protect themselves. The only topic that is covered in this work is the safety of women, but the actual gadget has not been tested [16]. This is one of the work's shortcomings. In his paper titled "Connecting human's report with networks and big data for sustainable health surveillance," Minchen et al. (2016) provides evidence that demonstrates the viability of the concept of smart clothing. Intra smart clothing technology, communications for Inter smart clothing, and the implementation of sustainable health surveillance for persistent illnesses [17].

In the article "AN IoT security model design and evaluation of Android based wireless Integrated device for health surveillance," which was written by Mandeep Singh (2015), the wireless integrated device is demonstrated. In order to expand the capabilities of telemedicine, a device that measures bodily parameters using a collection of monitoring algorithms and a mobile phone has been developed. The fact that this is an android application means that the sufferer is unable to access their phone and click on the application to request assistance [18]. This is one of the limitations of the concept. In his work titled "Integration of wearable solutions in AAL environments with movement assistance," Susana P. Costa(2015) provides evidence that wearables are more than just a theory. It has been decided to implement AAL, which provides peripheral solutions for a mobile environment. One of its limitations is that, despite the fact that it is a wearable device, all that is required to initiate the wearables is a click [19].

In his article titled "Roadmap to addressing security and purity problems in RFID system," which was published in 2007, John Ayoade provides evidence that demonstrates RFID's viability as a concept. Effectiveness of the supply chain, as well as refuse management, has been established [20]. In his approach, Rolf H. Weber(2010) demonstrates that privacy and security are not mutually exclusive. This task includes the implementation of data protection, RFID, and IOT technologies. The constraints of this work include the description of how IOT is safeguarded; however, implementation has not yet been provided. [21].

### III.MOTIVATION

The difficult circumstances that each woman must navigate in the modern era served as inspiration for the development of a safety gadget that would assist women in carrying out the task that they enjoyed doing. The application assists women in overcoming their fears so that they are able to move about easily and finish their task.

### IV.PROPOSED SYSTEM

In order to identify a woman's heartbeat, inclination, and palpitations, multiple sensors, such as heartbeat sensors, bend sensors, tilt sensors, and vibration sensors, are utilised. The Arduino platform has a connection to the heartbeat monitor. The Arduino C software is used to change the frequency range of the electrocardiogram. In addition, a tilt sensor is connected to an Arduino-uno board in order to determine whether or not there is any inclination. In order to keep track of vibrations, a vibration monitor has also been connected to an Arduino-Uno device ( if there is any different or abnormal vibrations ). Each delay of 20 milliseconds results in a new set of measurements being recorded. The power switch and the raspberry pi3 are both connected to the Arduino-uno device. Raspberry pi serves as the Satellite receiver. The position of the ladies can be determined with the help of Satellites.

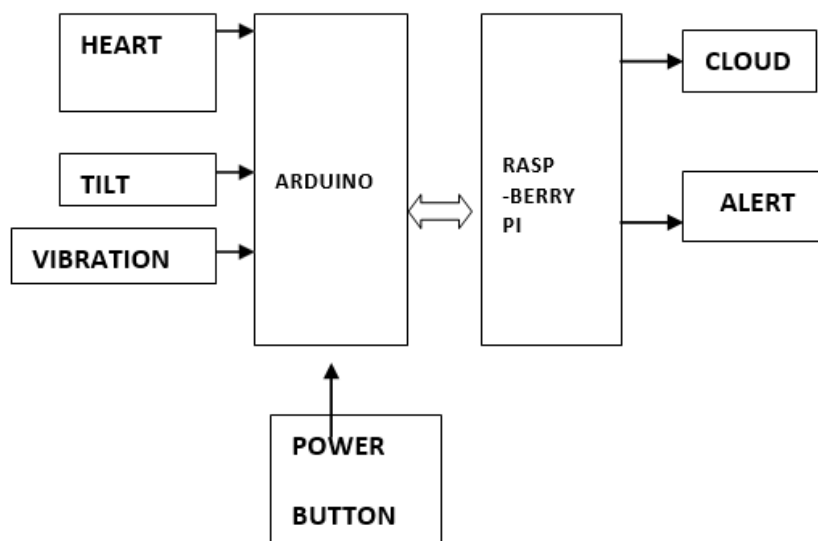


Figure 1 : proposed system architecture

#### ARDUINO

The Arduino platform is a microcontroller that can have devices connected to it. You can purchase it anywhere, including on the internet or in any establishment. The device that makes up an Arduino is about the size of a credit card. Arduino is available in a wide variety of different flavours. For the purposes of this application, an Arduino Uno device is utilised. By utilising the connection The Arduino device is powered by the notebook through which it is connected. In this particular application, an Arduino-UNO device is utilised.

