Facial Recognition / Comparison for Finding Missing Person using Python and AWS

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Abstract - Face recognition presents a challenging problem in every field whether face recognition used in searching for a missing person or face recognition used in comparing two faces. Face recognition is an accuracy and precision demanding technology and a very high cost maintaining. In a vast country like India with such high population and people getting missing causes a serious problem in communities and also finding and recognizing people in such high populated country is very costly and ineffective. This paper presents a solution developed to solve these problems in a cost effective and efficient way. As a result, a combination of two algorithms, one is face recognition from a set of images and second is face based verification of two face images. The major objective this research to determine a cost effective, easily accessible, and efficient solution to face recognition.

Key Words: Face recognition, Framework, Facial acknowledgement, aws, Low resolution

1. INTRODUCTION

The World with the Largest Population like India, which is the 2nd largest country in terms of population. Every year in our country thousands of people are reported missing and there are many cases which are not even reported. Some of the criminals also go missing. We need an effective way to find a person which takes a limited time and less human effort.

There are many methods that have been used earlier to do this. Posters and pamphlets can be used to find a particular person, but it is very time consuming, and loss of paper occurs which indirectly affect the environment. Media can be used to find the missing person for instance the use of newspapers. Media pleas may be the quickest and most effective way of raising awareness of your missing person and helping in search for him or her.[3] Everyone don't trust media as different persons have different interviewing techniques and styles. While many

columnists have sympathetic way, other may have appear forceful, or behave in other ways, which is not the right way to treat someone in that type of situation.

Furthermore, exposure might put currently weak individuals at more serious gamble by driving them further away in the event that they don't wish to be found. Ruffians can keep on misleading their casualties, as they will know through media.

The fresh insight about missing individual is promoted on TV and papers for a specific period. Following a couple of number of days everybody would have failed to remember that news since the promotion isn't gone on for a really long time.

The police track down all the expected results of considering the missing people by using standards and providing details regarding the media yet as a result, they don't have steady plan, and that suggests they can't view as the missing individual if the person to be found isn't staying at one position.

However, the utilization of facial recognition method makes it more straightforward for us to find the missing individuals and this will cook for all the limitations of utilizing media.

2. RELATED WORK

Face recognition systems have been conducted now for almost 50 years. Face recognition is one of the research in area pattern recognition and computer vision due to its numerous practical applications in the area of biometrics, information security, smart cards and access control.

Initially, the traditional way of finding a missing person was used. In this policemen's and NGO workers join their hands and use their people to trace the missing person by visiting the whole area or city personally. This process is very time consuming, or the chance of success is very less as if a person keeps changing his location it will difficult to catch him.

To keep away from this, we utilize facial recognition by which surveillance cameras are introduced at advantageous spots to follow individuals moving through

the live video feed. This will be not quite the same as scanning the entire country for the missing individual; all things being equal, we can limit our hunt to a particular region in light of the outcomes delivered by the framework.

Picture quality is typically corrupted by blur brought about by, for occasion, misfocused optics or camera movement. Obscuring additionally can fluctuate the exhibition of PC vision calculations if the picture highlights processed are delicate to those decays.

Low resolution (LR) could even be a crucial issue when handling world face recognition problems. The execution of traditional recognition algorithms will drop because of the loss of facial information in original high resolution (HR) images[3].

Reasonable video scene and face acknowledgment frameworks are in some cases exasperated with low-resolution (LR) pictures. The appearances could likewise be tiny though the video is self-evident, hence it's hard to gauge the similarity between the appearances straightforwardly

what's more, consequently the high-resolution (HR) preparing tests. Face recognition helped customary super-resolution (SR) strategies typically have controlled execution because the objective of SR will not be as indicated by that of order, and tedious SR calculations aren't reasonable for ongoing applications.

Number of applications for finding missing individual is accessible, yet the extent of following the missing individual is inadequate and it's just in the banner level and to remove significant elements from picture information, from which a depiction, translation, or comprehension of the picture can be given by machine, yet there could be no appropriate handling or adjusting a current picture in a wanted way. Additionally, there is no high goal and consequently there is no 100 percent precision that the casualty can be found.

3. PROPOSED SYSTEM

The data expected to perform tasks like adorning caught pictures from client photographs. Since ML Kit can perform face acknowledgment continuously. Recognize key face, also, acquire the shapes of identified faces. You can perceive elements in an image without providing any extra relevant metadata, utilizing an on-gadget API.[4] You can get the data you want to perform undertakings like decorating caught pictures from client photographs.

