

A Review on Ensuring Women Safety Using IOT Resiurce Cloud Platform

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Abstract

As we know the security concerns related to women safety and it has been the major challenge now-a-days. Even though we are incorporating various measures in this regards to make the security in that way which does not have any other barriers as compared to previous system. Government also making various literacy program for safety of women and making various camp on its awareness but still it makes no effect to current situation. Various devices also built to carry forward the sensitivity of the conditions but wearing those devices and maintaining it is a very tedious process. So in this process we are trying combine all those devices either it resembles to B.P. monitoring, Heart rate monitoring or may be it relates with clothes into single device which makes its maintaining with less headache and helps in the correct way as many devices can make. The process involves the use of various sensors and Arduino kits to integrate in single platform and work with more accuracy since the output generated are from single source. The main objective to design such type of device is to consider the women safety measures and will help to reduce the side effects of it. Also the device is wearable so that no one can be able to detect it as of it a device. The mobile app and other needs can be adjusted in future to handle or operate it in various ways. Since the latest technology parameter includes the devices with great accuracy and hence making it embedded with Arduino and related cloud sensors.

Keywords: Internet of Things (IoT), Literacy, Safety, Monitoring, Arduino, Cloud

1. INTRODUCTION

It 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. An advanced system can be built that can detect the location and health condition of person that will enable us to take action accordingly based on electronic gadgets like GPS receiver, body temperature sensor, GSM, Pulse rate sensor. We can make use of number of sensors to precisely detect the real time situation of the women in critical abusive situations. The heartbeat of a person in such situations is normally higher which helps make decisions along with other sensors like motion sensors to detect the abnormal motion of the women while she is victimized. The idea to develop a smart device for women is that it's completely comfortable and easy to use as compared with already existing women security solutions such as a separate

garment, bulky belts and infamous mobile apps that are just very abstract and obsolete.

2. LITERATURE SURVEY

Sathyasri et. al. states that today in the current global scenario, women are facing many problems like women harassment. We propose to have a device which is the integration of multiple devices, hardware comprises of a wearable "Smart band" that endlessly communicates with sensible phone that has access to the web. This paper covers descriptive details about the design and implementation of "Smart band". The device consists of a trigger, microcontroller(ATmega2560), GSM module (SIM900), GPS module(Neo-6M),IoT module(ESP-12E),Neuro Stimulator, Buzzer and Vibrating Sensor. In this project, when a woman senses danger she has to hold ON the trigger of the device. Once the device is activated, it tracks the current location using GPS(Global Positioning System) and sends emergency message using

GSM(Global System for Mobile communication) to the registered mobile number and near by police station. IoT module is used to track the location continuously and update into the webpage. Neuro Stimulator will produce non-lethal electric shock in emergency situations to detect the attacker, buzzer is used as an alarm to alert the nearby people so that they may understand that someone is in need and vibrating sensor will send the last location in case if the device gets defected. The main advantage of this project is that this device can be carried everywhere since it is small. [1]

Budebhai et. al. proposed that “IoT Based Child And Woman Safety” can be used to locating missing or lost children and also tracking the child movements outside from the home. The system can also be used to locate women who are in danger. We have combined GPS with one of the basic service of a smart phone which is GSM more specifically SMS in one system. Our proposed model contains various sensors which measure different parameters on a regular basis. In case of emergency a message will be sent to parents and/or police, by either pressing the panic button or pronouncing the keyword. The complete system is implemented using Raspberry Pi 3 Model B. Python programming is used interface all the sensors and other hardware. This device is wearable (like a wrist watch), and so it is easy to carry. [2]

Harikiran et. al. states that the current global scenario, the prime question in every girl's mind, considering the ever rising increase of issues on women harassment in recent past is mostly about her safety and security. The only thought haunting every girl is when they will be able to move freely on the streets even in odd hours without worrying about their security. This paper suggests a new perspective to use technology for women safety. “848 Indian Women Are Harassed, Raped, Killed Every Day!!” That's a way beyond HUGE number! We propose an idea which changes the way everyone thinks about women safety. A day when media broadcasts more of women's achievements rather than harassment, it's a feat achieved! Since we (humans) can't respond aptly in critical situations, the need for a device which automatically senses and rescues the victim is the venture of our idea in this paper. We propose to have a device which is the integration of multiple devices, hardware comprises of a wearable “Smart band” which continuously communicates with Smart phone that has

The internet of things, or IoT (we mentioned in next phases), is a system of interrelated computational

access to the internet. The application is programmed and loaded with all the required data which includes Human behavior and reactions to different situations like anger, fear and anxiety. This generates a signal which is transmitted to the smart phone. The software or application has access to GPS and Messaging services which is pre-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 application. This action enables help instantaneously from the Police as well as Public in the near radius who can reach the victim with great accuracy.[3]

3. PROPOSED WORK

The following steps are initiated when once the unusual behavior of the user is detected. The decision is made by the inputs given by the various sensors like pulse rate sensor, temperature sensor and unusual motion detected by the motion sensor. Even in this modern era women are feeling insecure to step out of their house because of increasing crimes in our country like harassment, abuse, violence etc., The corporate and IT sector are currently in boom. Many women are working in corporate even in night shifts. There is a feeling of insecurity among the working women. With the rise of Internet of Things (IoT), standalone devices with web connectivity have become an important part of our lives. In internet of things objects are equipped with microcontroller/microprocessor and sensor devices and various software applications. They also have communication protocols which enable them to talk to other objects. Internet of things delivers on demand real-time services and helps in saving time, resources and even manpower.

