International Journal of Research and Development in Engineering Sciences
ISSN: 2582 - 4201(Online) , http://www.ijrdes.com/
Regular Issue, Vol. 7, Issue. 6 (November – December) , 2025 , Pages: 34 - 38
Received: 10 January 2025 ; *Accepted:* 24 October 2025 ; *Published:* 07 November 2025
https://doi.org/10.63328/IJRDES-V7RI6P4
Original : Action Research – Problem-Solution Research Paper

Women Safety and Surveillance System using YoLov8

D Aruna Kumari [1]*, Y Prabhu Kumar [2] , A S V Shashank [3] , Neela Sai [4] , Aahil Shaik [5] , Sai Sri Charan [6]

[1,2,3,4] Department of Computer Science and Engineering, Vidya Jyothi Institute of Technology (Autonomous) , Hyderabad, Telangana 500075, India

** Corresponding Author: D. Aruna Kumari ; csehod@vjit.ac.in*

Abstract: Women Safety is one of the challenging areas in daily life's, and it has led to different security problems. Due to security issues, women hesitate to work beyond hours to reach the safety targets. Our proposed system announces the real-time concept of live surveillance tracking system when the Women available in various unprotected places, and its to tracking many through IoT and Deep Learning. It observes and capture images from live streaming and tracks the exact situations or movements where unacceptable situations on dangerous, abnormalities take places. Risk Desk System will track automatically notified with alerts and when there is changes in unacceptable behaviour happens. Current research work mainly focus on the posture estimation to resolve the identified problems through deep learning, and computer vision. It will be capable of identifying persons, recognize their gender, and estimate their situation exactly on live or SOS. It will help in recognizing harmful situations, where a women is left alone or occupied with a group of men, which also does not limit to only night time but daytime too. Additionally, it observes the people rigorously and continuously, providing more data related to the group of people acting in that situation. The system proposed mainly focuses on SOS gestures, alert automatically to concerned dedicated teams on surrounding police station's , NGOs, existing family relatives with noticeable alerts on timely and live tracking.

Keywords: Women Safety, Workplace, Public Safety, SOS Gestures, Real-time Monitoring System.

1. Introduction

The Women Safety is the big concern in India. We listen so many stories about women in the society about unsafely situations in public areas. We installed so many cameras but they are only for recording purpose not for taking actions. So footage also should be monitor by humans. For this our team has come with an idea a smart surveillance system using AI which can understand what is happening in front of camera. Basically it find people, find their gender and notice the unusual actions which mean something is in danger. This is a signal for indication of help. The feature is used mainly with computer vision and AI. Once the response in case of an emergency is detected, the signal will be automatically triggered. One of the unique features of this system is its ability to understand SOS gestures. The system uses posture estimation to recognize various emergency signs, such as a hand raised for help, repeated waving, or any other sort of distress movement predetermined. Once the system detects such signs, it immediately sends information to authorized security or government staff for immediate action. For example, if a girl came out at night from 8 p.m. to morning 5a.m. it gives alert. and if ant group of men surrounded it will give the alert and sends a messages or call to the nearby helping stations. we also added a voice assistant so that any disable person can access and provide a dashboard where officers can see alerts and live feed. our main aim is to stop risk and make women come out side at night without any fear. we make public places secured and make women live freely without any danger. Our solution takes an active and user-focused approach to improve women's safety. It also had a voice assistant feature for easy use, a real-time dashboard showing live camera feeds, alerts, and incident reports, and a secure login for verified authorities only.