Faces are matched based on their visual geometry, including the relationship between the eyes, nose, brow, mouth, and other facial features. Instead of first identifying the landmarks and using them as a basis for identifying the whole face, the Face API detects the whole face independently of detailed landmark information. For this reason, landmark identification is an optional step which can be done after the face is detected. Landmark detection isn't done by default since it takes longer to run. you'll selectively specify that landmark

detection should be done. Each detected landmark includes its associated position within the image

Fig -1: Landmark detection

A biometric programming application able to do particularly recognizing or confirming a private by looking at and examining designs upheld the individual's forms. Facial acknowledgment might be an approach to perceiving an individual's face through innovation. A face acknowledgment framework utilizes bio measurements to plan face from photo or video. It contrasts the information and a database of known countenances to search out a match.
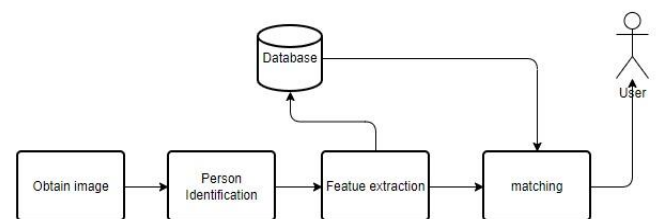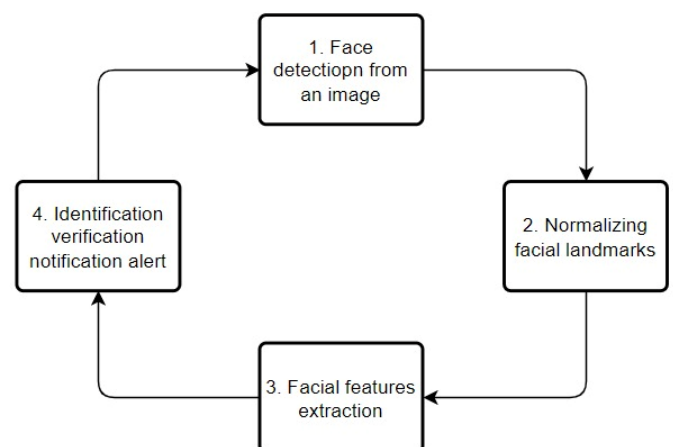

Fig -2: Facial Recognition

Fig -3: Architecture

Regardless of the way that this sort of innovation has become satisfactory in the public eye for different types of purpose, it has not been utilized for reasons for guaranteeing that families and companions are held together and in-tuned on the grounds that it should be.

Innovation has turned into a fundamental piece of individuals' lives today.[1] From PCs to cell cap are basically minuscule PCs, it appears to be most are associated.

4. MODULES

4.1 Indexing face

To perform Facial Recognition process we have to create a collection to store indexed Faces into our database. Algorithm don't store the original uploaded face. Algorithm first analyse the face in the uploaded image and then extract the facial features into a feature vector and stores. There is a certain ID that is assigned to each indexed face, this id is used to match the landmarks in between two images. The process of feature extraction is beneficial once you got to reduce the number of resources needed for processing without losing important or relevant information. Feature extraction also can reduce the quantity of redundant data for a given analysis. Also, the reduction of the info and therefore the machine's efforts in building variable combinations (features) facilitate the speed of learning and generalization steps within the machine learning process.

4.2 Facial Recognition

Facial recognition is a popular technology that is efficient of spotting a person from their digital image or a video frame that is stored in our collection. As a general rule, they are performed by choosing explicit facial elements from the given picture with caught faces inside our collection. It is likewise referenced as a Biometric AI-based application that can uniquely detect a private by breaking down specific patterns that upheld the individual's facial surfaces and shape. In this module, facial acknowledgment is utilized to identify and contrast the picture and the source collection. From a video source, a video outline or computerized picture is gotten and from that, the individual is recognized.

4.3 Facial Comparison and Matching

In this module comparison happens between the source collection and picture collection. Source collection contains the first picture of the people in question and picture collection contains pictures portioned from the video or uploaded. Compare face prints or face installing's with decide if there is a match. How similar the inserting must be for a match to be laid out will rely on the picked confidence threshold. Examinations can either be 1:1 or 1:N, it looks at a picture that contains a

face to at least one other facial pictures and lays out whether the countenances probably have a place with a similar individual; for example whether they are viewed as a match.[2] Assuming that the match is found geo-area is returned. The interaction go on until the match is found.

4.4 Notification

Once the face is matched the module automatically generate the email alert about the location to the police officials or Ngo members. After this collection automatically goes to the clean up state.

5 SUMMARY AND CONCLSION

The point of this task was to develop a facial recognition framework for face recognition and face-based check. Every one of the goals have been met consequently deciding the effectiveness and exactness of the framework. The specialist developed the framework utilizing the AWS and Python that assisted designer with building the vital modules of Face acknowledgment. The created framework could distinguish human faces and perceive faces from an collection of pictures and furthermore can contrast two human faces with check in the event that they are same appearances or not. Subsequently, the advantages of this framework have cleared a method for involving face acknowledgment framework in various field precisely and proficiently.

The researcher however encountered problems, which are prone to most facial recognition systems. The system was affected by the illumination problem, blur images and low resolution pictures. Whenever there was problem with picture, the recognition rate declined, as there was a significant figure of false positives. Another challenge was that of hardware, facial recognition requires high performance computing hardware and most particularly a high definition camera with a high resolution. To solve computing hardware requirements researcher can opt using cloud computing platforms available in the market.

The created system could recognize human faces progressively so it very well may be coordinated with google maps to follow any subject of interest. Moreover, facial acknowledgment frameworks can likewise be utilized in the improvement of mechanized attendance frameworks also, for investigating malpractice[6].

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