International Journal for Multidisciplinary Research (IJFMR)
E-ISSN: 2582-2160 ● Website: www.ijfmr.com ● Email: editor@ijfmr.com

RakshaYantra : A Connected Jewellery for Women's Safety through AI and IOT

Vaishnavi .U.Suryawanshi

RCPET'S IMRD, Shirpur(MCA) , Shirpur, Maharashtra

Abstract

Women's safety is a major global issue that requires creative and dynamic solutions. The aim of this rersearch is to launch RakshaYantra, an AI and IoT-based connect a smart jewelry device purpose to increase women's safety.

Features including in RakshaYantra like voice activation, GPS location sharing, image capturing, and automated send emergency alerts, this device provides real-time security by fusing wearable jewelry base technology with cutting-edge sensors and smartphone apps.

This research explores how to IoT and AI may combine discrete and effective security, reducing the need for manual intervention and providing a dependable personal safety solution.

Keywords: Wearable jewelry, technology, voice activation, AI, IOT, women's security, GPS tracking, connected devices, real-time location sharing, sensors, microphones, Digital Device.

Introduction:

In today's global world, women's safety has rapidly grown in importance, need to creative ways to guarantee security and comfort.

Rakshayantra is a AI-IoT Connected Digital Driven Smart Jewellery is a wearable gadget with features that empowers and promotes women safety.

Invigorating features in this device like artificial intelligence (AI) and the Internet of Things (IoT) are merging with tradition and technology in this smart jewelry device.

With just a voice cloning feature, it can instantly notify loved ones like relatives, Friends and users selected contact, share a real-time location with the help of GPS Tracker, and take pictures every two minutes to send to certain contacts and store this data in device.

This device redefines how technology may improve women's security by fusing contemporary innovation with cultural symbols to offer a covert yet effective tool for emergency response and real-time safety.

Ease of Use

A. *Problem Phases*

- Concern over women's safety in Social like both public and private areas is growing.
- The need for quick, trustworthy information sources and covert ways to get assistance in emergency situations.

- Why it can might be challenging to manually activate traditional protection measures like pepper spray and alarms during an attack.

B. *Some Key Points About Rakshayantra AI-Driven Connected Digital Smart Jewellery*

- A novel wearable technology that blends contemporary technology with traditional jewelry
- Developed to be worn comfortably and around-the-clock without highlighting its safety features and not more getting attentions.
- AI and IoT Merging for getting quick data transfer and wise decision-making Techniques.

C. *Core Safety-Security Functions*

- By using wake words or voice cloning, a voice-activated trigger method enables activation without the use of hands and not getting any hint of attackers (Secretly use) (for example, in restraint conditions).
- Pre-registered or select contacts receive SOS messages or alert alarms from the instant emergency alert system in this device.
- Accurate and correct tracking for prompt assistance is ensured by live or current GPS location sharing.
- During an emergency situations, automatic images are taken every two minutes and share to selected contacts as visual proof

D. *Technical –Digital Features*

- AI-IoT to reduce fake alarms and finding context.
- Internet of Things (IoT) connectivity for cloud storage and smartphone syncing.
- Low-power design for longer battery life between charges means provide high battery backups.
- Safe server combination for storing, fetching and retrieving data in the event of an inquiry.

E. *Impact ,Vision and Mission*

- Combination of technology innovation and cultural traditional jewellery.
- Seek promote and established a new benchmark for wearing personal security Digital Device like jewellery.
- Possibility of increasing use for women's security, such as working women, college –school girls who land senior care.

Objectives :

The aim of this research project is to design and developed a wearable, comfortable safety base device driven by AI and IoT that merge in perfectly with the aesthetics of ethnic jewelry while providing women with immediate, discreet, and intelligent emergency supportive assistance. By bridging the gap between real-time technological innovation and personal security needs, this approach seeks to ensure safety without sacrificing comfort or flair ad easy to use.