The key highlights of our modular and innovative system include voice-assisted instruction paired with live monitoring dashboard. Secure authorized login for special personnel allows that no data isn't hampered at any cost ensuring at most reliability. Incidents can also be reported as soon as any incident is spotted for the speedy action of the concerned authorities. The voice assistant gives you a quick demo of the various modules of the project so that the user can authorized user can go through the whole project and get acquainted to the project. It becomes easy

Jack Sparrow Publishers © 2025, IJRDES, All Rights Reserved
www.jacksparrowpublishers.com

ISSN: 2582 - 4201(Online) , http://www.ijrdes.com/ , IJRDES, Vol. 7, Issue 6, 2025 , https://doi.org/10.63328/IJRDES-V7RI6P4

for them to navigate later. The outcome of this thought provoking idea, is a software project that ensures the safety of each and every women, roaming on the street. Our ideology is partly inspired the Prime Minister of the United Arab Emirates who proudly claims that if a woman is wandering on the streets all alone at 12 A.M at midnight, you know she must be in the UAE. Our final motto is to make India a better and a safe haven for each and every women to wander on the streets without having to care about their safety at all.

2. Related Work

Traditional CCTV cameras placed in streets, universities, workplaces, and transportation hubs are the main tool used in India to monitor women's safety in public and semi-public areas. These systems mostly depend on human observation by authorities or security staff, who must constantly watch several cameras, feeds in order to spot possible threats. Women can send SOS alerts to family, friends, or authorities using some mobile applications, however these solutions rely on the user's capacity to access a device in an emergency. The majority of current monitoring systems are passive; they only record occurrences without evaluating or anticipating potentially dangerous circumstances.

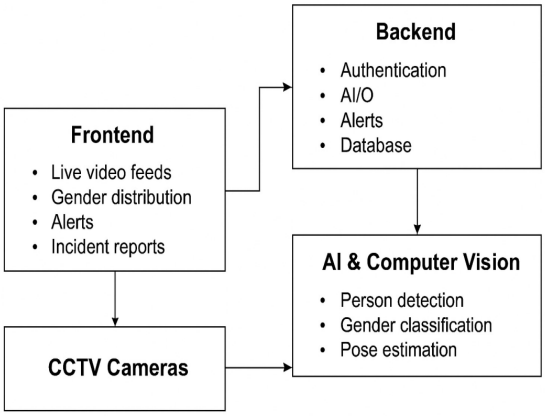

Figure.1 Explainable flow entier Proposed Mechanism

High-risk situations, including a lady alone at night or a woman surrounded by a group of guys, are not immediately detected by them. Most of the safety applications that we use today are still not very effective when it comes to identifying threats in real time scenarios. One major reason being that most of the modern technologies do not inculcate the use of AI-based recognition. It is because of this limitation that most of the tools out in the market fail to recognize threats in time and hence lead to damage being caused. When someone is in trouble, every second can make a big difference, and depending only on manual alerts can sometimes prove risky.

Taking all these factors into consideration, it is the need of the hour to develop a sophisticated system that utilizes advanced AI based recognition, that is well trained to think ahead and recognize any potential threats and watch out in the same regard for timely reporting of the same threat.

3. Proposed System

The proposed system, a Real-Time Surveillance for Women's Safety that provides a smart and proactive solution to overcome the limitations of the existing safety measures. It uses AI analytics along with YOLOv8 for real-time detection and gender classification of people in public areas such as streets, colleges and transport hubs. The system can recognize gestures like raising a hand or waving repeatedly and can also detect risky situations for instance, when a woman is alone at night or when a woman is surrounded by a group of men.

In such cases, the system instantly reports to the concerned authorities about the deprived safety of the woman at the exact coordinates of the presence, which ensures prompt action. The system provides an economical, effective, and human-cantered method of improving women's safety in India by fusing automated threat identification, real-time monitoring, and user-friendly interfaces.

The technological, operational, and financial viability of the suggested system, Real-Time Surveillance for Women's Safety, has been assessed to guarantee successful deployment in actual Indian situations. Technical viability: Accurate public space monitoring is made possible by the system's usage of YOLOv8 for real-time person detection and gender classification.

Basic AI components assist with pattern analysis, detecting gestures for SOS warnings, and identifying women who are alone or surrounded by men. The system is compatible with the current surveillance infrastructure because it can be used with both IP and traditional CCTV cameras. The system is viable for real-time deployment since a dashboard enables live monitoring, alert management, and problem reporting.

