IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

Smart Wearable Device

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Abstract: Women's safety remains a critical issue globally, with alarming rates of harassment, molestation, and assault reported across various demographics. Despite historical respect for women in society, contemporary challenges persist, with estimates indicating that 35lifetime. To address this pressing issue, this work presents the development of a smart wearable device aimed at enhancing women's safety through the Internetof Things (IoT). The proposed device is designed for daily useand activates in emergencies to provide real-time protection. Key features include GPS tracking, which allows for continuous location monitoring via a dedicated Android application, and an integrated camera module that captures and transmits photos to the app during dangerous situations. Additionally, the device is equipped with an SOS alert system to attract attention fromnearby individuals, and it sends SMS notifications to family members and local police stations when activated. This innovative wearable device aims to provide a comprehensive solution tothe safety challenges faced by women and improve their overall protection in critical situations.

Index Terms **-** Internet of Things (IoT), GPS Tracking, SMS Notification System, Wearable Technology.

I. INTRODUCTION

smart wearable devices for women's safety represents a transformative step in personal security technology. These innovative gadgets, ranging from stylish smartwatches to discreet jewellery, are designed to empower women by providing essential safety features such as emergency alerts, GPS tracking, and health monitoring. With capabilities like panic buttons that send immediate distress signals and real-time location sharing, these devices offer peace of mind in potentially unsafe situations. Their discreet design ensures that users can maintain a fashionable appearance while having access to vital safety tools. As awareness of women's safety issues grows, smart wearables play a crucial role in fostering confidence and security, allowing women to navigate their environments with greater assurance.

II. MOTIVATION

Smart Wearable Device for Women Safety arises from increasing concerns about women's safety in both public and private spaces. With the growing incidence of harassment, assault, and violence, there is an urgent need for technological solutions that can provide immediate help. A smart wearable device offers women a discreet and reliable tool to alert authorities and loved ones in emergencies, enhancing their sense of security and freedom. By incorporating real-time GPS tracking and automatic alerts, such devices can empower women to move more confidently, knowing they have immediate access to assistance when needed. This innovative approach not only aims to protect but also fosters independence and peace of mind.

III. PROBLEM STATEMENT

Build a security system for women that is completely automated and requires no human interface whatsoever.

IV. OBJECTIVES

- To enhance the safety and security of women by providing a reliable, real-time protection solution.
- To develop a user-friendly smart wearable device that offers immediate assistance during emergencies. customer happy and satisfied.
- Implement real-time GPS tracking for continuous location monitoring.
- Integrate an SOS alert system that notifies nearby individuals, family, and local authorities.
- Develop a camera module that captures and transmits photos during dangerous situations.

