



FACE RECOGNITION USING MACHINE LEARNING

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ABSTRACT

The use of images to identify people has become commonplace thanks to the media. It is less resistant to retinal scanning or fingerprint detection, though. The face is described in this report and find in the database using a machine learning project carried out for the module on visual perception and autonomy. The basic emotions that all people experience are universal and are consistently expressed on their faces. Here, an algorithm is described that carries out the detection, extraction, and evaluation of various facial expressions enabling, automatic identification of human emotion in pictures and videos.

It outlines the technologies offered by the OpenCV library as well as the process for putting them into practise with Python. Haar-Cascades were utilised for face detection, and Eigenfaces, Fisher faces, and local binary pattern histograms were displayed here for face identification.

Examples:

- 1.To identify people in photos ,videos
- 2.In colleges, organizations
- 3.Smart phones
- 4.Shopping malls

Keywords: Input Face, Face Detection, Face Recognition, classification, Identify the Face.

INTRODUCTION

A approach for determining people based on their distinguishing facial features is face recognition. These technologies may be beneficial for real-time machinery, images, and motion pictures. This essay seeks to present a more direct and straightforward approach to machine technology. A dataset with a similar matching look can be utilized to simply recognise a person's face using this technique. Using Python and OpenCV along with deep learning is the most efficient way to identify a person's face. This strategy is applicable in many different settings, including the military, security, educational institutions, aviation, banking, online web applications, gaming, and so forth. The paper that goes with it is a draught report on face recognition that was discovered in a database utilising a machine learning project. It involved developing a face detection and recognition system that incorporated a variety of classifiers from the open computer vision library (OpenCV). Since it can analyse multiple faces at once, face recognition is a non-invasive identification technology that is quicker than earlier systems.

Face recognition is the method of identifying "whose face is it?" by using a database of images

What is Open-CV?

One of the most fascinating and difficult problems in artificial intelligence is computer vision. The sights we perceive all around us are connected to computer software through computer vision. It makes it possible for software to understand and pick up on the environment's images. Think about the following example: The fruit can be recognised by its size, shape, and colour. The computer vision pipeline takes a different approach than the human brain, where we first collect data, process it, then train and teach the model to recognise different fruits based on their size, shape, and colour.

Machine learning, deep learning, and computer vision tasks can now be performed using a variety of tools. By far the best module for such challenging jobs is computer vision. A free and open-source computer vision library is called OpenCV. It is supported by number of programming languages, including Python and R. The majority of operating systems, including Windows, Linux, and macOS, are all compatible with it.

LITERATURE SURVEY

TITLE: Face Identification

AUTHOR: YassinKortli , +MaherJridi + Ayman AIFalou and Maher.

They uses biometric systems and surveys for face recognition. Based on this they gives biological characteristics that made easily to identify the person face. But it is very time consuming process.

TITLE: Facial Recognition using Machine learning, 2021.

AUTHOR: Raktim Nath

He uses Pre-processing,Classification,Svm, Clahe algorithms to identify the person

This model gives more accuracy and productiveness of the person face.

TITLE: Face Recognition using Machine learning,2022.

AUTHOR: M.A.Lazarini, R.Rossi & K.Hirama

The above model is created in 3 stages like initially taking input face, next recognizing the face and classification to identify the face. This model uses CNN algorithm and it provides 97% accuracy to this.

EXISTING SYSTEM

1.Biometric System Using Fingerprints:

In this method we are taking the person's fingerprints to identify the whose face it is?



2.Artificial Neural Networks:

In this method by calculating the weights of the faces we are going to recognize the person's face. And it has been done through many layers.



PROPOSED SYSTEM

To overcome the drawbacks in existing systems we choose the proposed systems for providing more accuracy in identifying the face of a person. It involves the following:

1.PRE-PROCESSING:

It is the initial step in identifying the face. The images in the dataset are already cropped around the face. In this step we are processing the skin colour, image normalization, and gaussian mixture model to pre-processing the faces.

2.Feature Extraction:

It is the second step in this system. After pre-processing we have to extract the features and determine that the given input has a face or not. Using Haar-cascades algorithm we classify the positive and negative images in the face.