#### HEARTBEAT SENSOR

The sound that is heard during heart pumping indicates that the heart is contracting and expanding at the same time as it is pumping blood. The normal limit for a human heartbeat is between 60 and 72 beats per minute. A heartbeat rate that is too low indicates that there may be an underlying health condition, while a heartbeat rate that is too high indicates that the sufferers are experiencing a great deal of anxiety. In the event that there is a significant shift, the records of the ladies are checked every 20 milliseconds, and then the communications are transmitted to the closest police station.

### **VIBRATION SENSOR**

Touch and vibration measurement are both performed with the assistance of resonance instruments. There is guaranteed to be a quickening of pace whenever a woman moves. When something is physically accelerated, the result is the production of a shockwave. There are numerous distinct vibrations associated with each sound. The vibrational recording is recorded at a rate of once every 20 milliseconds. If the sensations are detected to be different from one another, the position will be monitored, and communications will be sent to the nearest police station.

### **TILT SENSOR**

You can determine orientation or inclination with the help of a tilt monitor. These are simple to use and won't break the bank. If they are used correctly, there is no risk of injury to them. Because of its ease of use, tilt sensors are becoming increasingly common in consumer electronics such as games, devices, and appliances. Because of the different perspectives that they offer, people also refer to these as "mercury switches," "tilt switches," and "rolling ball sensors." In the event that there is any tilt or orientation, records will be kept for every 20 milliseconds, and appropriate measures will be taken, if necessary, in the event that there is a problem.

### **GPS/GMS**

The victim's longitude and latitude can be located with the help of GPS technology. In the event that any of the devices gives a false reading, the GPS will immediately begin tracking the victim's position. Tracking of the position's latitude and longitude, as well as transmission of the location itself, takes place. In this, we transmit the communications by using the SMTP mechanism, which is done through the programming language C.

### **ARDUINO C**

Software written in Arduino's C programming language that can record information from microcontrollers or devices. The range of instruments can be adjusted through the use of the programming language C.

## **V.IMPLEMENTATION**

A micro microprocessor can be made with an Arduino device called the Uno. These instruments are linked to the Arduino Uno microcontroller via connections. The heart beat monitor is wired to the S1 port, which functions as an input on the board. The S2 port on the Arduino - Uno device is connected to the electrocardiogram monitor in order to act as an outlet. Hand is positioned on the heartbeat monitor, Arduino board is connected to the computer through the use of a connection, readings are noted through the use of Arduino C software, and readings are noted for every 20 millisecond pause in the process.

The connection for the tilt sensor is exactly the same as the connection for the heartbeat sensor. The readings from a tilt monitor can be interpreted as twisting or inclination in any direction.

A sensor that detects vibration is also connected in the same manner as the devices described above. This instrument is able to detect vibrations emanating from all different directions. The Raspberry Pi comes equipped with a GPS receiver. A notification will be transmitted to the nearest police station in the event that there is any kind of emergency.

## **VI.COMPARISION**

- A large number of applications, including smartphone applications and online applications, are developed using the existing system, wherein programmes are also developed. Women are to either contact or send a communication in the event that there is an emergency related to that number.
- Multiple sensors, such as a heartbeat sensor, bend sensor, inclination sensor, and vibration sensor, are used in the work that is proposed to identify the condition of women. If there is an emergency, a communication along with the position is automatically sent to a nearby police station as well as to relations.
- To obtain assistance through the current method, just one action is required. At other times, women find themselves in precarious situations where even a single stroke is impossible. May the ladies be in a state of blocking out. At that time, bodily monitors assisted her in automatically detecting the situation.

## **VII.CONCLUSION**

It has become possible to develop a wearable protection gadget for ladies that incorporates GPS as well as three different instruments. When there is a crisis, this could be of assistance to ladies. By monitoring their position, the GPS will automatically transmit a notification to the nearest police station as well as to any relations it detects. It's possible that this will make it easier for women to travel easily wherever they want.

