

MOBILE APPLICATION FOR FACIAL RECOGNITION TO FIND MISSING PERSON

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Abstract- A biometric application capable of solely distinguishing and substantiating a person by collating and examining features supporting the person's contours from a captured image. Though there are several methods for face recognition system to work, they work by collating and examining the specific features from the given image. It is also outlined as an AI based biometric application which finds a person by detecting the person's facial features and texture. A face recognition system uses bio metrics to map countenance from a photograph or video. 3D facial recognition makes use of 3D sensors to record the details about the shape of the persons face. This detail is then used to find the unique facial feature on the facet of a face, a bit like the outline of the neck, chin. The biggest advantage of 3D facial recognition is that, it does not suffer from lighting like any other methods. It finds the facial features from different angles, which include all the profile of the person. The accuracy of face recognition is increased by the use of 3D data points which is obtained from the facet of the face. A unique technique is introduced which is used to capture the 3D profile picture with the help of tracking cameras which times at unique angles ;that is , a camera which is going to be pointing at the left, right and front view of the person's face. All the captured images will work intact so that finds the face of the person in real time. It then compares the knowledge with a database of known faces to seek out a match. When the face of the missing person has been recognized it'll automatically send the geo-location to the police headquarters e-mail and therefore the one that has filed the FIR.

KEY WORDS: 3D face recognition, Biometric software application, camera, geo location, person, 3D picture, 3D sensors.

I. INTRODUCTION

Facial recognition compares the faces of the person and match is found based on the unique features of the face .Even Google face API provides face detection. They do not provide face recognition. The process behind face detection is that it automatically identifies human faces in visual media. The detected face is outlined with the related dimensions and inclinations. Once the person's face is detected, it often looks for unique features such as nose, chin and eyes. Suppose if the face appears on any video which is of any length then they are identified and tracked, that is , the detected faces in the video is identified as the same person . This is not facial recognition; this only gives information about the motion and position of the human face. The point of interest on a face is often called as landmarks. Some samples of landmarks are left and right eye,

nose base .Once the face is detected the landmarks are found with the help of face API. To check whether the particular facial feature is present or not, face recognition uses the concept of classification. For example, human face is often distinguished based on the eye movement; that is whether the eyes are open or close. Another feature which helps in distinguishing human face is the person's smile, that is whether the person is smiling or not. ML kit plays a major role in facial recognition. ML kit is used to bring the package for android and ios. No matter how experienced the user is, one can use the functionalities of machine learning in a few lines of code. On the other hand, if the user has a very good knowledge of the ML kit then the ML kit constructs API which assists one to employ their custom Tensor Flow Lite models in their mobile apps.

The outlay of crime and missing cases in India is intensifying day by day. A system is developed to scale back the crimes and therefore the missing cases happening within the locality. The proposed system is an android application, which helps a common man to file a complaint against crime or about the missing of a person to the superior authorities. The superior authority can view the complaint filed by the user and take up the specified measures to unravel the case. The users need to register in order to file a complaint and further can check their account to know the developments of his/her case. This system is very useful for the investigation department to speed up in their investigation and track the status of multiple cases at a time. The authorities can find the crime ratio in society through the proposed app. In missing person cases, the user can upload the person's details along with the photograph. By using these complaints, Relative of lost person will go to trust rather than going to the police station to launch a complaint. This information will be stored on server which can be accessed by police and also normal people who are working in some organizations like NGO etc. Some existing application does not show the proper information about the Missing person, this application can analyze the mission person by using ML if the face matches with already stored in our database then it automatically sends the SMS notification to the one who rises the complaint about missing person and an e-mail is mailed to the police officials along with current GPS of the person missing. Finally after the person is identified all details of that person is deleted from the database. This application empowers highly qualified nonprofit groups with an equivalent transformative technology employed by governments and enforcement agencies. This mobile app often captures photographs of potential victims from a secure distance. Potential matches are checked against a watch list of missing persons and alerts are distributed to essential personnel within the sector and headquarters.

