iJRASET
International Journal For Research in Applied Science and Engineering Technology



INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 13 **Issue:** VII **Month of publication:** July 2025

DOI: https://doi.org/10.22214/ijraset.2025.73120

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 13 Issue VII July 2025- Available at www.ijraset.com

An IoT Based Smart Wearable Device for Women Safety

Vivekanand Thakare[1], Puja Yawalkar[2], Poonam Bhoote[3], Shraddha Moon[4], Samir Ramteke[5]
[1]*Assistant Professor,* [2,3,4,5] *Students Department of Computer Science And Engineering, Govindrao Wanjari College Of Engineering & Technology*

Abstract: ***Women are facing increasing levels of harassment nowadays, which is deeply concerning. The situation is extremely serious in both developing and developing countries. It harms both human progress and a country's economy. By pressing the emergency button ensures quick and complete safety help for women. In the incident occurs, the system tracks the users location in real time and alerts the police and volunteers. This device will also provide the user with the location of the nearest safe zone. Furthermore, this interface can be used both online and offline. If the user does not have access to the internet, the computer can also be used to contact the nearest police station and volunteer assistance. Arduino uno, GPS, GSM, Bluetooth, and more making it both costly and easy to use at home.***

Keywords: ***This project is focused on women empowerment and safety using modern technology. It uses IoT software, an Arduino UNO board, GPS for location tracking, and a GSM module to send emergency alerts. The system is designed to help women in danger by automatically sending their location and alert messages to trusted contacts.***

I. INTRODUCTION

As the working of women in industries and commercial sectors has increased , incident of abused and assaults against they have also risen , it is becoming increasingly necessary for females to work late and travel to distance and remote locations. However, in recent years, the exponential rise in attack and abuse against women has posed a threat to women's growth and development. A security is needed to help women feel ,as often freeze after an assaults. As a result, there is a need for a simpler safety solution that can be triggered as easily as pressing a button and can send warnings to the victim's immediate surroundings. This project focuses on a security infrastructure that is specifically designed to ensure the security and safety of women. The aim of this study is to develop a portable safety device for women that includes the Sends an emergency alert to family and friends. S. A. More's investigation. [2] explores how to use image processing to identify any potential danger and offers a variety of options to defend her. The authors of [3] created a system that used a PIC16F876A microcontroller and a SIM808 module with GPS, GSM, and GPRS support to alert friends and family when the emergency button is pressed. A framework based on facial features is built in [4]. A report is filed if the facial expression is threatening in nature. [5]. The message is sent to pre-stored mobile numbers in this scheme, and it includes the victim's body position as well as her location. With the support of a synchronized Bluetooth link, [6] allows for independent activation of the android application and the arm computer. The audio and video that have been registered, as well as the location, are sent to the phone numbers that have been pre-set in the application in the form of a call and a message to warn them. An android app is developed in [7] that provides the location of the woman in danger through fake phone calls, video forwarding, location, and first-aid information. [8] uses sensors to detect body movements, heart rate, and body temperature with the aid of a reliable protection system that includes an ATMEGA8 controller with Arduino tool and advanced sensors. [9] Employs three sensors: heartbeat, temperature, and accelerometer. These sensors are used to identify anomalies, and a message is sent to the loved ones using the GPS and GSM module.

II. LITERATURE SURVEY

"Women's spice system design GPS is used to quickly access the customer area. There are three press catches performed to characterize the type of mishap victim. At the point where the customer is facing any problems, one of three catches can be pressed. The microcontroller will receive it at that point and send an SMS to the specific phone number. Until customers turn off the frame when saved, the area of the customer is constantly followed. In addition, they are using the whole framework to control.

[11]A Women empowerment towards developing India" was suggested by A. Priyadarshini et al. [12]. Women strengthen the foundations to empower all women across the country to be open and to take care of their rights and to prepare them for their physical safety in all perspectives.

