

CRIME PREDICTION AND DETECTION USING FACE RECOGNITION: ENHANCING SECURITY THROUGH FACIAL ANALYSIS

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ABSTRACT

Crime Detection and prevention aims to identify trends and prevent future crimes to reduce overall crime rates. In this abstract, we present a novel approach "ResYOLO CrimeSight," integrating the ResNet algorithm for facial recognition with the YOLO algorithm for weapon detection. The algorithm analyzes live surveillance footage using ResNet for identifying criminals and YOLO for spotting potential threats like weapons, aiding proactive crime prevention by swiftly alerting law enforcement. It utilizes ResNet for instant face recognition against a criminal database, storing data and sending alerts to police. Also, ResYOLO Crime Sight detects weapons, promptly alerting surveillance authorities to abnormal activities like individuals carrying knives or guns. The Flask web app offers a user-friendly interface for real-time data access and management. ResNet efficiently extracts and compares facial features for accurate matching with known criminals, logging essential details upon a match. ResYOLO CrimeSight showcases YOLO's effectiveness in weapon detection. Automated notifications promptly inform law enforcement of potential threats or matches with wanted criminals. Evaluation of the trained model is conducted on a separate test dataset, assessing metrics such as precision and accuracy. After comprehensive assessment, it was evident that among the algorithms CNN, RCNN, and VGGNet19, ResNet stood out as the most prominent due to its skip connections, overcoming challenges like vanishing gradients. This allows for more effective training of deeper networks, enhancing predictive accuracy. Its integration with YOLO for weapon detection enhances effectiveness in comprehensive crime detection and prevention.

KEYWORDS: Computer vision, Weapon detection, Facial Recognition Algorithms, Residual network algorithm, You only look once algorithm