# JanRakshak

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*Abstract*—In recent times, ensuring women's safety has become a paramount concern globally. "Janrakshak" is a novel device designed to address this issue by integrating various technologies to provide immediate assistance to women facing harassment or potential danger. This paper presents the design, implementation, and evaluation of the "Janrakshak" system, which includes features such as voice recording and conversion to text, continuous image capturing, and GPS tracking for real-time location monitoring. The paper discusses the technical details of the system, its components, and the integration of state-of-the-art models like Hugging Face for voice-to-text conversion and image detection. Furthermore, it explores the potential impact of "Janrakshak" in enhancing women's safety and suggests future directions for research and development in this domain.

*Keywords—Women safety, safety device, Image detection, GPS tracking, IoT (Internet of Things), Voice-to-text conversion*

## I. INTRODUCTION (*HEADING 1*)

In recent times, ensuring the safety of women, particularly in public spaces, has emerged as a significant societal concern. Despite strides in various fields, women continue to face threats ranging from harassment to physical harm. To address these challenges, innovative solutions are imperative

Enter "Janrakshak" – a comprehensive safety device designed to empower women in vulnerable situations. Integrating advanced technologies like voice recognition, image detection, and GPS tracking, "Janrakshak" offers immediate assistance to women facing danger or harassment.

This paper presents an in-depth exploration of "Janrakshak," detailing its architecture, functionality, and potential impact on women's safety. By leveraging modern technology, "Janrakshak" aims to bridge the gap in traditional safety measures, offering a reliable means of protection in critical moments.Through our examination of "Janrakshak," we seek to contribute to the discourse on technology-driven solutions for societal challenges. As we navigate the complexities of modern society, "Janrakshak" represents a beacon of hope for a safer and more inclusive future.

## II. METHODOLOGY

The technical framework of Janrakshak revolves around three primary functions:

•**Voice Recognition and Speech-to-Text Conversion:** The system uses Hugging Face models to interpret voice input, ensuring accurate distress signal detection.

•**Continuous Image Capture**: A camera module captures images which are processed using AI-based detection algorithms, providing visual evidence in case of danger.

•**GPS Tracking**: The Neo 6m GPS module ensures real-time location updates to emergency contacts and services.

Each component of the system is designed to activate discreetly and provide assistance without escalating the situation.

### A. Hardware Components

The core hardware components include:

•Raspberry Pi 3B+: The processing unit for the system.

•USB Microphone and Camera Module: Used for capturing audio and visual data.

•Neo 6m GPS Module: Provides real-time geolocation tracking.

•Activation Button: Triggers the system's safety mechanisms.

### B. Software Architecture

•Voice Recording and Speech Conversion: Recorded audio is processed using AI to convert speech into text, generating context for alerts.

•Image Capture and AI Detection: Captured images are analyzed using computer vision models to detect potential threats.

•Data Transmission: All collected data, including audio, image, and location, is sent to real-time access.

## III. IMPLEMENTATION

The Janrakshak system's implementation merges hardware and software to provide robust monitoring and rapid response.

### A. Hardware Setup

The system's hardware setup includes a Raspberry Pi as the central processor, an activation button that triggers image and audio recording, and a GPS module to track the user's real-time location. The device is designed for portability and ease of use.

### B. Software Architecture

The system leverages AI for processing audio and images:

- Voice-to-Text Conversion: Audio is captured and converted into text using Hugging Face models.

- Image Analysis: Captured images are processed in real-time to detect suspicious activity using machine learning models.

- Geolocation Sharing: The system transmits the user's location via GPS to pre-configured emergency contacts or services.

### C. Front-end

It resents real-time data, including a map view of the GPS coordinates and alerts.

### D. System Architecture and Data Flow

- The system integrates the captured data (audio, images, location) and transmits them to a web server. The data flow is as follows:

1. The activation button is pressed.

2. Voice recording, image capturing, and GPS tracking are initiated.

3. Audio is converted to text via Hugging Face AI models and analyzed.

4. Images are processed using object detection to identify suspicious behavior.

5. Geolocation data is transmitted in real-time.

6. All the data is combined and transmitted to a Flask-based web server.

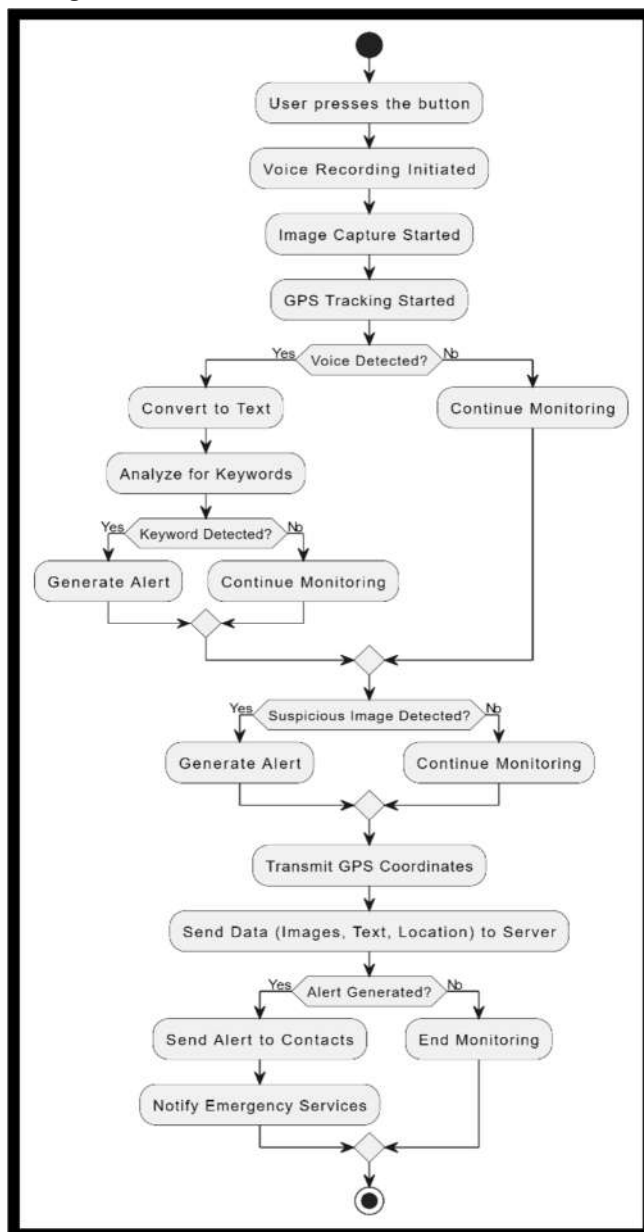7. Alerts are sent to emergency contacts or law enforcement if a threat is detected.
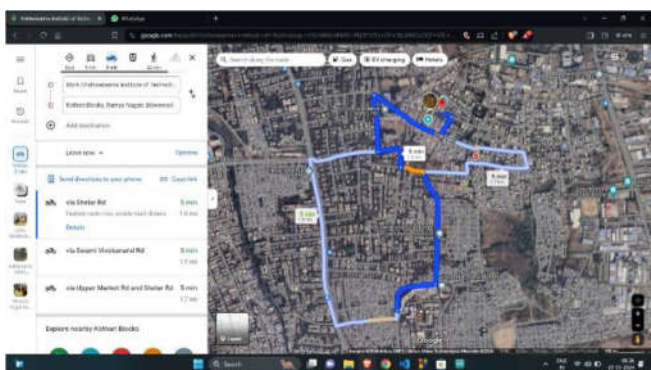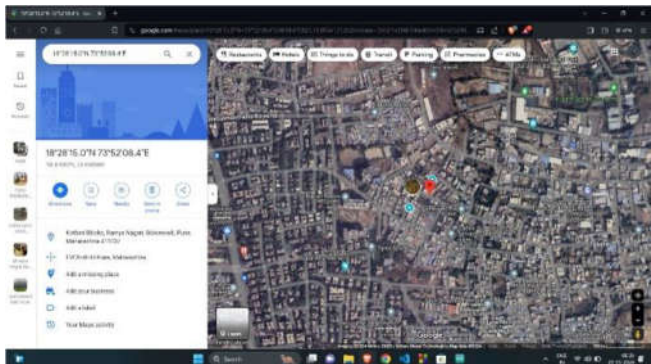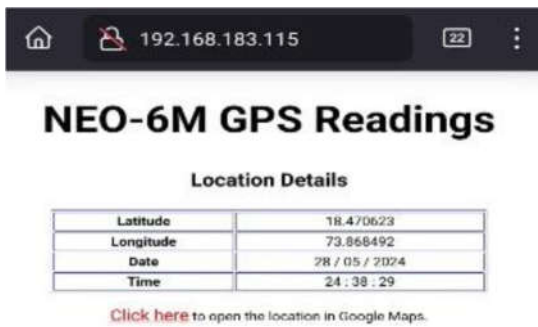
### E. Figures



*Fig: Workflow of Janrakshak*

## IV. RESULTS AND DISCUSSIONS

The implementation of the "Janrakshak" project demonstrated promising results in providing a robust safety solution for women facing potential threats while traveling. Through the integration of hardware components including the Raspi 3b+, USB microphone, camera module, and Neo 6m GPS module, coupled with advanced AI models from Hugging Face, the system successfully enabled distress signal activation, voice-to-text conversion, continuous image capture, and real-time GPS tracking. Testing procedures confirmed the system's responsiveness, accuracy in converting speech to text, effectiveness in capturing images, and reliability in GPS tracking. User feedback indicated positive perceptions of the system's usability and potential to enhance safety measures for women. Overall, the "Janrakshak" project exhibited promising outcomes in leveraging technology to address women's safety concerns in transportation scenarios.