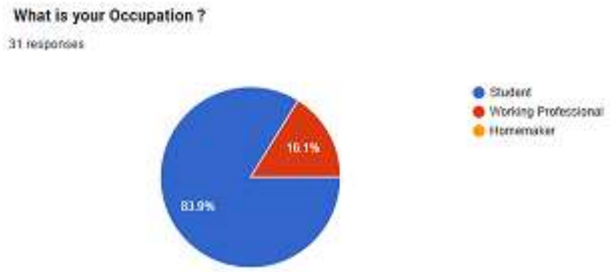
Key pointes include:

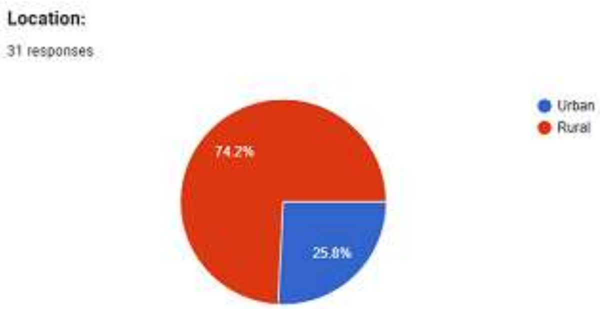
1. **Using Technology** – To give women with a safety-related device that increase their independence, mobility, and confidence in public.
2. **Immediate Emergency Assistance** - to allow for immediate activation via voice clonning ,wake words and orders, guaranteeing that assistance can be called for even when being physically restrained.

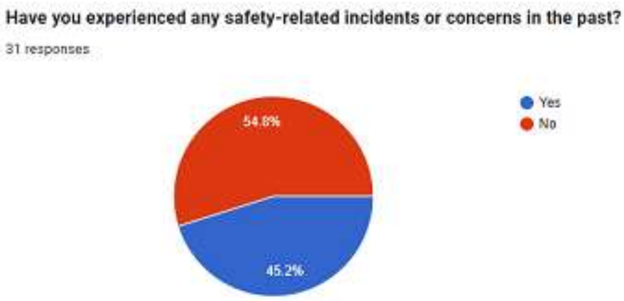
3. **Continuous Safety Monitoring –** To provide automated image capturing, shared live GPS location, and data store from cloud.
4. **Create Designs for Daily Use** – Design a jewellery-like appearance that easily wear into everyday clothing while making sure the gadget is always available and not getting unwanted attention.
5. **Flexible Safety Solution** – To build a device adaptable to other vulnerable groups, including elderly individuals, children, and high-risk professionals.

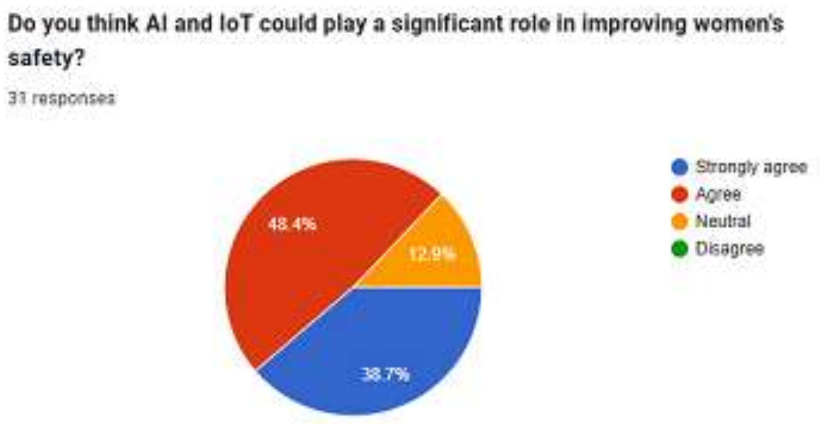
Methodology:

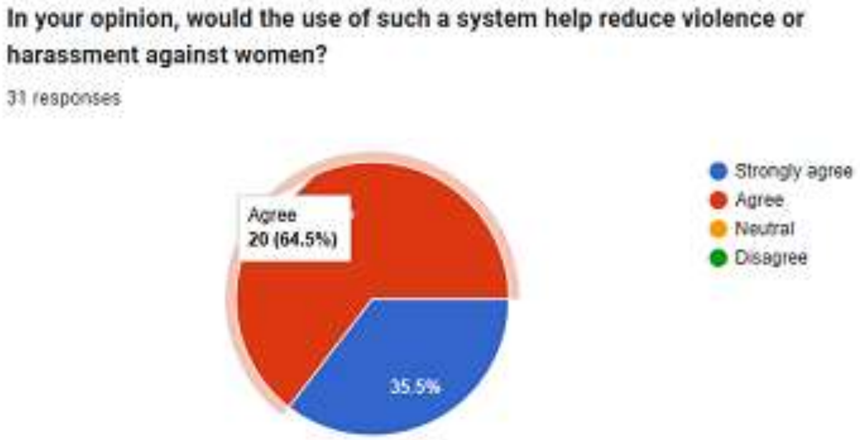
Primary data for this research was getting by using a Google Survey Form. The aim of the research was to getting information and data about public opinion, worries about women's safety, and interest in implementing and wearing AI-driven smart connected jewellery like Rakshayantra. Both closed-ended and open-ended questions are used to collect both qualitative and quantitative data. To guarantee truthful and objective answers, participants were kept anonymous. After the data was gathered, it was examined and analyse to find patterns, user expectations, user interest and possible areas where the suggested Device may be improved. This is a pie chart of the answers.

