

# IOT Based Women's Safety Gadget

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**ABSTRACT:** Nowadays, women and children safety is a prime issue of our society. The counts of the victims are increasing day by day. In this paper, we are proposing a model which will help to ensure the safety of women and children's all over the global. We have used different sensors like heartbeat sensor, temperature sensor for detecting heartbeat, temperature and sudden change in user. We have used GPS which will help to detect location of the device and also send alert messages and email to guardians, relatives and police station. We have proposed IoT (internet of things) based device which will help to continuously monitor values of different sensors and GPS used in device.

**KEYWORDS:** IoT, Microcontroller, GPS, Nodemcu, sensors.

## I. INTRODUCTION

In today's world, women safety has become a major issue as they can't step out of their house at some times due to physical/ sexual abuse and a fear of violence. Even in the 21<sup>st</sup> century where the technology is rapidly growing and new gadgets were developed but still women's and girls are facing problems. Women are adept at mobilizing diverse groups for a common reason. They often work across ethnic, religious and cultural divides to promote liberty. We all are aware of importance of women safety, but we must analyse that they should be properly protected.

This paper 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 that can detect the location and condition of person that will enable us to take action accordingly based on electronic gadgets like GPS (Global Positioning System), LCD (Liquid Crystal Display), body temperature sensor, pulse rate sensor and IOT.

We can make use 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 temperature sensor to detect the abnormal temperature of the women while she is victimized.

In the case of any emergency conditions she can press a button once then the location information will be tracked and sent to police and family members so that she will be protected in proper time.

## II. EXISTING SYSTEM

Women's security is a critical issue in today's world and it's very much needed for every individual to be acting over such an issue. This paper describes an IOT based women security system that provides combination of GPS, IOT devices and specialized software to track the location as well as provide alert and messages with an emergency button trigger.

The existing systems include the usage of spy camera and other wired systems and most of alarming systems which is conventional and cannot communicate efficiently. Exact tracking is not implemented in the security systems at present.

### III. HARDWARE AND SOFTWARE USED

Hardware Requirements	Software Requirements
<ul style="list-style-type: none"> <li>• Nodemcu ( ESP8266)</li> <li>• USB Cable</li> <li>• GPS module</li> <li>• Button</li> <li>• LCD</li> <li>• Sensors</li> </ul>	<ul style="list-style-type: none"> <li>• Arduino IDE</li> <li>• Net beans</li> </ul>

### IV. METHODOLOGY

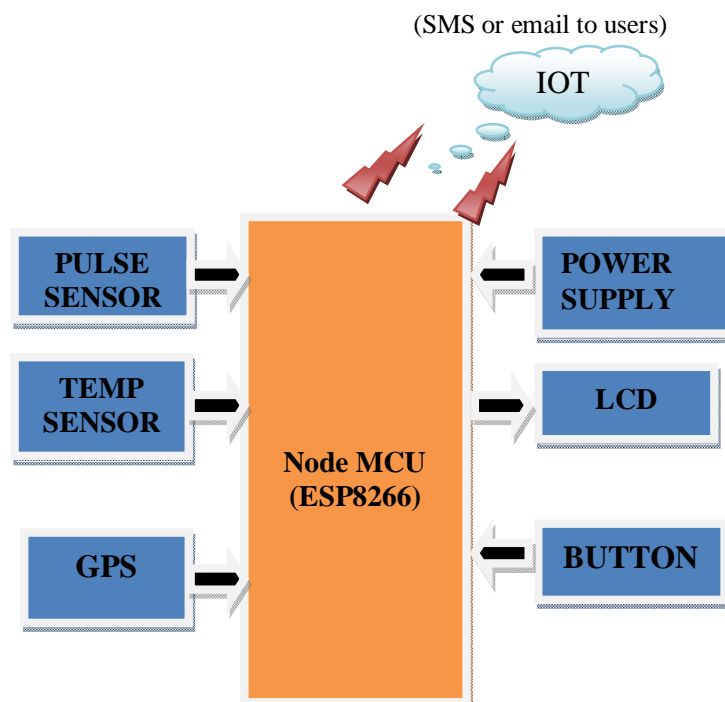


Fig 1 System Architecture

As seen in block diagram consists of Smart phone connected to hardware through IOT (Internet of things). The device communicates with smart phone through specially designed software that acts an interface between the device and the phone. The data directed 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 software which is pre-installed in the system/laptop. In cases of abuse, the software directs the smart phone to perform the following tasks:

