SafeVisionAI: Real-Time Surveillance with Threat Detection

Problem Statement

Traditional surveillance systems rely heavily on human monitoring, which is time-consuming, prone to fatigue, and inefficient for identifying threats in real-time. This project aims to address the limitations of manual surveillance by developing a smart AI-powered system that automates threat detection, enhancing security and response times in public and private areas.

Objectives

1. Develop an AI-based surveillance system to detect suspicious behavior in real-time. 2. Utilize computer vision and deep learning techniques for threat recognition (e.g., fights, weapons, intrusions). 3. Create a user-friendly dashboard to display surveillance footage with alerts. 4. Ensure scalability and privacy considerations in real-world deployment.

Technology Stack

- Language: Python - Libraries: OpenCV, TensorFlow/Keras, YOLOv8, Flask (for dashboard) - Tools: Git, GitHub, VS Code - Deployment: Localhost or cloud (future scope)

Methodology

1. Dataset Collection: Use publicly available datasets like UCF-Crime, Roboflow, or custom annotated footage. 2. Model Training: Train object detection or activity recognition models using YOLOv8 or similar. 3. Integration: Link the model with a live webcam or CCTV stream. 4. Dashboard: Develop a Flask-based dashboard for real-time alerts and visualization.

Expected Outcomes

- Real-time threat detection (e.g., weapons, intrusion, fighting). - Audio-visual alert system. - Dashboard with threat logs and video highlights. - Potential integration with IoT devices or law enforcement APIs.

Conclusion

SafeVisionAI aims to revolutionize traditional surveillance systems by leveraging the power of AI to proactively identify and alert security teams about potential threats in real-time, minimizing human error and response time.