The main intension to design such system is to overcome the drawbacks with the existing system. IoT is multidisciplinary concept which involves hardware for sensing and actuation, communication level for wireless communication, storage level for data collection and its intelligence level for decision making. Women Safety is the measure part and of significance importance for any country or culture. Although many system are efficient in every terms but some drawbacks are still available.

devices, mechanical and digital machines, objects, animals or people with unique identification and the

potential to communication in transmission as well as receiver point of view without intervention with human being. A thing in the internet of things can be a person with a heart monitor implant, a farm animal with a biochip transponder, an automobile that has built-in sensors to alert the driver when tire pressure is low or any other natural or man-made object that can be assigned an IP address and is able to transfer data over a network. With increase in various technological updation and upgradation the use of IoT is increasing day by day

History of IoT

Kevin Ashton, co-founder of the Auto-ID Center at MIT, first mentioned the internet of things in a presentation he made to Procter & Gamble (P&G) in 1999. Wanting to bring radio frequency ID (RFID) to the attention of P&G's senior management, Ashton called his presentation "Internet of Things" to incorporate the cool new trend of 1999: the internet. MIT professor Neil Gershenfeld's book, When Things Start to Think, also appearing in 1999, didn't use the exact term but provided a clear vision of where IoT was headed.

IoT has evolved from the convergence of wireless technologies, microelectromechanical systems (MEMS), microservices and the internet. The convergence has helped tear down the silos between operational technology (OT) and information technology (IT), enabling unstructured machine-generated data to be analyzed for insights to drive improvements. Although Ashton's was the first mention of the internet of things, the idea of connected devices has been around since the 1970s, under the monikers embedded internet and pervasive computing.

The first internet appliance, for example, was a Coke machine at Carnegie Mellon University in the early 1980s. Using the web, programmers could check the status of the machine and determine whether there would be a cold drink awaiting them, should they decide to make the trip to the machine. IoT evolved from machine-to-machine (M2M) communication, i.e., machines connecting to each other via a network without human interaction. M2M refers to connecting a device to the cloud, managing it and collecting data. [1]

