

AI/ML-Powered Video Analysis for NSG Surveillance Systems



Problem Statement : The National Security Guard (NSG) operates drones, body cams, and robots, generating vast video data that is impractical to analyze manually. Currently, no automated system exists to efficiently detect threats.

Our Vision: To develop an AI/ML-powered video analysis system that detects threats and suspicious activities with minimal human intervention, providing real-time actionable insights to enhance NSG's security and efficiency.

Key features of the project :

- ❖ Multi-Source Video Input: Accepts video streams from existing surveillance systems in various formats.
- ❖ Real-Time Object Detection: Identifies weapons, vehicles, and other objects of interest using computer vision models.
- ❖ Activity Recognition: Detects suspicious behaviors like loitering, running, or crowd formation.
- ❖ Facial Recognition: Identifies individuals from watchlists for enhanced security monitoring.
- ❖ Alerts and Reporting:
Generates real-time alerts, visual heatmaps, and analytical reports for decision-making.
- ❖ Legacy System Compatibility: Works with existing hardware without requiring upgrades.

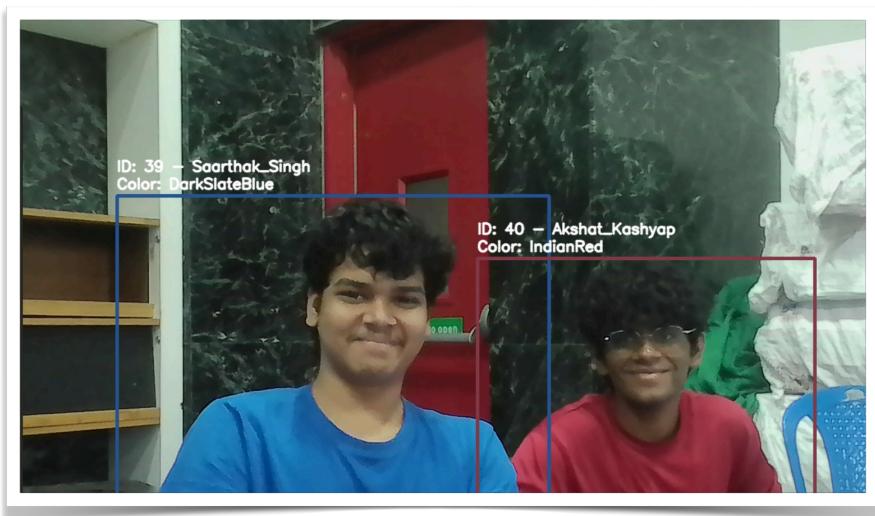


Technology Stack:

- ❖ Programming Languages: Python, C++ (for high-performance video processing)
- ❖ AI/ML Frameworks: TensorFlow, PyTorch, OpenCV, scikit-learn
- ❖ Video Processing: OpenCV, FFmpeg
- ❖ Database: SQLite or MongoDB for storing logs and metadata
- ❖ UI/Reporting: Web dashboard (React/Flask)
- ❖ Object Detection (YOLOv8, Faster R-CNN), Activity Recognition (CNN + LSTM models)

Our proposed solution - basic demo:

We propose an AI/ML-powered video analysis platform that processes feeds from drones, body cams, and robots to automatically detect people, objects, and activities. It flags anomalies, identifies potential threats in real time, and generates clear, actionable reports—reducing manual effort and enhancing NSG's situational awareness and response speed.



AI/ML VIDEO ANALYSIS

PIPELINE



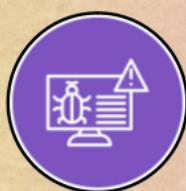
Data ingestion

Receive video data from multiple sources like drones, body cams, and surveillance systems



Data Extraction

Automatically extract meaningful features such as objects, activities, and patterns



Detection

Identify threats, suspicious activities, persons



Giving output

Deliver real-time alerts, comprehensive reports, and visual analytics for informed decision-making



Adapt

Customize to NSG requirements without hardware upgrade

