

Face Recognition Based System to Find Missing Human

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Abstract - One of the problem that is rising continuously is missing cases. It has reached upto this limit that it can be categorized as one of a common problem. The missing human can be of any age, from a baby to a man and to an old man. This problem is needs to be resolved as some person got found while some still struggles. This problem can be reduced using face recognition based systems. This paper aims to provide an application which will locate and identify the missing man. To start with an app, download it and then provided an image into it. This provided image will be either from missing man relatives or random person across a street. This image will then be stockpiled along with other images that are already exist onto our database. As soon as the image will be provided, the processing will get start up within the background. In this processing some mathematical calculations, and some algorithms are performed on the provided image. These operations and calculations are also performed on the already existing images within the database. With this, software will try to find out the nearest match face in the database with the uploaded face. If a match found, then the information regarding that person will get shared to his/her concerning relatives or that kind street man.

To speeding up this investigation process the face recognition based system must be used. Our application will ask for an image of a lost man which will then stockpiled with the other images that are already present onto our database and whose match are still to be found. This image can be an existing image a family have or the newly clicked one by a random person. With this uploaded image, processing starts. Some basic operations that are to be performed over an image, such as update the records, deletion, or storing the records, get easily done and takes a very less amount of time. This application is helpful for a family, or the investigation department, or the common man.

The result that produced is a “match found” or “no match found”. If the result is positive then the stored information of that face will pass on to their concerning party. If due to no presence of same face in the database, result will be negative and hence that face will then uploaded to our application. When in future the same face will be uploaded then the information will be sent to their concerned.

Keywords: Face encodings, face recognition, lost man, exploring and finding.

1. INTRODUCTION

These missing cases are regardless of their age or gender. They are ranging from a baby to a man and from a man to an old man. It is found that about 99 percent humans get ran away and the cases that know the reason behind their childish act is only about 43 percent. There are others reasons and cases too which push this act in the upward direction.

These childish acts will then bring a lot of dangers over them. Dangers of being murdered, kidnapped, physically abused and similar dangers. These dangers will harm the lost person and at the same time to their loving family members, friends, relatives. A tremendous pressure built upon them. They are exposed to lot of tension and stress.

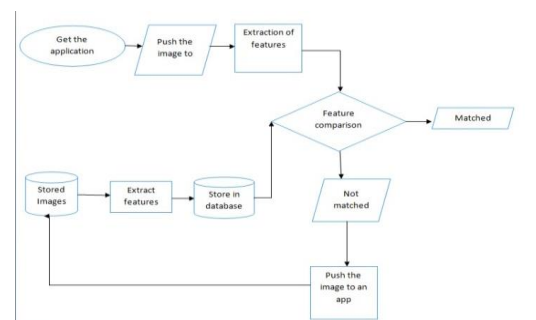


Fig. 1- Flow of data

2. SOME RELATED WORK

A system proposed by Rohit Satle[1] using face recognition based system. The PCA (Principle Component Analysis) used for face recognition. The issue with the system was its ability in detecting faces. Face having same expression were only detecting and the computational complexity was also very high.

For face detection and face recognition Haar[3] is also used by some. With a new image, a huge number of features produced. Paper[4] uses AdaBoost for boosting an algorithm. Such features implementation required a huge set.

A system was proposed in paper[5] using a LEM (Line Edge Map) as a face recognition based system. This technique mostly used in such condition where variations in intensity of light does not change[6]. Gao and K.H. Leung[5] proposed this system and 92% was its accuracy.

Another face recognition using Eigen face as its method was proposed[6]. A robust performance were found when it undergoes some changes in lighting.

LBPH method based face recognition system was proposed[9]. It was mainly proposed for Zimbabwe to identify missing ones. The technique LBPH is sensitive towards variation in intensity of light and its rate was about 67.5%.

3. METHODOLOGY

To apply the face recognition some steps has to be done. Those are:-

1. Locate the human face within the provided picture.
2. Get the quality of an extracting face. Quality in terms of intensity of light, posing of the face and related features.
3. To make out differences within the faces, some unique features that all faces possess but are unique to each will get extracted. An example would be the measurements of a nose, ears, eyes.
4. At last, the unique face feature undergoes comparison. If a nearest match face found then face information will be pass on to their concerned.