V. RESEARCH METHODOLOGY

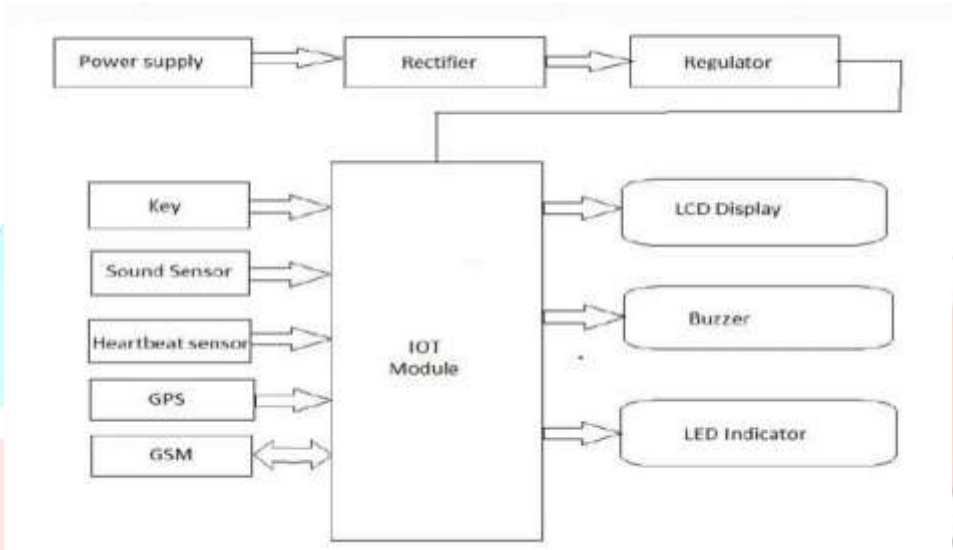


Diagram likely represents a smart wearable safety device for women, designed to provide real-time protection and monitoring. It could automatically send alerts with location data and physical status (like hSrate) to emergency services or trusted contacts in situations of distress or danger.

The Buzzer and LED Indicator are there to alert people nearby, while the LCD Display might show crucial informationto the wearer or confirm that alerts have been sent. The wearable device is probably aimed at preventing assaults or dangerous situations by enabling the wearer to summonhelp discreetly while also providing a robust mechanism for self-defense.

System Architecture Components

1.Global System for Mobile Communication (GSM)

Globalsystem for mobile communication is a device as shown in figure 8 to send the location obtained through GPS. The values from the sensors are sent to SMS for few preprogrammed numbers. Global System for mobile communication is used for mobile communication that enables higher data transmission rate. GSM is a small chip sensor consists of SIM card inserted into it. GSM transfers data serially based on AT commands.

2. GPS

It consists of six wires in which three wires are used for connection. Blue wire is transmitter wire which is connected to the 15th pin of the microcontroller. Voltage supply is about 3.3V to 5V. When trigger button is pressed, GPS starts receiving signals from 8 satellites out of the 24 satellites in orbit. If the connection is established in latitude and longitude values of current location are obtained. The GPS acts as a transmitter. The 5V supply is given to GPS from the microcontroller.

3. Heart Beat Sensor

A Heart Beat Sensor is a small chip like sensor is appeared. It is a device in which it measures heart rate or pulse in beats per minute (BPM). It is often used in health monitoring systems, wearable fitness trackers, and medical devices.

4. Sound Sensor

The sound sensor module provides easy way for detecting sound. It is used to detect sound intensity. This module used for security, monitoring, and switch applications. Its accuracy is easily adjusted for the convenience of usage. It uses microphone which supplies the input to amplifier, peak detector and buffer. When the sensor detects a sound, it processes output signal voltage which is sent to microcontroller then performs necessary processing.

5. Buzzer

A buzzer in women's safety devices is a critical feature designed to quickly alert others in the event of an emergency. Typically, these buzzers are integrated into smart wearable devices, such as smartwatches, bracelets, or keychains, aimed at ensuring women's security.

VI. Mathematical Equation

• Let Assume S be the system which execute Women Safety

• S = s, e, X, Y, T, Fmain, NDD, DD, Success, Failure

• S(System): Is our proposed system which includes following tuple.

• s(initial state at time T): The GUI of search engine provides space to enter a query/ input for laser.

• X (input to system): Input Query. The user has first entered the query. The query may be ambiguous or not. The query also represents what user wants to search.

• Y (output of system): List of URLs. User has to enter a query into search engine then search engine generates a result which contains relevant and irrelevant URL's.

• T (No. of steps to be performed): These are the total number of steps required to process a query and generates results.

• F main (main algorithm): It contains Process P. That contains Input Output and subordinates' functions. It shows how the query will be processed in different modules and how the results are generated.

• DD (deterministic data): It contains Database. Here we have considered SQLite contains number of queries. Such queries are user for showing results. Hence, SQLite is our DD.

• NDD (non-deterministic data): No. of input queries. In our system, user can enter numbers of queries in that we cannot judge how many queries user enters in single session. Hence, Number of Input queries are our non-deterministic data.