©IJRASET: All Rights are Reserved

The paper focuses on the issues women look to in their daily plans for women's empowerment in India and the self-help group in the province of Tamil Nadu, proposals on a self- help group for future upgrades and a contextual study on women's autonomy cells. "SMARISA: a smart ring for safety for women with IoT based on Raspberry Pi," said Navya R Sogi [13]. They updated a wearable device for women as an experienced ring (SMARISA) with Raspberry Pi, camera, signal and capture for administration and a very small gadget that could be implemented by tapping a fetching capture that would bring their present region and picture the aggressor using raspberry pi and sending the crisis contact number. It is a compact gadget.The "Smart Intelligent System for Women and Child Safety" was designed by Prof. Sunil K Punjabi [14] A compact device with a weight changeover. If an attacker ambushed the woman/child or recognizes any weaknesses as a result of the more unusual situation, he would then be able to press or press the device. This weight and a regular SMS are quickly identified by the sensor. The causal area will be sent to the telephone numbers of the folks / watchman set in devices when he receives it. Then there's a call. When the call is unsuccessful for a delayed time, a call is forwarded to the police and also sends SMS.[15] G C Harikiran et al. Implemented 'Internet of Things Smart security solution for women (IOT)' They proposed a tool which combined two or three pillars, equipment fuses from a wearable "savvy band" which constantly speaks to a sharp telephone to be able to access the web section. The product is customized and stacked with all the information needed to fusion human behaviour and to answer unique conditions, such as discomfort, fear and pressure. This generates a sign sent to the telephone. The product has the right to go to the GPS and to inform administrations in such a way that, whenever a crisis signal comes, it is able to provide assistance. Smart Foot Device for Women Safety was intended by Nandita Viswanath et al. [16] This shrewd gadget is cut into the customer's footwear and can be done with great care. When one foot is taped behind the other several times, an alarm is sent to an application on the causality phone using Bluetooth low vitality correspondence methods. Adjusted to create an SMS to help with the gadget area associated with the search.

III. EXISTING SYSTEM

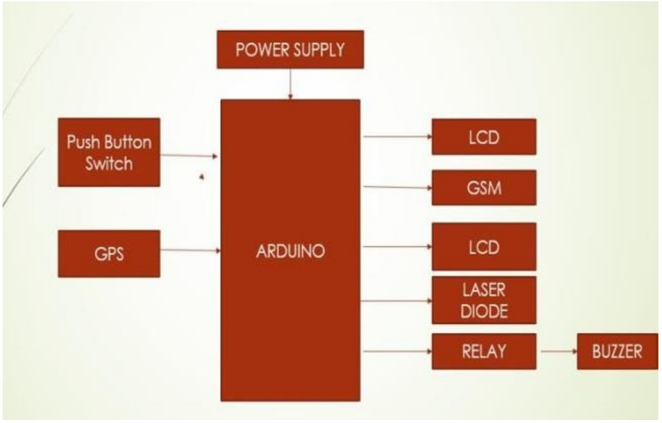
In the past system, the women's alerting system is implemented. The applications contain the SOS number for the purpose of security which warns the victims' family members. Many developers have creative applications that take this concern into consideration. Emergency service code that alerts police control is used to provide emergency services. The free "Help me mobile" mobile app has been launched to ensure the safety of women in an emergency. In order to do this, these applications require one click. But if a girl is in trouble, the girl may sometimes not be able to call and push the button.

IV. MOTIVATION

Every woman's current challenging situations motivated her to develop a safety device for women to help them do their job. The application helps women to overcome fear and to go about their work freely and complete.

V. PROPOSED SYSTEM

The main goal of this paper is to use Raspberry Pi to improve women's safety and security. Python programming is used for this purpose. A temperature sensor, heart rate sensor, GPS, and camera module are all built into the Raspberry Pi. When a woman is in danger, an alarm will be sent automatically or manually to the appropriate authorities. Furthermore, using voice information can assist women who are in risk. and because she was unable to click the button at the time, she simply said "help," and an SMS alert with the location and captured picture was sent to the guardian's/police.Fig-1 shows the block diagram for women safety using GPS and GSM modules.



