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Article

A Review on Cridetinator

Bharat Dutt Mathur[1], Shivam Patel[2], Arpit Agarwal[3]

[1,2,3]Department of CSE/IT Global College of Technology, Jaipur, India.

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Corresponding Author:
Bharat Dutt Mathur, Department of CSE/IT
Global College of Technology, Jaipur, India
E-mail Id:
bharatmathur47@gmail.com

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A B S T R A C T

"Cridetinator" was built with an objective to serve the society by creating awareness about ongoing crimes through an investigation and visualizations about crime from past records. Accordingly, with the assistance of progressive expertise, various devices are being used/installed for the security resolve in public as well as private places to provide surveillance system activities. Out of those commonly used is CCTV camera's, the footage of which is very helpful to recognize suspects on scene. This system can sense and diagnose face inevitably as per the criminal record. In such scenario this system is helpful to successfully enforce the law or aid any organization to perceive or diagnose the suspect. As of accuracy, the results show that about 80% of input photo can be matched with the template data. This system is executed using the skills available in the Open- Computer-Vision (Open CV) library and methodology with Python. For face detection, Haar- Cascades and face detection libraries were used. As per security standards of this system. Only authorized user can retrieve the essential information, because to access the information, the administrator ID and password is required.

Keywords: Machine Learning, Haar-Cascade, Open CV

Introduction

With the pace of development in technology, various security approaches have been developed which are helpful in two folds one in keeping confidential data secured and another in reducing the chances of a security breach. Out of those numerous methods face recognition is the one which possess merits of both high accuracy and low intrusiveness. It is a computer web based program which uses a person's face to spontaneously identify and verify such person from digital image. In doing so it basically compares selected facial features from the image and face database. This technology is commonly used in biometrics system for authentication, authorization, verification and recognition. There port begins with a brief history of face recognition. This is followed by the explanation of HAAR-cascades, Eigen face and Local binary pattern histogram (LBPH) algorithms A lot of business enterprise has been using face recognition in their safety cameras, access controls and many more. Facebook has been the use of face recognition in their internet site for the purpose of growing a digital profile for the people the use of their website. In developed countries, the regulation enforcement creates face database to be used with their face awareness system to compare any suspicious with the database. In other hand, in India, most cases are investigated by using thumbprint documentation to recognize any suspect for the case. Therefore, because of internet and other social activities, most of the criminals are acquainted of thumbprint recognition and therefore they use various methods like using gloves or some material which does not leave any fingerprint. Keeping in mind the said aspect this paper proposes a system whereby suspects are being identified using criminal database through facial recognition system rather than thumbprint matching.

The objective of this study is :-

- Matching a face with available database precisely.
- Using numerous principal component analysis for finding numerous features from lots of images to get the similarity for the target image.

- To show the name of criminal when successfully identified.

Methodology

The paper was distributed in numerous modules and further in various sub tasks. Firstly, all the tasks were collected to be there in the paper for attaining the projected plan. Then the tasks were divided according to the numerous modules. Numerous modules identified were

Dataset Collection: The requirement of the paper was examined first. Accordingly, the data of numerous crimes were collected from various sites for training the model. First of all, we generate the Criminal Detection dataset through two sequential steps (1) Data Extraction in this we extracts the unstructured crime data from various crime Web sources, namely- www.kaggle.com . (2) Data preprocessing it helps in cleanings, integrating and reducing the extracted criminal data into structured form. (3) The preprocessed data provides various folders in which more than 5 images are available of an individual person or criminal which are further used for identification process.

Preparing Machine Learning Algorithm: An algorithm was prepared for detecting various criminal. The database is then supplied to OpenCV modules-it support Haar-Cascades based object detection and classification. Here we determination effort with face detection. Originally to train the classifier the said algorithm requires two set of images one is image of faces and another is images without faces. Further to extract features from the said data Haar features are used. Each of such feature is obtained as a single value object after deducting the total addition of pixels under the white rectangle from the total addition of pixels under the black rectangle. Cridetinator being an integration of various data mining modules such as DE, data preprocessing, conception and differentiation. It thus gains insight into the criminal records to detect the prime crime suspects by filtering out the huge criminal database. Cridetinator can help the police and justice departments to narrow down to recognize of criminals. This in turn will reduce the cost and time of crime examination.

Web Interface Designing: This task comprised of designing a friendly user interface for the public to access the functionalities of the project. Numerous pages were designed as per the services providing like Home Page, Main Page. They were all designed using html, CSS, PHP etc. Complete designing was done to make the project look more attractive and make it easy to use for the user.

Integration of algorithm with web interface: In this by using python based library Flask we created a user interactive webpage with integration of machine learning. Flask is an interface features clarity, pliability and concrete control. We have proceeded routing of URLs using flask. Using Flask we have unified machine learning algorithms which are Python Based, this will make the application more quick-witted and comprehensive.

Experimentation and Results

The raw data collected was extracted from various sources and then was pre-treated using various data analysis techniques. Then the data was cleaned from various angles and a fresh dataset was obtained. Now the dataset was transformed into data frame. Then we selected the machine algorithm model. We use Haar-Cascade classifiers to detect front face and eyes of the criminal from the database. Then we used OpenCV for live tracing and then compare it with the Haar-Cascade detected face and eye of the criminal.

Conclusion

The computational models, which were applied in this system, were chosen after widespread research, and the positive testing consequences authorize that the selections finished by the researcher were reliable. The system with face detection and automatic face recognition have a recognition. Accuracy of 80%, due to the number of eigen faces that were used for the PCA transformation. This system was tested under very vigorous conditions in this experimental study and it is predicted that real-world presentation will be moreover better and accurate.

By visiting the website, user can access all the functionalities or features of website “Cridetinator”. This web portal will be available to them 24*7 hours which they can easily access using their mobile phones or laptop having suitable internet connection and browser. User need to access the website by entering user ID and Password. Then the main page can be accessed through which the camera gets active and start recognizing faces according to database. Proper and detailed information will be provided to the user about the criminal face with its name displayed on the screen for proper visualization.

The implemented fully automated face detection and recognition system could be used for unassuming investigation requests such as ATM user security, Shops, or any Organization.

Future Scope

- In future, the program will change accordingly as per the requirement of the user.
- We can enable SOS functionalities. So that the user can contact to police station in case of emergency.
- In future, we can enhance data privacy by applying some encryption algorithm, accuracy and other security measures of our system.

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