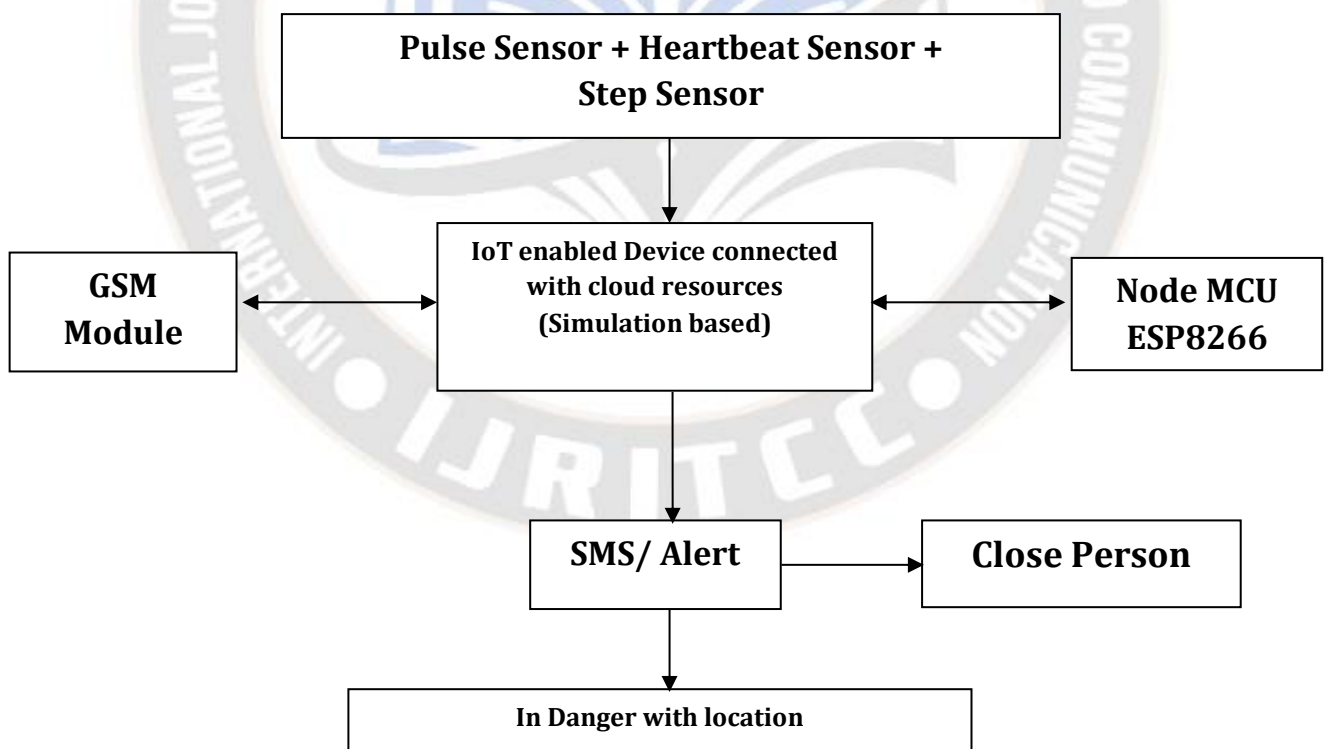


Figure 1. Structural flow of the system

4. PREVIOUS SYSTEM

Many system was designed to solve the problems those are as follows:

A. SHE (Society Harnessing Equipment): It is a garment embedded with an electronic device. This garment has an electric circuit that can generate 3800kV which can help the victim to escape. In case of multiple attacks it can send around 80 electric shocks [3].

B. ILA security: The co-founders of this system, have designed three personal alarms that can shock and disorient potential attackers and hence safeguard the victim from perilous situations.

C. AESHS (Advanced Electronics System for Human Safety)

It is a device that helps track the location of the victim when attacked using GPS facility.

D. VithU app: This is an emergency app initiated by a popular Indian crime television series "Gumrah" aired on Channel [V]. When the power button of the Smartphone is pressed twice consecutively, it begins sending alert messages with a link of the location of the user every two minutes to the contacts.

E. Smart Belt: This system is designed with a portable device which resembles a normal belt. It consists of Arduino Board, screaming alarm and pressure sensors. When the threshold of the pressure sensor crosses, the device will be activated automatically. The screaming alarm unit will be activated and send sirens asking help [4].

The main drawback of these applications and services is that the initial action has to be triggered by the victim which often in situation like these doesn't happen. So the emphasis is to build a solution that works autonomously in situations encountered.

5. CHALLENGES AND THE PATH FORWARD:

- **Technical Reliability and Accuracy:**

- Ensuring sensors (e.g., GPS, accelerometers, gyroscopes, biometric) provide consistent, accurate data in varied environments (dense urban areas, rural zones, indoor/outdoor). False positives (unnecessary alerts) and false negatives (failure to alert in a real emergency) are critical issues.

- Battery life limitations for wearable or portable devices. A device that runs out of power quickly is ineffective.
- Connectivity issues in areas with poor network coverage (cellular, Wi-Fi, LoRaWAN). An emergency device is useless without reliable communication.
- Data latency. Delays in transmitting distress signals can be critical in time-sensitive situations.

- **Privacy and Security Concerns:**

- Protecting sensitive personal data (location history, activity patterns) from breaches and misuse. This is paramount for trust and adoption.
- Preventing unauthorized access to the device or its data by potential perpetrators.
- Ensuring the privacy of the user even when the device is active (e.g., preventing constant tracking unless an emergency is declared).

- **Usability and Accessibility:**

- Designing a device that is discreet, easy to activate under duress, and comfortable to wear or carry without drawing unwanted attention.
- Ensuring accessibility for users with varying technological literacy, physical abilities, or language barriers.
- Creating intuitive user interfaces for companion apps (for setting up contacts, monitoring, etc.).

- **Social and Ethical Considerations:**

- Avoiding the creation of a "panic culture" or fostering excessive reliance on technology over community-based safety measures.
- Addressing potential biases in algorithms if AI is used for threat detection (e.g., misinterpreting normal behavior as a threat).
- Ensuring equitable access and affordability, preventing the solution from becoming a privilege rather than a universal safety tool.

- Establishing clear protocols for emergency responders and ensuring their effective integration into the system (e.g., verifying alerts, response times).
- **Cost and Scalability:**
 - Keeping the manufacturing and subscription costs low enough to be affordable for a broad demographic, while ensuring quality and functionality.
 - Scaling production and deployment to reach a wide user base, including infrastructure for maintenance and support.

6. CONCLUSION

This system significantly enhances the safety of women and children by leveraging advanced, continuously updated technology, leading to greater accuracy in identifying and mitigating risk factors. While acknowledging that technological advancements can introduce data vulnerabilities, this solution focuses on practical applications to secure women and children. It incorporates various embedded sensing devices that generate real-time data, enabling the detection of high-risk situations and contributing to the reduction of future threats. Given the increasing prevalence of crimes and harassment against women in various environments—such as workplaces, shopping areas, and public spaces—this technology becomes crucial. By analyzing various physiological measures, the system can detect panic situations and automatically initiate emergency responses, providing critical assistance when needed.

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