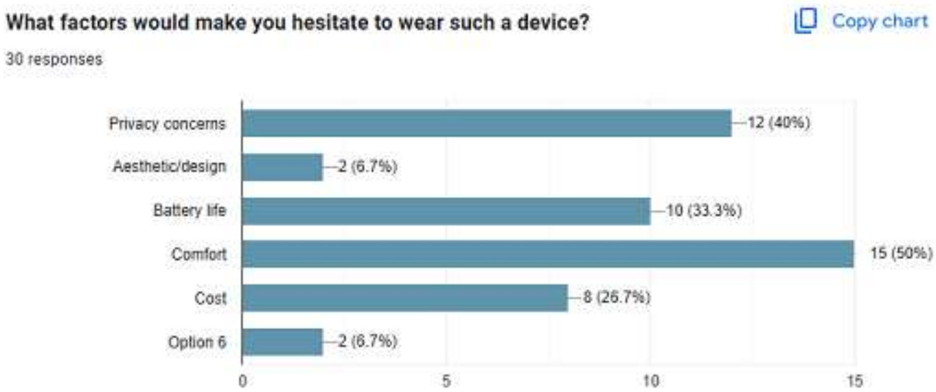






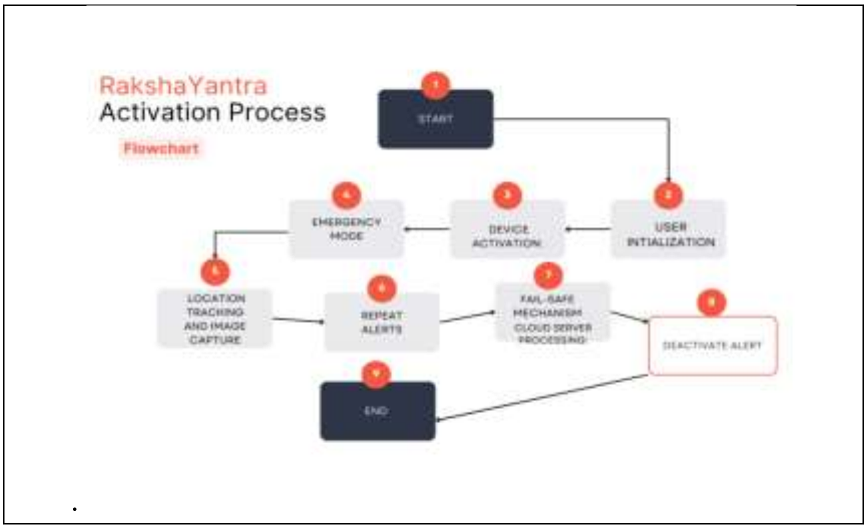






Experimental Work:

The Flowchart determinates how to implement process and how device work like User initialization, device activation, emergency mode, location tracking and image capture, repeat alerts, cloud processing, deactivating alerts, and the device's precise response to emergency situations by contacting contacts, sending alerts, and exchanging location data are some of the steps involved in the process. To guarantee its dependability and security, the system is evaluated for responsiveness in real-world scenarios and issues.



