

Face Recognition Using Python

REPORT SUBTITLE

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**What is Face Detection?**

One essential problem we are trying to figure out in computer vision is to automatically detect objects in an image without human intervention. Face detection can be thought of as a problem where we detect human faces in an image. There may be slight differences in humans faces of humans but overall, it is safe to say that there are certain features associated with all the human faces. There are various face detection algorithms but Viola-Jones Algorithm is one of the oldest methods that is also used today and we will use the same later in the article. After completing this article, you can go through the Viola-Jones Algorithm as I’ll link it at the end.

Face detection is usually the first step toward many face-related technologies, such as face recognition or verification. However, face detection can have very useful applications. The most successful application of face detection would probably be photo taking. When you take a photo of your friends, the face detection algorithm built into your digital camera detects where the faces are and adjusts the focus accordingly.

**What is Face Recognition?**

1. **Face Detection: -**

To recognize a face, it is first important that we detect/locate a face in an image/video. There is various facial detection software that can detect a Human face in an image. We can extract a human face and then move on to the next step. Viola-Jones algorithm is one of the popular face detection algorithms.

1. **Feature extracting using face embedding**

The next step is to extract features from a face using a face embedding model. A face embedding is a vector that represents the features extracted from the face and we can use these vectors to recognize the face. Note that face embedding for the same face may be really close in the vector space, whereas the face embedding of two different faces may be really far away. We get a face embedding after passing the image through a face embedding model.

1. **Facial Recognition**

We have face embedding for each face in the system. Whenever we pass a new face to the system, it calculates its face embedding and compares it with the ones we already have. The face is recognized, if its face embedding closely matches any other face embedding in the database.

Step 1: - Install Libraries