A. LCD

The LCD term refers to the display of liquid crystal. It's one type of electronic display module used in many applications, such as mobile phones, computers, computers, TV set and so on. It is an extensive range of applications. These displays are chosen mainly for light emitting diode in multi- segment and for 7 segments. The main advantages of using this module are low- cost; simply programmable, animations and custom characters, animations and so on are not limitations on displaying them. Fig-3 shows the LCD image.



Fig.3. LCD

B. Switch

A pushbutton or simply a button is a simple button to control some aspects of a machine or process.
Typically, buttons are made of hard materials, often plastic or metal . Fig-4 shows the button image.



Fig -Switch

C. Buzzer

A buzzer or beeper is amechanical electromechanical ,or piezoelectric audio signaling user input such as mouse click or keywords are all popular uses for buzzers and beepers . Buzzers are electronic transducers with a DC power supply that are commonly used in sound device such as computers ,printers , copiers ,alarms, electronic toys, automotive electronic equipment, telephones, clocks , and others electronic items . Fig – 5 shows the buzzer image.



Fig - Buzzer

D. GSM

A GSM modem is a system that can be either a cell phone or a modem that allows a computer or other processor to communicate over a network .A GSM card to operate and works on a network range that the network operator has subscribed to. It can be used to connect a computer via serial, USB, or Bluetooth, Fig -8 shows the GSM module.

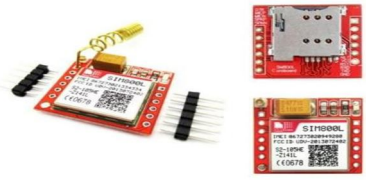


Fig - GSM

ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 13 Issue VII July 2025- Available at www.ijraset.com

VI. METHODOLOGIES

A. Manual Mechanism

The process flow that occurs when the women are in a position to react is called the manual mechanism. It has a button that the woman can press when she feels threatened. The buzzer activates when the button is pushed, making a loud noise to warn anyone nearby who can assist her. The alarm system is then activated.

B. Automated Mechanism

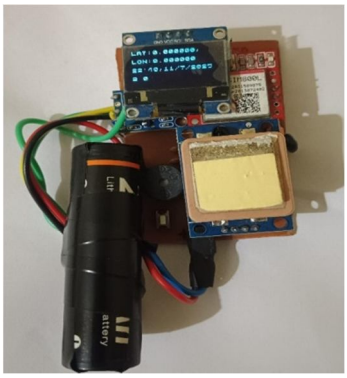
The woman may not be able to respond and use the manual mechanism in the majority of cases. As a result, use friction, temperature, and pulse-rate sensors to automate the mechanism. In order to eliminate false positives, combine the readings of these sensors. The alarm system is triggered when one of the two sensors detects an abnormality. A force sensing resistor sensor is used as a pressure sensor (FSR). The resistance decreases exponentially with a slight increase in force. The resistance value is transformed to an analogue voltage between 0 and 5 volts.

C. Alert Mechanism

During a dangerous situation, one of the above processes triggers the alarm system. When the warning system is enabled, GPS and GSM are used to transmit a message to relatives and officials containing the victim's location. For easy access, the location is sent as a Google Maps connection.

VI. RESULT

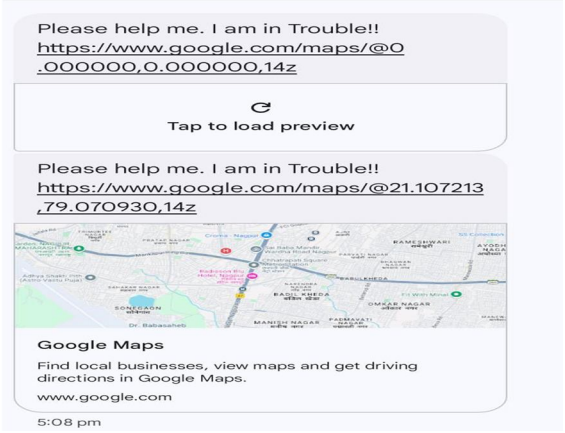
The prototype shown in the image is a successful implementation of the Smart Wearable Women Safety Device using IoT. After interfacing the components (SIM800L GSM Module, GPS Module, OLED Display, Buzzer, and Battery), the device was tested under various conditions.