- Sends message to the family members along with the co-ordinates.
- Co-ordinates are sent to nearest police station requesting immediate action.
- Also sends information to people in near vicinity requesting public attention.

The software 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 track ability! The help message is sent to the family members and the nearest police station through the IOT facility that is inbuilt in the IOT.

The software also provides a social platform where the people who have this particular software installed get the messages instantaneously so that they too can contribute in justice being delivered just in time. This feature is executed by using internet facilities of the phone of the user.

Control Unit collects information from software unit and GPS receiver. IOT will then send all these information from CLOUD to user. Software unit collects the data from human using body temperature sensor, pulse rate sensor and switches. RF module is used to send data from software unit to the control unit.

Figure1 consists of various units that precisely monitor the situation and takes necessary action accordingly.

**Pulse rate sensor:**

Heart beat sensor gives digital output of heart beat. When heart beat detector is working the led flashes for every heart beat. This digital output will be connected to microcontroller directly to calculate the beats per minute (BPM) rate. It works on the principle of light modulation of networked satellites and is tracked to uplinks data for synchronization. The system uses four frequencies in the Lband which ranges from 1.2 to 1.6 GHz.

**Temperature sensor:**

Human body temperature is of vital importance to maintain the health and therefore it is necessary to monitor it regularly. We can measure the body temperature using various temperature sensors. For instance, LM35 series are precision integrated circuit sensors whose output voltage is linearly proportional to the Celsius temperature. It operates linearly +10.0mV/°C scale factor with 0.5°C accuracy. In emergency case body temperature varies drastically which can trigger module for rescue.

**GPS module:**

Global positioning system (GPS) is able to determine the latitude and longitude of a receiver on Earth by calculating the time difference for signals from various satellites to reach the receiver. In six different orbits approximately 12,500 miles above the earth, 24 MEO (Medium-Earth Orbit) satellites revolve around the earth 24 hours and transmit location every second as well as present time from atomic clocks and by monitoring blood flow through skin when is in contact with the wrist band at each pulse.

**Node MCU:**

ESP8266EX offers a complete and self-contained Wi-Fi networking solution; it can be used to host the application or to offload Wi-Fi networking functions from another application processor. When ESP8266EX hosts the application, it boots up directly from an external flash. It has integrated cache to improve the performance of the system in such applications.

**Power supply:**

The microcontroller and associated circuitry requires 3.3v supply.

#### LCD:

16 x 2 LCD module is a very common type of LCD module that is used in projects. It consists of 16 rows and 2 columns of 5 x 7 or 5 x 8 LCD dot matrices. It is available in a 16 pin package with back light, contrast adjustment function and each dot matrix has 5-8 dot resolution. It is used to display the values read by sensors.

#### Button:

When the button is pressed then it will send signal to microcontroller, then microcontroller will send the GPS co-ordinates via GSM to the police station or to the family members.

We propose to have a microcontroller device using IOT, which continuously communicates with Smart phone that has access to the internet. The application is programmed and loaded with all the required data which includes temperature, heart beat and also victim motion. 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 relatives and the parents. From this device we can take the immediate action on the situation.

#### V. CONCLUSION

This type of an idea being the first of its kind plays a crucial role towards ensuring Women Safety in the fastest way possible automatically. The proposed design will deal with critical issues faced by women in the recent past and will help solve them through technologically sound gadgets.

With further research and innovation, this project can be implemented in different areas of security and surveillance. The system can perform the real time monitoring of desired area and detect the violence with a good accuracy.

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