Operational viability: The system is made for approved government or security professionals, guaranteeing that the appropriate authorities receive alerts in a timely manner. Operators can better grasp system functionality with the use of straightforward voice assisted instruction. In emergency situations, prompt action is made possible by real-time monitoring and alarms.

To guarantee well-organized operation and simpler deployment, the Real-Time

Jack Sparrow Publishers © 2025, IJRDES, All Rights Reserved
www.jacksparrowpublishers.com

ISSN: 2582 - 4201(Online) , http://www.ijrdes.com/ , IJRDES, Vol. 7, Issue 6, 2025 , https://doi.org/10.63328/IJRDES-V7RI6P4

Surveillance for Women's Safety system is separated into the following parts.

User Authentication Module: Only authorized government or security professionals are able to access the system thanks to this module. Users log in using unique credentials, ensuring secure access to live camera feeds, alerts, and incident reports.

Module for Live Camera Monitoring: On the dashboard, this module shows live video feeds from IP or CCTV cameras. It is the central component of the system, enabling operators to keep an eye on semi-public or public areas all the time.

K. H. Cheong, "Practical Automated Video Analytics for Crowd Monitoring and Counting," *IEEE Access*, vol. 7, pp. 183252-183261, Dec. 2019.

Module for Person Detection and Gender Classification : This module recognizes and categorizes persons in the video feed as either male or female using YOLOv8. Additionally, it computes the gender distribution in real time, which aids in crowd analysis and the observation of potentially dangerous circumstances.

Do, T. D., Nguyen, V. H Kim (2020). Real-Time Gender Classification in Video Surveillance. Pattern Analysis and Application.

The module for detecting high-risk scenarios : This module examines spatial configurations to detect high-risk scenarios, like a woman alone at night or a woman with several guys around her, and sets off alarms for prompt action.

Gesture-Based SOS Detection Module : This module detects emergency gestures such hand-raising, repetitive waving, or preset SOS signs by using posture estimation algorithms. It automatically sends alerts to authorized personnel after detection. An End-to-End System for Recognizing the 'Signal for Help' Gesture. by F. Buccellato et al. (2025).

Alert & Incident Management Module : This module records information such as time, location, and threat type for analytics and future use. It also controls automated alerts, notifications, and incident reporting.

Analytics & Dashboard Module : It helps authorities to take spontaneous decisions by providing an easy to use, user friendly interface with live video feeds and alerts. This is especially useful in heavily deserted areas or at the odd hour of the day.

The Voice Assistance Module : A voice guided tool which basically shows every new and authorized user, how to navigate through the application making it easier for anybody new to use the application with at most ease.

4. Results and Analysis

This is a Figire.1 image login portal which is solely meant for official staff. It asks for a name and badge number to granting access.

Each and every task being performed is recorded for ensuring no data is being tampered or neither is any evidence being hidden

