International Research Journal of Education and Technology
Peer Reviewed Journal
ISSN 2581-7795

FACIAL RECOGNITION FOR CRIMINAL DETECTION USING DEEP LEARNING

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Abstract - *In this project, we have developed a system for detecting criminal faces, for this, we have used deep learning algorithms. Deep learning is currently the most wellknown technique, and it is utilized in a variety of applications. One such application is crime detection and prevention. The criminal's face is recognized by this system, which then obtains the criminal's database information. In this application detect image and video for criminal identification. Once select the image to identify it results whether the person is criminal or non-criminal. It will simplify the investigation process. We use pre trained convolution neural network architecture called VGG-16. It can classify the images among 1000 categories. We collected our datasets from NIST special datasets 18. This project will identify whether the person is criminal or non-criminal. It can able to run in a real time. this project can able to process video and detect the identity of the person through video only if the person is criminal. Otherwise, recognize as non-criminal.*

Key Words: **Deep learning, Criminal detection, Real time application, Image recognition, Video detection**

INTRODUCTION

Preventing crime is an endorsing because it represents one of the most severe and pervasive issues that we face. In any culture, various crime patterns and the careful deliberation of citizens' security and protection are significant factors that have a significant effect on how well people can live their lives. Crimes like stealing, identity theft, and even pickpocketing can cause stress and disruption in a person's life. This can have an influence on the person's psychological well-being. Because of increasing concerns about crime and its risk to safety and protection, the deployment of numerous closed-circuit television systems (CCTV) in both public as well as private settings has been considered important. A deep learning-based methodology is employed since it offers.

EXISTING SYSTEM

Due to rapid advancements in the computational capability of machines, deep learning based neural network architecture have gained wide popularity in solving complex and practical classification and identification problems It is also important to find the number of criminals and non-criminal's images in our data-set because there can be problem of imbalance class. We ensured that our model is not suffering from imbalance class problem. It has low accuracy problem, and the data may not secure. The previous system takes more time and data inconsistency. They require massive resources.

1. PROPOSED SYSTEM

In our proposed VGG-16 model can process a DR image at any scale due to the SPP layer's virtue. The experimental results show that the proposed model performs better in terms of accuracy, computational resource utilization compared to state-of-the-art methods. The architecture of this project is the Vgg16 model, which has been introduced with minor modifications. The output of Vgg16 architecture. Moreover, the project concluded the effects of the VGG16 and Tkinter. Deep learning models can solve issues that cannot be solved by more conventional machine learning models. Compared to any other GUI toolkit, Tkinter is simple and quick to implement. Tkinter is more versatile and dependable. Higher prediction by VGG-16 layer.

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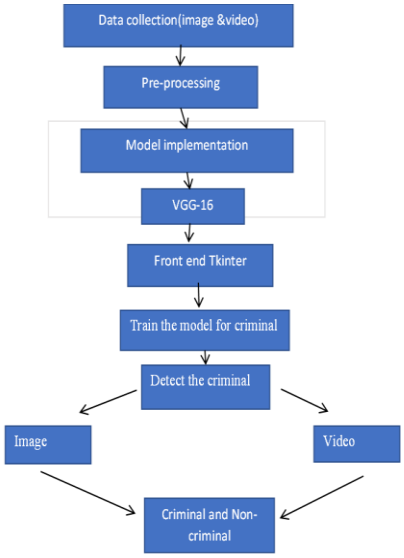
which automatically triggers the SOS functionality. Detects the criminal through image and video. Additionally, we can add criminal details train the model.

ARCHITECTURE DIAGRAM



1.1 Data pre-processing

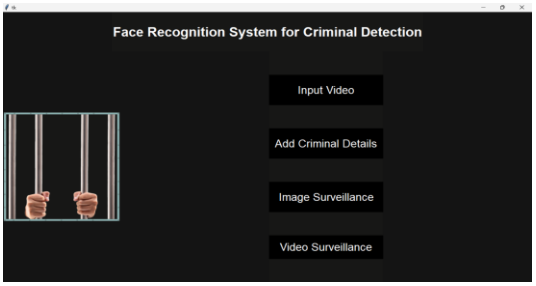
After collecting the database, pre-processing the data is a frequent first step in the deep learning workflow to process input data in a way that the network can accept. To match the dimensions of an image input layer, for instance, you can resize the image input. Besides that, preprocessing data may be employed to enhance desired characteristics or minimize artifacts that might bias the network.

1.2 VGG 16

The pre-processed data can be implemented in vgg 16 model. It classifies the image from the format data. It separates the images from the several classes. The Collection of datasets was trained using the model with deep learning (VGG-16). The trained model can able to detect the criminal.

1.3 TK inter

Tkinter is the standard GUI library for Python. The combination of Python and Tkinter makes it quick and simple to develop GUI apps. A robust object-oriented interface for such Tk GUI toolkit is developed by Tkinter. Using the saved model, we can detect the criminals in web application using Tkinter frame,



1.4 HAAR CASCADE

Haar cascade is an algorithm is to detect whether a image have face or non-face by analyze the patterns in image data and match with the facial features.

FUTURE GOALS

In future, this system identifies the criminal face, retrieves the information stored in the database for the identified criminal and a notification is sent to the police personnel with in terms of all the information and the position where the criminal was being watched by the camera would be extremely biased and overly pessimistic.

CONCLUSIONS

Classification of any person requires effort, but more care and seriousness are needed to classify a criminal or a suspect. This work's flaws can include in its some imperfection because any wrong classification can have serious effects. To claim that the 99 percent accuracy that VGG-16 has achieved is 100% acceptable Majorly facial Images are classified using facial emotions and age, so first neutral images and elderly, and children's images were eliminated. We tried to remove this bias by using Haarcascade by cropping the facial part out of the images, but also showed they have less impact on results. So, if we create a greater dataset, taking in account the various factors mentioned above and detecting other personality traits/features can be our future scope of the study.

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