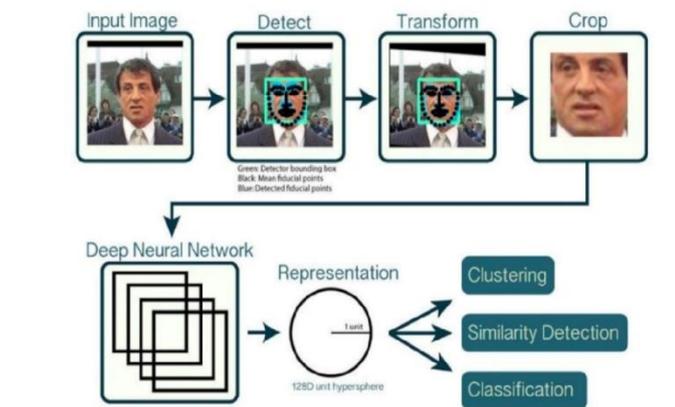
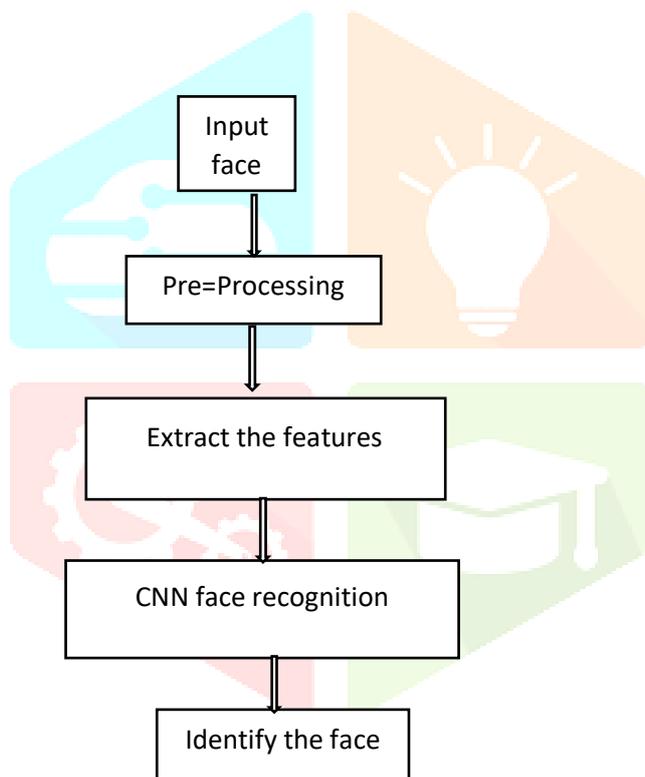
3.Convolutional Neural Network:

It is the final step in this system. It considers the features that are extracted from the second step and compared with known face in the specific database which consists of the faces.

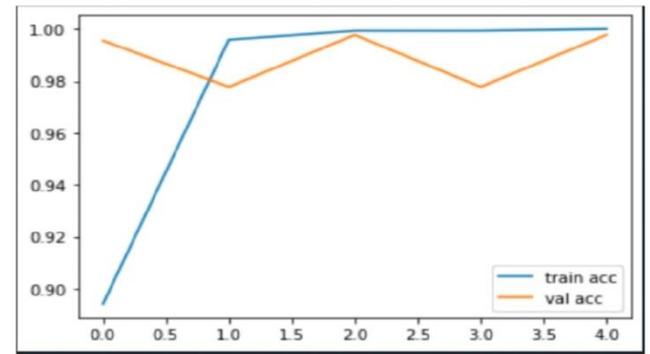
IMPLEMENTATION

Given proposed system can be implemented as the following diagram by

- 1) Taking input face image
- 2) Detecting and recognizing the features of the input face
- 3) Compare and classifying the face to identify the correct face.



Graph for accuracy:



X-Axis = No. of Epochs

Y-Axis = Accuracy

INSTALLATION

1. Python IDLE
2. install packages :
Open-CV
3. Download haar-cascades xml files

CONCLUSION

We provide an efficient method for identifying the faces of a person. It can be useful for not only for UG project but also in real time applications for identifying the faces even in the critical situations also. A face recognition system has been implemented using open-cv and python efficiently.

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