International Journal of Scientific Research in Engineering and Management (IJSREM)
Volume: 07 Issue: 05 | May - 2023 Impact Factor: 8.176 ISSN: 2582-3930

CRIMINAL FACE DETECTION USING DEEP LEARING

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ABSTRACT

A criminal record contains both personal information about a person and an image ofthat person. To identify a criminal, we need personal information about that person, which an eyewitness can supply. Fingerprints, eyes, and DNA are all methods for identifying someone. One of theuses is face recognition. The face is our primary focus of attention in social interactions, and it plays a vital role in communicating identity and emotion. Although it is impossible to discern intelligence or character from a person's face, humans have an exceptional abilityo remember and distinguish faces. An automatic facial recognition system for criminal records was proposed using the well-known Principal Component Analysis technique. This technology will be able to Detect and distinguish faces automatically. If there is no thumbprint on the scene, law enforcement will have an easier time locating or identifying the suspect. The goal of this project is to examine several techniques to face detection and recognition in order to create a full solution for image- based face detection and recognition that is more accurate, has a better response rate, and may be utilized as a first step in video surveillance. The proposed solution is basedon testing results from multiple face- rich datasets in terms of subjects, position,emotions, and light.

Keywords: CIS, CNN, Deep Learning, Criminals and criminal face detection

INTRODUCTION

A criminal record contains both personal information about a person and an image of that person. To identify a criminal, we need Personal information about that person, which an eyewitness can supply. Fingerprints, eyes, and DNA are all methodsfor identifying someone. One of the uses is face recognition. The face is ourprimary focus of attention in social interactions, and it plays a vital role in communicating identity and emotion. Although it is impossible to discern intelligence or character from a person's face, humans have an exceptional ability to remember and distinguish faces. Thisstrategy is intended to assist any investigation department in detecting offenders. We save photographs of criminals in our database alongside theirinformation, and these images are then divided into four slices: the brow, eyes, nose, and lips. These photographs are then stored in a separate database record to help with identification. The slices that show on the screen will be selected by eyewitnesses,and we will use them to retrieve the facial image from the database. As a result, if the criminal's record is found in the database, this technology produces a highlycomfortable environment in which both the operator and the eyewitness may easily identify the offender.

RELATED WORK

Paper 1: Face Recognition and Detection for Criminal ID Systems

Description: Finding and identifying a criminal is a difficult and time-consuming task. In recent years, criminals have improved their cunning, leaving no biological evidence or fingerprints at thescene of the crime. Modern facial identification technology can be used as a quick and easy solution. Thanks to developments in security technology, CCTV cameras are now installed for monitoring reasons at the majority ofbuildings and traffic lights. The video records from the camera can be used

Identify suspects, offenders, runaways, and missing people. This study explores the development of a criminal identification system using deep neural networks and machine learning. The technique outlined below can be used to facilitate law enforcement.

Paper 2: Identification of Criminals and Missing Children Using Face Recognitionand Web Scraping

Description: Face recognition is abiometric method that maps a person's facial characteristics using mathematics and stores the data as a face print. In orderto translate an item into a series of numbers, it analyzes the image using machine learning. This technique is used by companies like Google and Facebook to create digital profiles of Their users. The objective of this project is to use this technology to locate fugitive criminals based on their criminal histories. The National Crime Records Bureau (NCRB) conducted research that found that the same people commit 70% of crimes. Theseoffenders can be recognized using face recognition from an image or video frame captured by cameras placed in various locations, and it can also be used to locatemissing children.

Paper 3: Face recognition for automated criminal identification using open computer vision classifiers

Description: This paper presents a real-time facial recognition system based on an automated security camera. The four-step process of the proposed method includes training real-time photos for face detection using a Haar-classifier, comparing trained real-time photos with photos from a securitycamera, and calculating the result based on the comparison. An important application of interest is automated surveillance, which has the objective of identifying people on awatch list. The objective of this research is to evaluate one image against a number of training images. In this paper, we present a methodology for reliable real-time face detection.

Paper 4: CIS: A Computerized Identification System for Criminals

Description: Identification of criminals and terrorists is the responsibility of the military,the police, and security officials. Attacks by terrorists and criminality had increased remarkably quickly. Combating them is a difficult challenge for all security divisions. Modern technology is currently being used in several fields. They are not, however, as effective or precise as they had planned. The

analysis of faces, emotions, ages, and genders allowed the culprits in this study to be found. Face recognition, emotion, age, and gender identification are implemented using CNN techniques that are based on deep learning. To detect suites, the LeNet architecture is employed.The implementation phase employs categorization using the Keras deep learning package, which is based onTensorflow. IMDb was used as the trainingdataset throughout the entire process. Training is conducted in the AWS cloud, which is a more capable and potent methodthan using local PCs.

Paper 5: Face recognition system design **Description:** The most widely used and sought-after technology in the modernworld is facial recognition. Giving aMachine vision makes sense so that it can communicate with people more effectively. We shall see a reflection of our way of life if machines can read our faces.A new era in human history will beginthanks to the facial recognition technology. Finding security and identity will bebeneficial in many ways. In this study, face recognition is suggested for sophisticatedapplications including payments, criminal identification, access and security, and soon. Face detection, feature extraction and classification, and real-time recognition arethe three stages of face recognition, which will be utilized to identify persons.

CONCLUSION

In order to improve the detector's performance and accuracy, the input image is scanned at virtually every pixel location and scale. We divided image processingtechniques into three categories: low, medium, and high. Based on the suggested system's facial recognition procedure, this work has provided a superior technique for criminal identification. In this project, we took a previously captured photograph and processed it. In the future, we intend to takea genuine photograph and do "real time imageprocessing" on it.

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