☑Observed Results:

The GPS module was able to track the location accurately and display coordinates on the OLED screen.

The GSM module (SIM800L) successfully sent alert SMS to the registered emergency contact numbers with real-time location.



©IJRASET: All Rights are Reserved

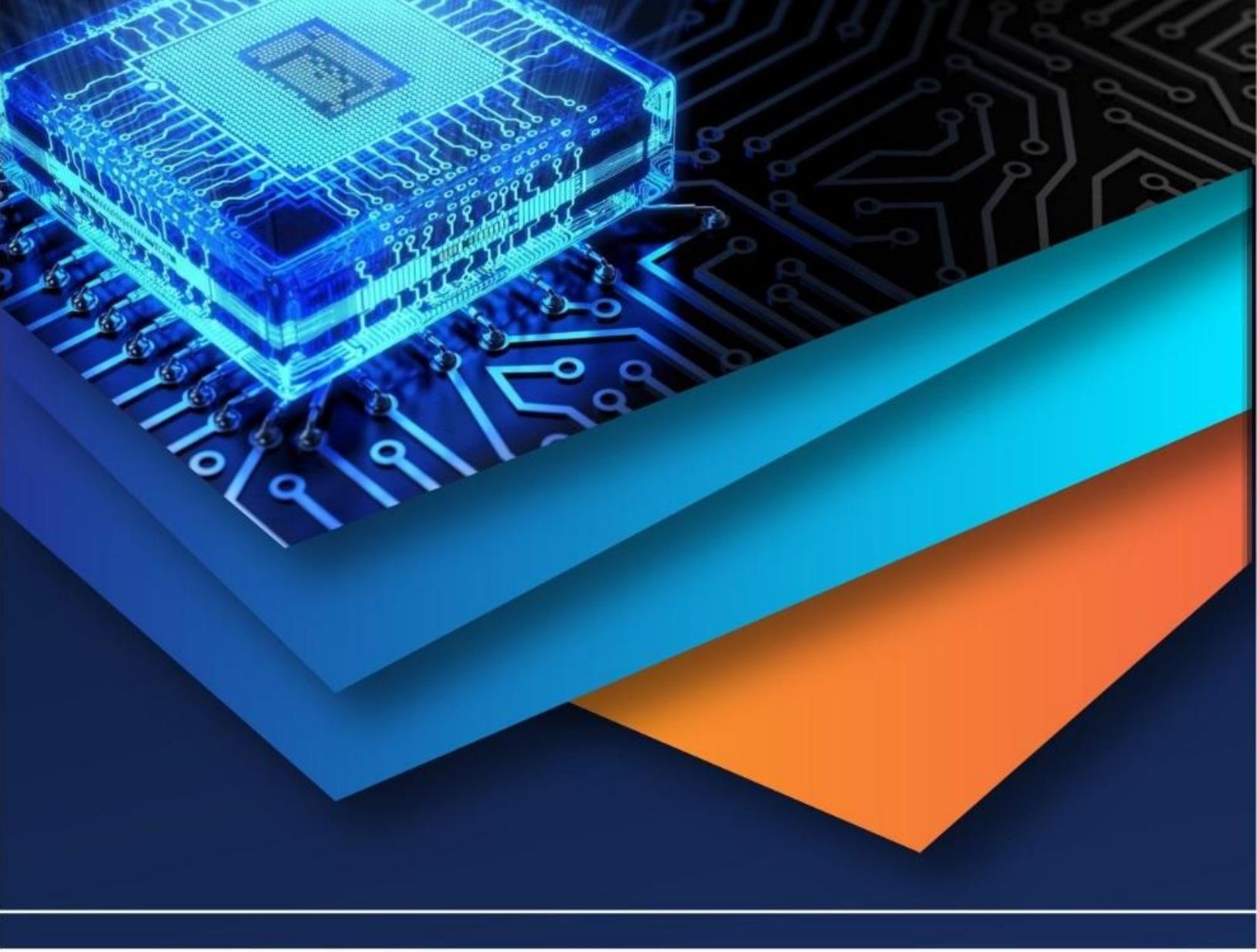
The buzzer triggered a loud alert sound upon pressing the panic button, useful in emergency conditions.
The OLED screen displayed current time, coordinates, and system status clearly.
The circuit was powered reliably using a 3.7V Li-ion rechargeable battery for several hour