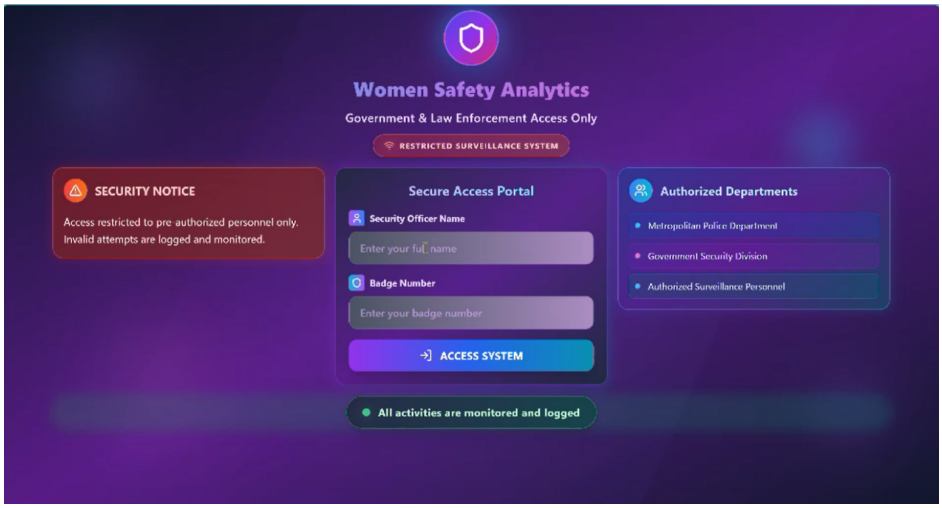

Figure.2 Workflow of the Proposed Explainable Women Safety Analytics

This Figure.2 is the main monitoring dashboard that displays all the real-time analytics, live tracing camera footage and along with the active alerts. Security staff rely on this interface to keep an eye on public safety and respond quickly to any possible threats .

Jack Sparrow Publishers © 2025, IJRDES, All Rights Reserved
www.jacksparrowpublishers.com

ISSN: 2582 - 4201(Online) , http://www.ijrdes.com/ , IJRDES, Vol. 7, Issue 6, 2025 , https://doi.org/10.63328/IJRDES-V7RI6P4

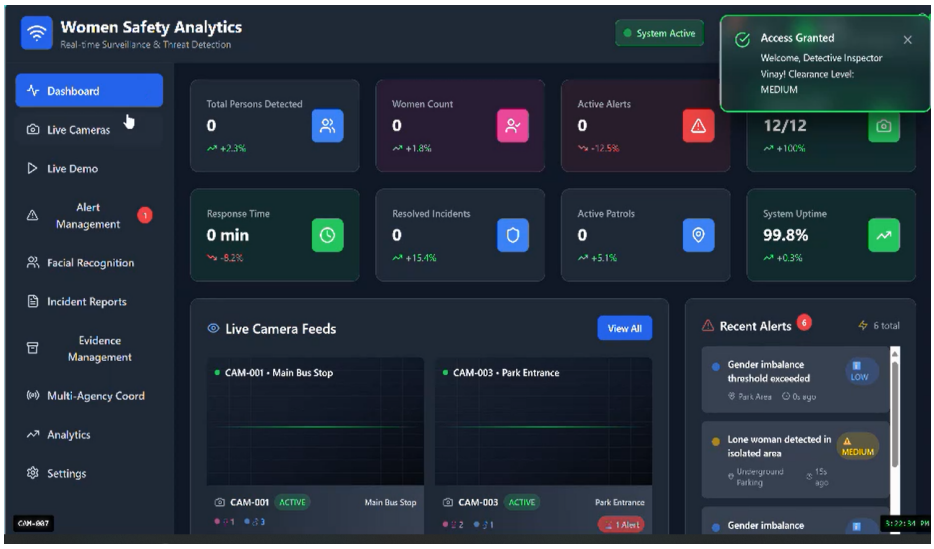

Figure.3 Main Dashboard to detailed Safety Analytics

The camera management dashboard that displays Figure.3 live feeds from various monitoring places. Security staff can easily observe activities across multiple areas using this decentralized system.