• CPU count: In our system, we require 1 CPU for server

• Success: Successfully recommend best system as per user's interest

• Failure: If application will not send the notification to user it will fail. JCOE, Department of AI And DS Engineering 2024-2025 3 Smart Wearable Device Project Synopsis

• Subordinate functions:

Where

s = Start State

e = End State

X = Set of Inputs = (x1, x2, x3)

Where,

x1 = Login for Admin and Police Station

x2 = Add Police Station details with their name, address, Contact Number etc

x3 = Add Person details with their name, address, Contact Number etc

Y = Set of Outputs = y1

Where,

y1 = After sending request, Text Message immediately send to Relatives and Nearest Police Station

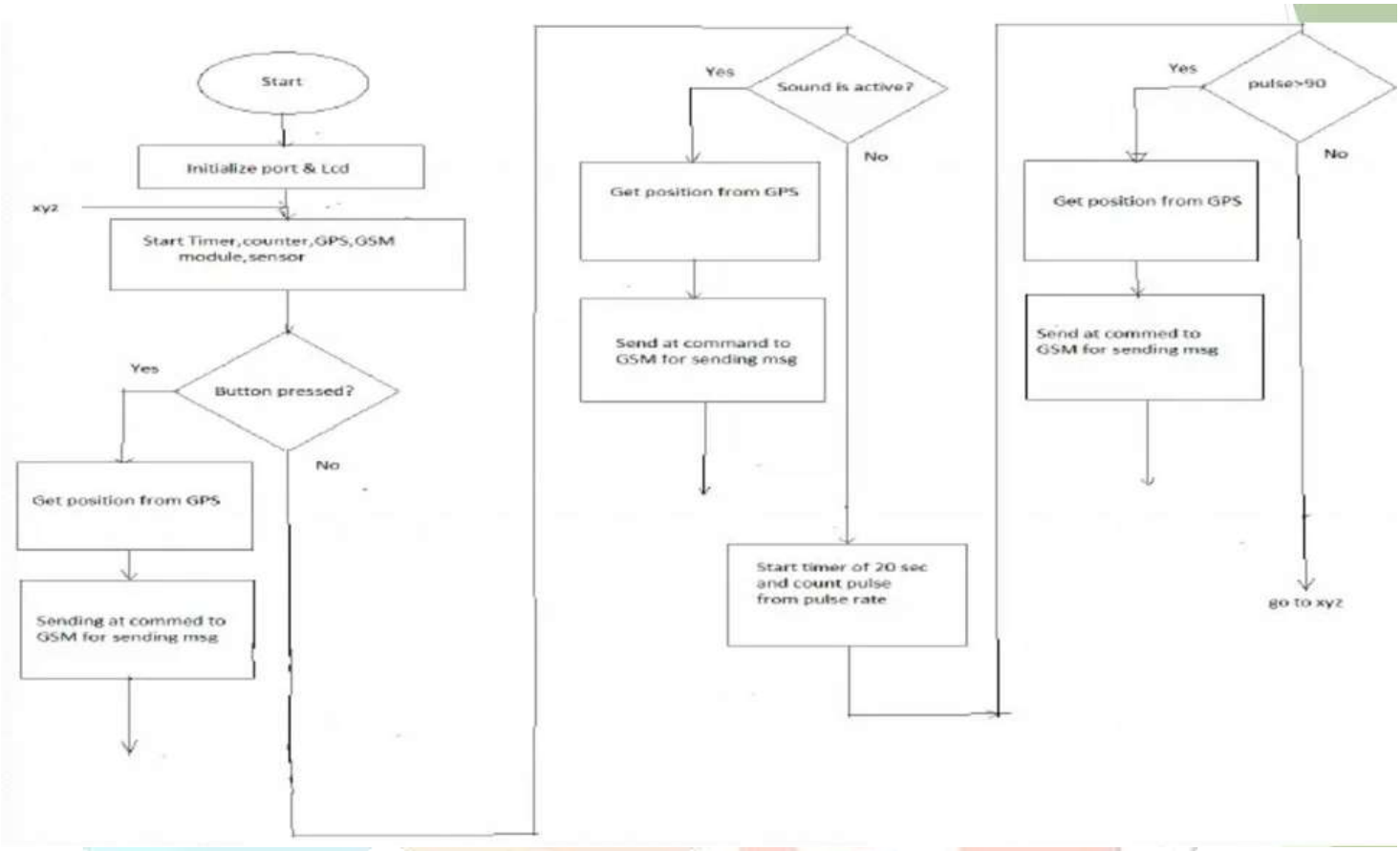
F main = Set of procedure = f1,f2

Where,

f1 = Take x1,x2,x3,x4 input

f2 = Give y1 output

VII. FLOWCHART



1. Initialization:
   - The system starts by initializing the ports, LCD, timer, counter, GPS, GSM module, and sensors.

2. Button Press Logic:
   - If the emergency button is pressed, the GPS gets current position.
   - A command is then sent to the GSM module to send a message with the location details.

