Harmful Objects Detector for NYPD

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Abstract

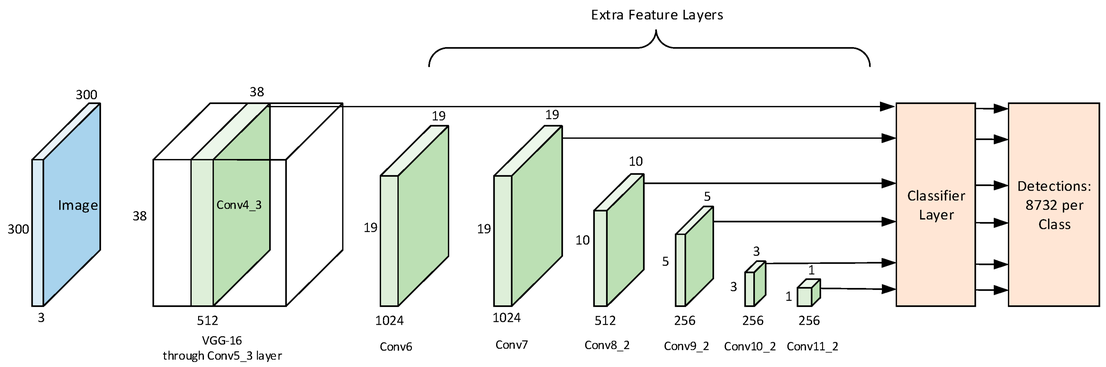
The rise in crime rates in New York State is a pressing issue, with the New York Police Department reporting a 27% increase in reported crimes in May 2022 compared to the previous year. To address this issue, this study proposes using computer vision technology to detect harmful objects, with a specific focus on evaluating the effectiveness of the "Single Shot Detector" algorithm and training a machine learning model using Google TensorFlow. The objective is to develop a system that connects to public cameras and analyzes real-time footage to detect suspicious activities and notify law enforcement, with the goal of reducing crime rates and promoting a safer environment. The results of this study will provide insights into the potential of computer vision technology as a tool for crime prevention and offer a framework for implementing such a system in other cities facing similar challenges.

Methods

- Conduct a thorough investigation to determine why the "Single Shot Detector" (SSD) algorithm is the most appropriate choice for our project, considering factors such as accuracy, speed, and scalability.
- Gather a diverse dataset of images containing guns and other harmful objects, accounting for real-world scenarios such as varying lighting conditions and perspectives.
- Use Google TensorFlow to train the machine learning model with the SSD algorithm on this dataset to enhance its accuracy in identifying and detecting harmful objects in real-time footage from public cameras.
- Evaluate the performance of the trained model by testing it on real-world scenarios and making any necessary adjustments to improve its effectiveness in contributing to a comprehensive crime prevention system.

Results

Our study has successfully trained a machine learning model capable of detecting and identifying harmful objects in real-time footage captured by public cameras. By integrating this model into a comprehensive crime prevention system, law enforcement agencies will be equipped with a powerful tool to monitor public spaces and quickly respond to suspicious activities. This development has the potential to significantly enhance the effectiveness of crime prevention efforts and contribute to creating safer communities.



Conclusion

In summary, our study has successfully trained a machine learning model that can accurately detect harmful objects in real-time footage captured by public cameras. We plan to further refine the model to enhance its accuracy and detection capabilities and create a tool to help law enforcement officials identify suspicious activities and prevent crimes. This technology has the potential to significantly improve crime prevention efforts and promote safer communities.

References

- Official TensorFlow website: https://www.tensorflow.org/

- SSD (Single Shot Detector) — Object Detection
Author: Gil Levi
Link: https://towardsdatascience.com/review-ssd-single-shot-detector-object-detection-851a94607d11

- OpenCV : https://opencv.org/