Description of an each step.

Step 1: Detect the face within the photograph.

Detect the face. For this we use or convert an image to black and white. Then the method to detect the face is HOG (Histogram of Oriented Gradients). Then that face will be bounded to highlight the face in an image.

Step 2: The face projection and its posing.

Look up for 68 specific points on the face through a landmark estimation algorithm. These 68 points are

landmarks. Then it is possible that face is posing in a different direction. To resolve these issues an image then undergoes some operation like rotation, scale up or scale down. These steps can be easily done with the help of OpenCV.

Step 3: Get the Unique Face Features.

To differentiate the face from other faces or to get a match, some calculations or measurements needs to be done. To performed them the face then input to the Deep Convolutional Network. This network will then output 128 measurements. Two different images of the same man have same 128 measurements which are produced by this network. These measurements can be generated with help of dlib library, cmake library, face-recognition library very easily.

Step 4: Information regarding the face.

Eventually to get the recognition of the face it passes to linear SVM classifier. This classifier will take input these measurements and an output would be the nearest match.

This match face information will then pass on to their concerned. Else, the photograph will then be uploaded to the database for searching it in future.

4. RESULT

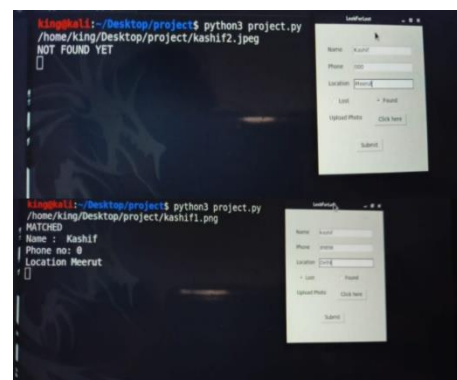


Fig. 2-Case1 First time image upload by family.

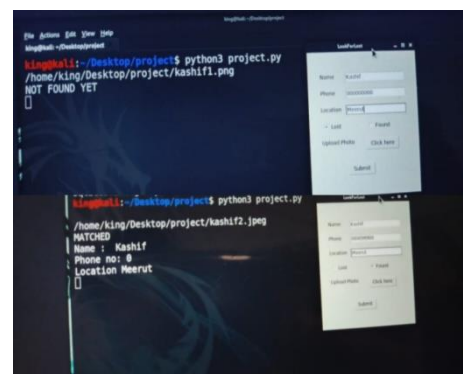


Fig. 3- Case2 First time upload by random

Tkinter library in Python is used to built this GUI. Fig2. Shows the case when family upload the image and then some random man found that person. Fig3. shows the case when random man upload the image first to an app and then by family. In both cases a match will found when an image of the same person will be uploaded from both the ends. Then the information will get exchanged.

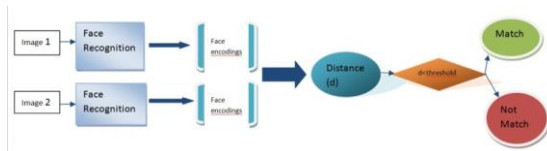


Fig. 4-. Two face encodings are compared.

The face encodings will be compared against each other to check the similarity in the faces. This results in the distance (d). If d found to be less than the threshold (0.44 in our case), then face matched. Else, not.

5. CONCLUSION AND SCOPE IN FUTURE

This technology based method for searching a missing one is fast. It will speed up the process of investigation, searching and then locating. It is really helpful for a family, the investigation department, and common help can also help and add up more speed to the process. Some challenges it still have with the age. With growing age the face structure will evolve and this occurs to child face rapidly. In future with advance methods and study, this issue will get resolved.

In future the software can be installed to CCTV cameras of houses, malls, hotels, restaurant, means in every public place. This makes it easier to investigate in different regions and on every time. This makes an application to work at any place, on anytime with speed.

6. REFERENCES

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