#### REFERENCES

1. Orlando Pereira, Joao M. L. P. Caldeira, Joel J.P.C Rodrigues "Body Sensor Network Mobile Solutions for Biofeedback Monitoring", Springer Science +Business Media, LLC ,2010.
2. Mirjami Jutila, Helen Rivas, Pekka Karhula, Susanna Pantsar "Implementation of a Wearable Sensor Vest for the Safety and Well-being of Children", The second international Workshop on Body Area Sensor Networks(BASNet-2014), Elsevier B.V, 2014.
3. Samuel Tanga, Vineetha Kalavally, Ng Kok Yew, Jussi Parkkinen "Development Of A Prototype Smart Home Intelligent Lighting Control Architecture Using Sensors Onboard A Mobile Computing System", <http://dx.doi.org/10.106/j.enbuild.2016.12.069>, 2016, Enb 7248.
4. Jesudoss A. and Subramaniam N.P., "EPBAS: Securing Cloud-Based Healthcare Information Systems using Enhanced Password-Based Authentication Scheme", Asian Journal of Information Technology, Vol. 15, Issue 14, 2016, pp. 2457-2463.
5. Jesudoss A. and Subramaniam N.P., "Enhanced Kerberos Authentication for Distributed Environment", Journal of Theoretical and Applied Information Technology, 2014 Vol. 69, No. 2, pp. 368- 374. (Scopus Indexed)
6. Lakshmanan, L. and D. Suganthi Sharmila, A,(2017), "Security Improvement for Web Based Banking Authentication by Utilizing Fingerprint", Global Journal of Pure and Applied Mathematics RIP India, Vol. 13, No.9,pp. 4397-4404,India, 2017, ISSN: 0073--1768
7. Lakshmanan, L. and Sankar,(2015), "Dynamic cognitive system for recovering from vulnerable attacks in social network", International journal of Applied Engineering Research, RIP India, Vol. 10, No.4,pp.10365-10374,India, 2015, ISSN: 1087--1090.
8. Parth Sethi, Lakshey Juneja, Punit Gupta and Kaushlendra Kumar Pandey "Safe Sole Distress Alarm System for Female Security Using IOT", Springer Nature Singapore Pte Ltd. 2018.
9. Pooshkar Rajiv, Rohit Raj, Mahesh Chandra "The Email Based Remote Access and Surveillance System for Smart Home Infrastructure", Perspectives in Science, <http://dx.doi.org/doi:10.1016/j.pisc.2016.04.104>, 2016.
10. Enji Sun, Xing Zhang, Zhongxue Li "The Internet Of Things(IOT) and cloud computing(CC) based tailings dam monitoring and pre-alarm system in mines", The First International Symposium on Mine Safety Science and Engineering, Elsevier, 2011.
11. Zheng Yan, Peng Zhang, Athanasios V. Vasilakos "A Survey on Trust and Management for Internet Of Things(IOT)", Journal of Network and Computer Applications, Elsevier, 2013.
12. Alessio Botta, Walter De Donato, Valerio Persico, Antonio Pescapè "Integration of Cloud Computing and Internet Of Things(IOT): A Survey", Future Generation Computer Systems, 2015.
13. Luigi Atzori, Antonio Lera, Giacomo Morabito, Michele Nitti, "The Social Internet Of Things(SIOT)", Computer Networks, Elsevier, 2012.
14. S.Sicari, A.Rizzardi, L.A. Grieco, A. Coen- Porisini "Security, Privacy and Trust in Internet Of Things(IOT)", Computer Networks, Elsevier, 2014.Andre Gloria, Fencisco Cercas, Nuno Souto, "Design and Implementation of an Internet Of Things(IOT) Gateway to Create Smart Environments", The 8th International Conference on Ambient Systems, Networks and Technologies, Elsevier, 2017.
15. Carolyn Witzman, Margaret Shaw, Caroline Andrew and Kathryn Travers, "The Effectiveness of Women Safety Audits", Security Journal 22, 205 218 doi:10.1057/sj.2009.1:, 2009.
16. Min Chen , Yujun Ma, Jeumgeum /song, Chin, Feng Lai, Bin Hu "Smart Clothing : Connecting Human with Cloud and Big Data for Sustainable Health Monitoring" Springer Science + Business Media New York, 2016.
17. Mandeep Singh, Neelu Jain, "Design and Validation of Android Based Wireless Integrated Device for Ubiquitous Health Monitoring" Springer Science + Business Media New York, 2015.
18. Susana E. P. Costa1 & Joel J. P. C. Rodrigues & Bruno M. C. Silva1 & João N. Isento1 & Juan M. Corchado, "Integration of Wearable Solutions in AAL Environments with Mobility Support", Springer Science + Business Media New York, 2015.
19. John Ayoade, "Roadmap to Solving Security and Privacy Concerns in RFID Systems", Privacy and RFID Systems, 2007, Elsevier.
20. Rolf H. Weber, "Internet Of Things-New Security and Privacy Challenges", Elsevier, 2010.



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