1) Classification

Classification shows that a specific facial characteristic is present or not. Android Facial API now helps 2 categorizations: open eyes and a smile. IOS Facial API now underpins the smile stratification. Classification can also be expressed as a sure value that shows the specific facial characteristic present. Considering, a value of 0.7 or above shows that the person is smiling. All these classifications depend upon detection of landmarks. An important thing is that the “open eyes and smile” works good only for frontal typefaces, in other words the faces that have a little angle Euler Y. Below the common search methods used recently; standard methods were ranked high when compared to fashionable numeral methods. This shows that the fashionable technology, mainly mobile apps, were not inculcated much especially in this application area. Software application which includes biometry that is able to distinctly recognize or verify an individual by examining and contrasting features that support the person’s contours [7]. The fascinating method of identifying the face of a person with technology’s help is called Facial Recognition. Facial recognition system uses the key feature biometry to plot features from a video or a photo [5]. This is then compared with a database that has familiar faces to find out a match.

II. EXISTING SYSTEM

Facial recognition is a successful approach to detect human faces. In spite of being relevant all these years, the only problem in this approach is low resolution images which are apprehended. Facial features which are apprehended in these circumstances are very much befouled by light sensitive images [3]. It is analyzed that these techniques which are using data to find the image under poor quality environment within the space provides an analysis which is inclusive of the outputs obtained. The succeeding benefactions presented were, apprehension of observations to gauge techniques for low resolution images [4]. Even though there are a lot of apps for finding missing person, the accuracy in finding them is missing. Many applications work by fetching details from the image which is not so accurate. Because of the above issues there is no guarantee that the person will be found.

III. PROPOSED SYSTEM

The information needed to perform tasks like embellishing captured pictures from user photos. Because, ML Kit can perform face recognition in real time. Identify key countenance, and obtain the contours of detected faces. You can recognize entities in a picture without having to supply any additional contextual metadata, using either an on-device API. You can get the information you need to perform tasks like embellishing captured pictures from user photos.

It then sends the current GPS location to the respective family and also to the nearby police station. It can be accessed from anywhere and by anyone all over the world. This application is exclusively for finding criminals and missing people. The Facial API provides Euler Y and Euler Z angle values for identified faces, where Euler Z angle value of the face is usually submitted. Angle Euler Y uses “accurate” mode setting of the master detector (opponent to the “fast” mode setting, where detection is faster since shortcuts are used). Angle Euler X angle is not supported presently.

A. Landmarks

Point of interest in a face is called a landmark. Few examples of landmarks in the face are the left and right eye balls, nose base and so on. The Face API Identifies the entire face unconventionally of the detailed information about landmarks, instead of identifying the landmarks first and using them as a foundation in order to identify the entire face. Therefore, identification of landmarks can be done after the face is detected thus making it an optional step. Identification of landmarks is not a default process as it takes long time to run. Hence, selective specification is required for detection of landmark to be done. The associated position is also included with each landmark detected inside the image.