## NEO-6M GPS Readings

### Location Details

| Latitude | 18.470623 |
|---|---|
| Longitude | 73.868492 |
| Date | 28 / 05 / 2024 |
| Time | 24 : 38 : 29 |

Click here to open the location in Google Maps.





OUTPUTS FOR GPS

- These can be viewed on google maps also.
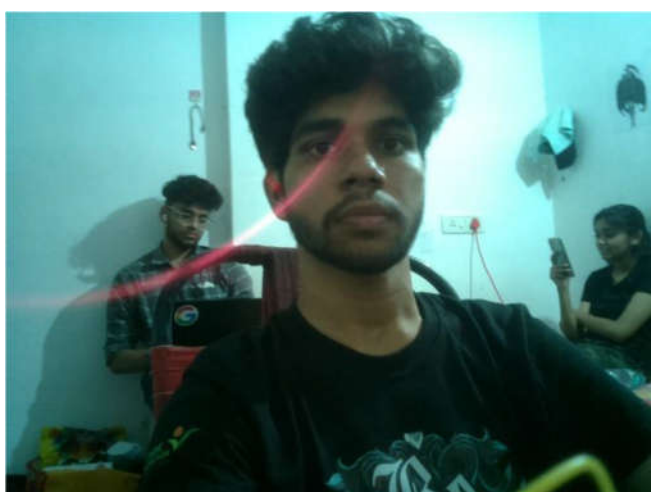- GPS module working using node MCU, it will redirect it to the website we working on.
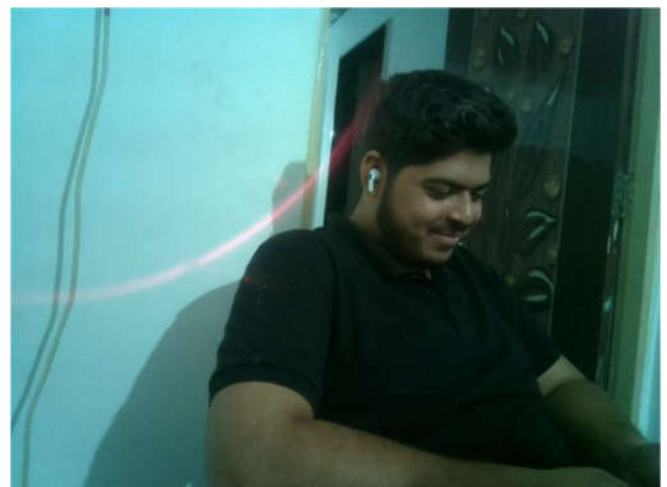


Fig:- Image Capturing



Fig:Anomaly Detection



```
Image: captured_images/image_1.jpg
Output: [{'generated_text': 'there
is a man that is looking at his cell
phone'}]

Image: captured_images/image_2.jpg
Output: [{'generated_text': 'there
are two people sitting on the floor
in front of a computer'}]

Image: captured_images/image_3.jpg
Output: [{'generated_text': 'there
is a man sitting in a doorway with a
cell phone'}]

Image: captured_images/image_4.jpg
Output: [{'generated_text': 'there
is a man that is looking at a cell
phone'}]

Image: captured_images/image_5.jpg
Output: [{'generated_text': 'blurry
photograph of a computer monitor
with a red cord running through
it'}]
```

**Its is capturing image, generating output**

hello hello my name is yoyfashrokonorto i am in danger some people are cheasing me please help me i am under the water holo lonos

**Its is recording audio and generating output**

## V. FUTURE SCOPE

Janrakshak offers significant potential for future enhancements to improve functionality and expand its usability:

- **Predictive AI Models:** Incorporate machine learning to anticipate potential threats based on behavioral patterns and real-time data analysis.
- **Hardware Miniaturization:** Future iterations could focus on making the device more compact, potentially evolving into wearable forms like smartwatches.
- **Improved Connectivity:** Adding SIM card support or mobile network integration would ensure continuous operation without Wi-Fi, enhancing reliability.
- **Advanced Image and Video Analytics**: The system could evolve to provide real-time video streaming and advanced facial/object recognition to detect threats more accurately.
- **Direct Emergency Services Integration**: The system can be further integrated with law enforcement for automatic alerts and real-time communication.
- **Customization:** Offering users more control over sensitivity settings, contacts, and geofencing for personalized safety.
- **Energy Efficiency**: Implementing low-power or solar-powered options would extend battery life and make the device more suitable for remote areas.

## VI. ACKNOWLEDGMENT

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## VII. REFERENCES

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