VII. CONCLUSIONS

The main goal of creating a woman protection device is to act as a rescue and avoid any harm to women in the event of a hazard. A smart device for women's protection is planned using the proposed system, which automates the emergency warning system. This device detects and sends warnings to loved ones with the women's position coordinates without requiring her intervention in critical situations. It immediately sends an emergency alert to the family members and the nearest police station. The prototype can be carried in a variety of bags, including handbags and laptop bags. Carrying the prototype in these bags is recommended because the individual attempting to injure you might not be aware of your presence.

REFERENCES

[1] S. A. More, R. D. Borate, S. T. Dardige, S. S. Salekar, Prof. D. S. Gogawale "Smart Band for Women Security Based on Internet of Things (IOT)" International Journal of Advance Research in Science and Engineering, Volume No 6,Issue No. 11, November 2017
[2] Mohamad Zikriya, Parmeshwar M G, Shanmukayya R Math, Shraddha Tankasali, Dr.Jayashree D Mallapur "Smart Gadget for Women Safety using IoT (Internet of Things)" International Journal of Engineering Research & Technology (IJERT), ISSN: 2278-0181, NCESC - 2018 Conference Proceedings
[3] Naeemul Islam , Md. Anisuzzaman , Sikder Sunbeam Islam , Mohammed Rabiul Hossain, Abu Jafar Mohammad Obaidullah "Design and Implementation of Women Auspice System by Utilizing GPS and GSM". 2019 International Conference on Electrical, Computer and Communication Engineering (ECCE), 7-9 February, 2019
[4] Remya George, AnjalyCherian.V, Annet Antony, Harsha Sebestian, Mishal Antony, Rosemary Babu.T " An Intelligent Security System for Violence against Women in Public Places ". International Journal of Engineering and Advanced Technology (IJEAT) ISSN: 2249 – 8958, Volume-3, Issue-4, April 2014
[5] B.Vijaylashmi, Renuka.S, Pooja Chennur, Sharangowda.Patil " Self[3] B.Vijaylashmi, Renuka.S, Pooja Chennur, Sharangowda.Patil " Self defence system for women safety with location Tracking and SMS alerting through GSM network". IJRET: International Journal of Research in Engineering and Technology eISSN: 2319- 1163 | pISSN: 2321-7308
[6] D. G. Monisha, M. Monisha, G. Pavithra, and R. Subhashini," Women Safety Device and Application-FEMME". Vol 9(10), Issue March 2016
[7] Dr. Sridhar Mandapati, SravyaPamidi, Sriharitha Ambati," A Mobilebased Women Safety Application (I Safe App)". Vol 17, Issue 1, Ver. I (Jan – Feb. 2015)
[8] Deepak Sharma, Abhijit Paradkar "All in one Intelligent Safety System for Women Security". Vol 130 No.11 November 2015.
[9] Prof. R.A. Jain, Aditya Patil, PrasenjeetNikam, Shubham More, Saurabh Totewar," Women's safety using IOT ". Vol: 04 Issue: 05| May- 2017
[10] International Conference on Electrical, Computer and Communication Engineering (EECE), 2019, PP.1-5.
[11] Muskan , Teena Khandelwal, Manisha Khandelwal, Purnendu Shekhar Pandey, "Women Safety Device Designed using IoT and Machine Learning",2018 IEEE, pp. 1204- 1210.
[12] A. Priyadarshini, R.Thiyagarajan V.Kumar, T.Radhu, "WomenEmpowerment.



10.22214/IJRASET

45.98

IMPACT FACTOR: 7.129

IMPACT FACTOR: 7.429

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Call : 08813907089 (24*7 Support on Whatsapp)