ALGORITHM:

```
1. Start()
1.set all initial values
2. Define constants such as WakeWord, ContactsList, and CaptureInterval.
3. Set the device state to "Locked" to ensure the device remains inactive until the wake word is detected.
Loop
3. Continuously listen for the WakeWord ("") while the device is locked.
        3.1If (WakeWord is detected) Then
                Unlock the device and trigger the emergency alert.
                When the device is unlocked, perform a series of emergency actions.
                Call contacts, send alert messages, and start capturing images.
                Set i=1
                Loop call contact== answered
                then
                    If (call contacts== answered)Then
                        Make communication.
                        Create a message containing the emergency (e.g., "Emergency! I am in danger. Please help!").
                                Find GPS location of the user.
                                        Send this message to all contacts in ContactsList.
                                Capture images
                                        Send these images to all contacts in ContactsList.
                    Else
                        Move on to the next contact.
                        i=i+1;
                 End IF
                End Loop
        End IF
End Loop
```

Step 1: Start
Step 2: Listening Mode on the Device (wake word detection)
If (with the help of voice cloning Wake Word detected)
Then

- Device is on (unlock).
- Activate emergency alert phase (mode).

Step 3: Getting phone calls on selected contacts
(selected contacts stored in device memory.)
For each contact in the ContactsList:

If (Call answered)
Then

- Communicate the emergency message.
- Getting a warning message (e.g., *"Help me I am in danger!"*).
- Share live GPS location of the user.
- share this location message to all selected contacts
- Use the device's camera to take pictures at in every 2 second CaptureInterval.
- Share these images to all contacts in Contacts List immediately until emergency mode is stopped**.**
  Else
- Proceed to the next contact.

Step 4: End
The device was turned off or the emergency was addressed.
If (Emergency mode stopped)
Then

- Stop all working of the device.
- Return to listening mode.

Result:
In order to verify its functioning workflow—which includes wake word detection, voice cloning, automatic contact communication, GPS-based live location sharing, and image collection on cloud and data storage—the suggested emergency alarm system was put into practice and evaluated and tested by using the Python programming language. Its successful implementation for incorporation into the Rakshayantra AI-IoT Connected Driven Smart Jewellery Device is confirmed by the successful execution. To increase future use and real-time performance in urgent circumstances, future research will concentrate on improving AI-based detection accuracy, speeding up response times, and adding more IoT-based safety features we will work on it.

Features we added	Accuracy Score
Wake Word Detection	99 %
Contact Communication	98 %
Image Capture & Location Sharing	99 %

We will implement this idea in device like jewellery for future use In order to provide quick emergency response for women's safety, we will integrate AI wake word detection, IoT GPS tracking, immediate communication, and image capture into a small, discrete wearable gadget. We will also apply this concept to jewelry for future application.

Conclusion :

This study involves a smart safety jewelry device that combination with conventional jewelry techniques with technology like voice activation, IoT, and artificial intelligence to increase women's safety. When an emergency occurs, the system reacts automatically by sending out notifications, contacting emergency contacts, taking pictures, sharing real-time locations, and storing information. Wearable technology offers women a cutting-edge and dependable tool for personal security by fusing classic design with contemporary safety features to provide a discrete and efficient real-time protection solution.

References :

1. **VEDHA SREE G** "Women Safety Analytics Protecting Women From Safety Threats" Research Scholar(2024).
2. **Arpita Halder** "Women Safety Matters: Addressing the Complexities and Violence Against Women"ijels(2024).
3. **Islam, et al.** *Design and Implementation of Women Auspice System by Utilizing GPS and GSM*—SOS alert system using GPS, SMS, microcontroller
4. Nidhi Pillai "Sentinel Adorments: IoT Integrated Smart Jewelry for Augmented Women's Safety"(JETIR)(2014)
5. **Navya R. Sogi.** *SMARISA: A Raspberry Pi-based Smart Ring for Women Safety using IoT*—compact wearable, captures image of aggressor and sends to emergency contact
6. **Priyadarshini, A.** *Women Empowerment towards Developing India*—discusses women's self-defense awareness (contextual background).
7. **Monisha, D. G., et al.** *Wearable Device with Location Tracking and SOS via Button Press*—sends SOS repeatedly or makes a call.
8. **Pardhi, P., Dhote, C., Pagote, R., Somkuwar, S., & Dhanorkar, M.** (2022). *Smart Wearable System for Women Security using IoT.* SAMRIDDHI—GPS → SMS + call using handbag and Android app.
9. **Smart Gadget for Women Safety using IoT."** IJERT. Triggers image capture on motion, emails culprit image + location.