3. Sound Activation Logic:
   - If the sound sensor detects activity (e.g., a loud sound indicating distress), the GPS fetches the current position.
   - A command is sent to the GSM module and send the message.
   - A 20-second timer starts, during which the pulse rate is monitored.

4. Pulse Rate Monitoring:
   - If the pulse rate exceeds 90 (indicating panic or distress), the GPS position is retrieved.
   - A message is sent via GSM with the location details.
   - If the pulse is below 90, the process loops back to monitor other conditions.

This flowchart seems to cover key aspects such as manual activation (button press), automated activation (sound sensor), and physiological monitoring (pulse rate) to ensure safety for the wearer. It integrates GPS for location tracking and GSM for message communication, which are essential in emergency scenarios.

VIII. CONCLUSION

The women security system is helpful tool to self-defence for women. There are chances to reduce crimes against molestation, kidnapping, murder etc. Our primary goal of this project is every woman in our society to feel safe and secured. By using this system prevention of incident is been carried out by using siren indication, this method will be helpful to prevent that violence rather than communication. Communication through GPS & GSM technology is supplementary part to have help the person

IX. FUTURE SCOPE

- Advanced Health Monitoring
- Improved Battery Life
- Enhanced Security and Encryption
- Location Tracking and Geofencing

X. References

[1] Monika Ingole, Pranay Chide, Ajit Ukey, Araju Chamlate, Aarti Ukey," A SMART WEARABLE DEVICE WOMEN" International Journal of Innovations in Engineering and Science, www.ijies.net,May2024.
[2] Sunita Malaj," IOT BASED SMART WEARABLE DEVICE FOR WOMEN SAFETY" International Journal of Engineering Technology and Management Sciences, Nov2023.
[3] Pravin Pardhi, Chetna Dnyaneshwar Dhote, Riteshwari Ashok Pagote, Suwarna Sunil Somkuwar, Minakshi Pundlikrao Dhanorkar," SMART WEARABLE SYSTEM FOR WOMEN SECURITY USING IOT" International Journal of Advances in Engineering and Management (IJAEM) Volume 4, Issue 5 May 2022.
[4] C. Pratheeba, K. R. Archana, E. Dharshana, M.K. Nandhini, B. Shalini,"A SMART WEARABLE DEVICE WOMEN SAFETY SYSTEM BASED ON IOT" International Research Journal of Modernization in Engineering Technology and Science, March-2021.
[5] Pallavi Kapoor,Shivani Basargi,Pranita Veer, "IOT BASED WEARABLE SAFETY DEVICE FOR WOMEN ", International Journal of Engineering Research and Technology,5 May 2021.
[6] Rajini R, Chandrashekhar N, Shivkumar G, Shivshankar H, Shivakumar. S," WOMEN SAFETY DEVICE", JETIR May 2019.
[7] Kalpana seelam, K. Prasanti," A NOVEL APPROACH TO PROVIDE PROTECTION FOR WOMEN BY USING SMART SECURITY DEVICE" IEEE International Conference on Inventive Systems and Control (ICISC 2018), , pp 351-357 , Jan 2018.
[8] Prof. Kiran. Mensinkai, Chaitra B.V, Chinmayi V Pandith, Goutam P Nayak and Jyothsna C. S," AN INTELLIGENT SAFETY SYSTEM FOR INDIVIDUAL'S SECURITY" IEEE International Conference on Energy, Communication, Data Analytics and Soft Computing (ICECDS 2017), pp 1117- 1122, Aug 2017.