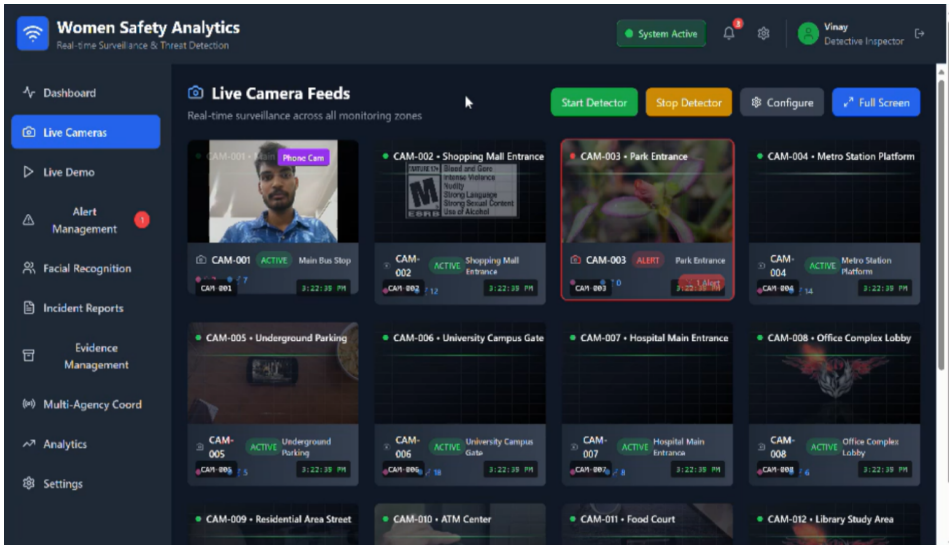

Figure.3 Captured Image Analysis to existing database or throughout Online databases

This Figure.4 shows the system's training and protest part. It permits hands to training with simulated emergency scenarios like lone woman detection and crowd harassment to enhance response vigilance.

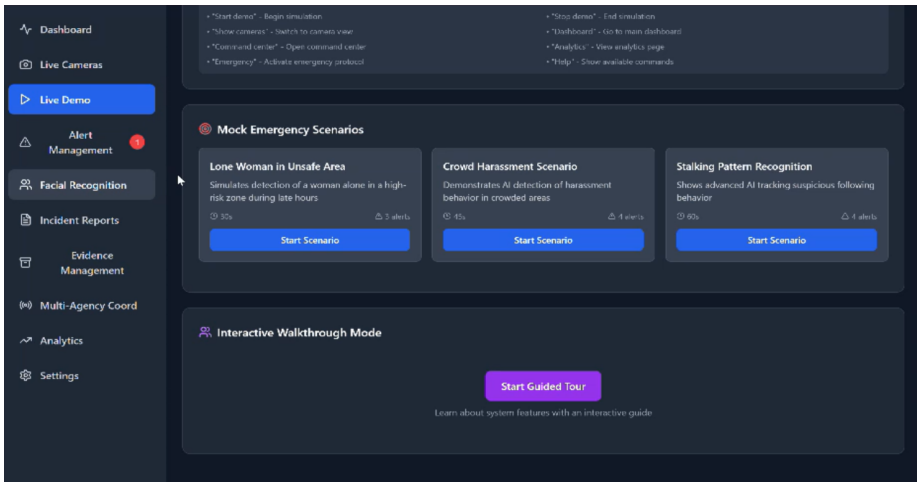

Figure.4 Simulated analysis on SOS flow with Response Workflow

Jack Sparrow Publishers © 2025, IJRDES, All Rights Reserved
www.jacksparrowpublishers.com

ISSN: 2582 - 4201(Online) , http://www.ijrdes.com/ , IJRDES, Vol. 7, Issue 6, 2025 , https://doi.org/10.63328/IJRDES-V7RI6P4

This interface Figure.5 displays reported safety happenings with their detailed case evidence. Security staffs can track, examine, and update case statuses whereas accessing their associated evidence like CCTV footage and also the witness statements.

