Deep Learning-Based Gun Detection and Notification System for Law Enforcement

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MOTIVATION

The motivation behind a deep learning-based gun detection and notification system for law enforcement is to enhance public safety, improve response times, and prevent gun-related incidents. By leveraging advanced technology, such a system can quickly identify firearms in real-time video footage, enabling law enforcement to respond swiftly and effectively to potential threats, saving lives and deterring crime.

CURRENT PROBLEMS

- In today's world, Law enforcement agencies face the challenge of manually monitoring surveillance footage for gun detection, which is time-consuming and prone to errors. This approach can lead to delays in identifying and responding to firearms incidents. Therefore, there is a need for an automated gun detection system to enhance public safety and enable timely responses to potential threats.

OUR SOLUTION

- Our solution involves training a model, such as YOLOv4, on a large dataset of labeled gun and non-gun images. The model is trained to accurately detect guns in real time by predicting bounding boxes and class probabilities. Once trained, the model is deployed in a system that analyzes live video streams or images from surveillance cameras. When a gun is detected, the system generates notifications or alerts to inform law enforcement via Gmail

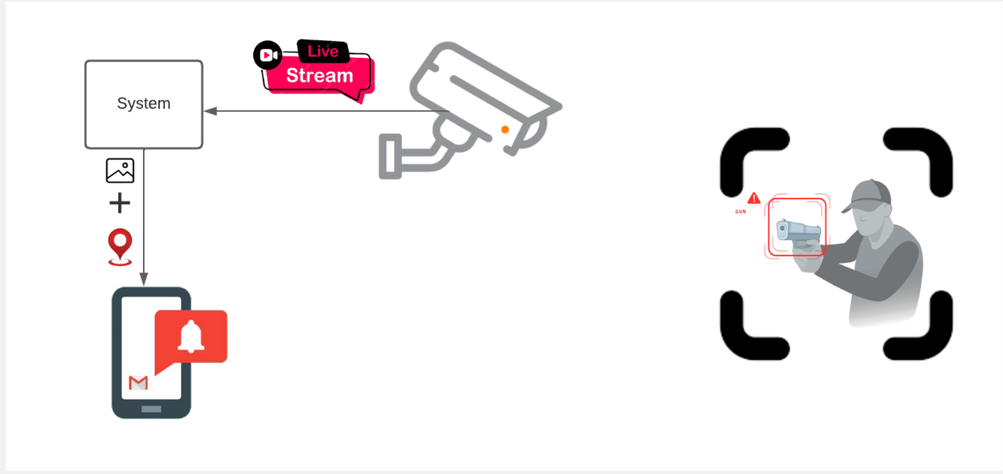
YOLOV4

- The Deep Learning-Based Gun Detection and Notification System for Law Enforcement utilizes YOLOv4, an advanced object detection algorithm. YOLOv4 offers real-time and accurate gun detection capabilities. By leveraging its powerful features, including feature pyramid networks and advanced training techniques, the system can effectively detect guns of varying sizes and orientations.

- Once a gun is detected, the system promptly sends notifications to law enforcement, enabling swift response. YOLOv4's speed and precision make it an essential component in this gun detection system, enhancing public safety and aiding law enforcement agencies in identifying and addressing potential threats.

WORKING

- This system works by analyzing video feeds from surveillance cameras, and detecting guns based on their visual attributes, such as the object's shape, color, and texture.
- This can enable law enforcement agencies to quickly detect potential threats, respond proactively, and take appropriate action to prevent gun-related incidents.



APPLICATIONS

- Implementing the gun detection system in educational institutions can help safeguard students and faculty by promptly detecting firearms on campus and notifying authorities to take immediate action.

- The gun detection system can be utilized to monitor and secure restricted areas, such as government buildings, airports, and critical infrastructure sites, to prevent unauthorized access to firearms.

CONCLUSION

- A deep learning-based gun detection and notification system for law enforcement use advanced algorithms to detect guns in real-time surveillance footage. By training a deep learning model with a diverse dataset of gun images, the system can identify the presence of guns and generate alerts for law enforcement. This technology enhances public safety and response to potential threats.

Source Code

Panopto Project Demo