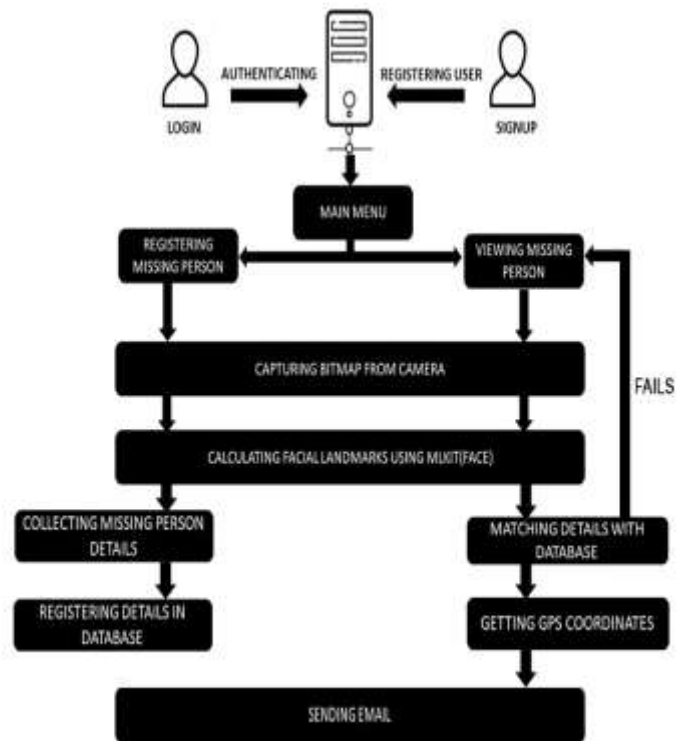


Fig 1: Architecture diagram

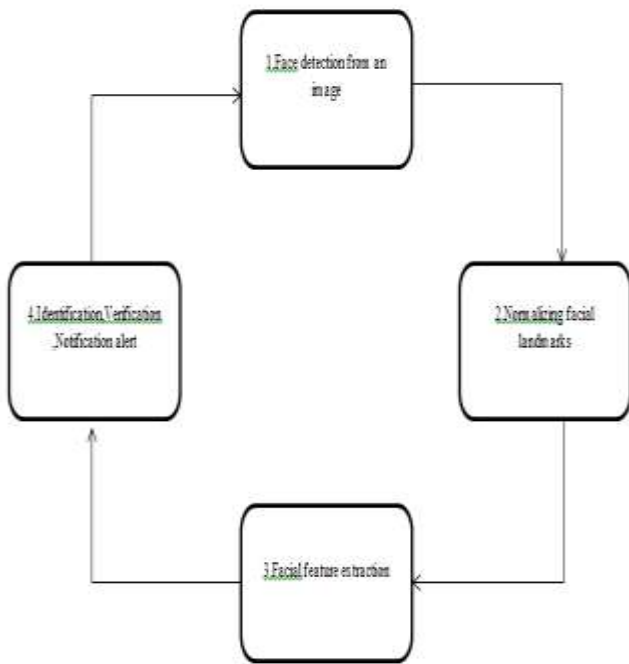


Fig 2 : Schematic diagram

IV. MODULES

MODULE 1: FACIAL RECOGNITION

To identify a person from their digital image or a video frame, an upcoming technology facial recognition is used and are stored in the database [2]. The process goes on by selecting certain facial features from the captured images in this database. Also known as Biometric Artificial Intelligence based application because it uniquely identifies an individual by analyzing specific patterns that support the facial texture and shape of a person. In this module, facial recognition is used to identify and compare the image with the source database. From a video source, a video frame or digital image is obtained and from that, the person is identified.

MODULE 2: FEATURE EXTRACTION:

Feature extraction is also a dimensionality reduction process by which manageable groups processing groups are derived from an initial knowledge set [1]. The result is large data sets whose characteristic is an extensive amount of variables that require computing resources in tons for processing. The variables are selected or combined into features using facial feature extraction that effectively reduces the amount of data

that is to be processed, also accurately and completely describing the first data set. Feature extraction process becomes beneficial once the resources required for processing has reduced without losing the relevant information. The redundant data for a particular analysis can also be reduced using feature extraction. Also the information reduction and hence the efforts of the machine in building features facilitate the learning speed and steps for generalization within the machine learning process.

MODULE 3: FACIAL COMPARISON AND MATCHING:

In this module comparison occurs between the source database and image database. Source database contains the original image of the victims and image database contains images segmented from the video. Comparison of face embedding or face print is done to determine whether it is a match (Fig 1). The similarity level of the embedding required to be a match depends on the selected confidence threshold. Comparisons can be either 1: N (one-to-many) or 1:1 (one-to-one), it compares an image that contains a face to one or more other facial images and establishes whether the faces likely belong to the same person; i.e. whether they are considered a match [6]. If the match is found geo-location is returned (Fig 2). The process continues until the match is found.

MODULE 4: NOTIFICATION ALERT:

Once the match is found, this module automatically generates alert e-mail of the person’s current location to the registered family members and the same is sent to the police officials .Now details about the identified person is automatically deleted from the database.

VI.FUTURE ENHANCEMENT

The iris recognition is undergoing a massive period, according to a record from technical research organization TechNavio. The researchers of the firm predict a CAGR of 23.5% for the market between from 2014 to 2019. Enhancement of this application leads to more accurate results. The IRICIAL processing in the initial stage is to recognize the face of the victim and generate several images at different ages, which in turn creates a more compact application and utilizes high-end camera for accurate image acquisition.

VII.CONCLUSION

This mobile app is a family ring application which finds the missing person to re-connect them to their family by using facial recognition, Image processing. Where the authorized data is collected and maintained with the proper dataflow strategies. Once the positive response is collected immediately the message is conveyed to relatives and police station for further procedures. There are number of apps for finding missing person available, but the scope of tracing the missing person is incomplete and it’s only in the poster level. The proposal of our Android app will try to link the missing

person with their family by providing the current image of the missing person and their current GPS location to the respective family and the nearby police station. Hence, the benefits of this application have paved the way for the police department in order to find the missing person and criminals at ease by using facial recognition, Image processing, machine learning and image mapping technologies.

VIII. REFERENCES

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