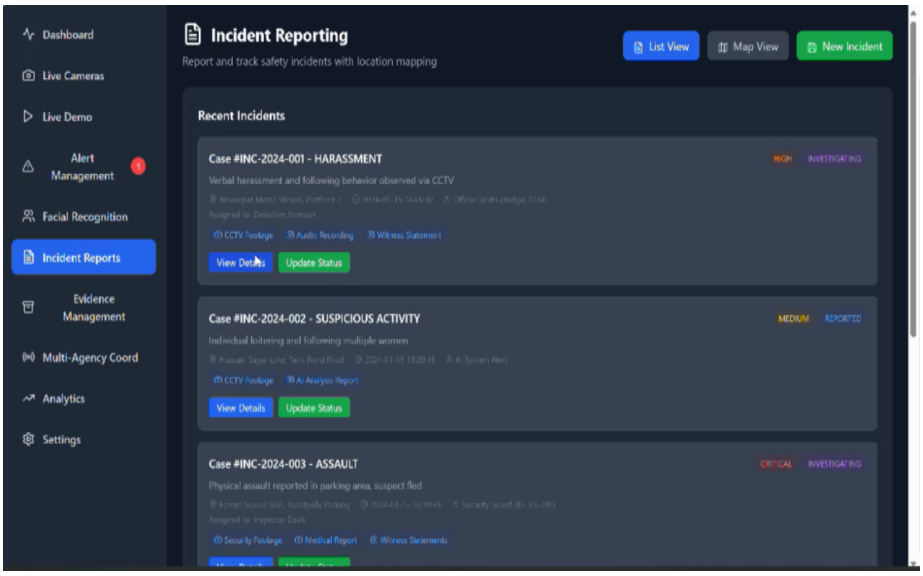

Figure.5 Reports analysis various parties and Responsive Women Safety Team

5. Conclusion

To enhance women's safety in India, the Real-Time Surveillance for Women's Safety system provides a smart, practical, and forward-thinking solution. By combining the use of YOLOv8 for person detection, gender classification and gesture recognition, the system can identify any potentially risky situations and immediately alert the concerned authorities and security officials.

For authorities, the platform's simple and efficient interface with live monitoring, incident reporting, and analytics helps in speedy response from the authorities. Thanks to it's cost-effective design and high compatibility with the existing camera networks, it can be easily deployed in streets, colleges and transport routes. Overall, this system delivers a reliable, scalable, and socially impactful way to make public spaces a safer place for women. It blends modern technology with a human touch to strengthen community safety and to build a more secure environment for everyone to live within.

References

[1] R. S. Yarrabothu and B. Thota, "Abhaya: An Android App for the Safety of Women," in 2015 Annual IEEE India Conference (INDICON). https://www.scribd.com/document/776489177/Abhaya-An-Android-App-for-the-safety-of-women

[2] Do, T. D., Nguyen, V. H Kim (2020). Real-Time Gender Classification in Video Surveillance. Pattern Analysis and Application. https://link.springer.com/article/10.1007/s10044-019-00802-6

[3] Awasthi, U Gupta, P. & Singh (2025). Real-Time Hand and Face Gesture Recognition for Emergency Response. IJRASET Journal https://www.ijraset.com/best-journal/realtime-hand-and-face-gesture-recognition-for-emergency-response

[4] An End-to-End System for Recognizing the 'Signal for Help' Gesture. by F. Buccellato et al. (2025). https://www.sciencedirect.com/science/article/pii/S2667305325000626

[5] Artificial Intelligence Based Women Security and Safety Measure System" (2025). https://www.researchgate.net/publication/360732358_Artificial_intelligence_based_women_security_and_safety_measure_system

[6] Hand Gesture Recognition Using OpenCV Python, UpDegreehttps://www.youtube.com/watch?v=QkO_3absfdw

[7] A. Rosebrock, Real-time object detection with YOLOv8, PyImage Search, 2023. https://pyimagesearch.com/2023/05/01/real-time-object-detection-with-yolov8/

[8] National Crime Records Bureau (NCRB), Crime in India 2023 – Statistics on Crimes Against Women, 2024. https://ncrb.gov.in

[9] Wang Q. Feng, G.& Li Z. (2025). Lightweight Person Detector for Surveillance Footage Based on YOLOv8n Sensors. https://www.mdpi.com/1424-8220/25/2/436

[10] K. H. Cheong, "Practical Automated Video Analytics for Crowd Monitoring and Counting," IEEE Access, vol. 7, pp. 183252-183261, Dec. 2019. https://ira.lib.polyu.edu.hk/handle/10397/82173

[11] OpenCV Team, "Open Source Computer Vision Library," OpenCV.org, 2024. https://opencv.org/

[12] Kaggle Datasets, "Women Safety – Public Surveillance and Crime Data," Kaggle, 2024 https://www.kaggle.com/datasets/fmena14/crowd-counting

Jack Sparrow Publishers © 2025, IJRDES, All Rights Reserved
www.jacksparrowpublishers.com