IJCSE International Journal of Computer Sciences and Engineering Open Access
Research Paper Vol.-7, Special Issue-8, Apr 2019 E-ISSN: 2347-2693

Integrated Analysis of Face Similarities in Twins

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DOI: https://doi.org/10.26438/ijcse/v7si8.5860 | Available online at: www.ijcseonline.org

Abstract— Comparison identical twins using their face images are a challenge in biometrics. This paper presents experiments done in facial recognition using data from a set of images of twins. Identical twins have the closest genetics-based relationship and therefore, the maximum similarity between face is expected to be found among identical twins. Facial comparision techniques should be able to operate even when similar-looking individuals are encountered of identical twins. The capability of biometric techniques to distinguish between the twins features of multiple reasons. Human face matching capability is often considered as a benchmark for assessing and improving automatic face recognition techniques. This study gives us some clues and shows the various aspects of personality are differently subjected.

Keywords— Computational studies, Face matching system, Biometric, Twins.

I. INTRODUCTION

A biometric characteristic is a detectable biological or behavioral characteristic of an individual that is distinguishable and repeatable.Some examples include fingerprints, face, palm prints, iris, retina, and voice. The similar appearances of identical twins may also give them a greater incentive to commit fraud than average persons.In this twin studies are utilized in an attempt to determine how much of a particular trait is attributable to either genetics or environmental influence. These studies compare mono zygotic and dizygotic twins of medical genetic or psychological characteristics to try to isolate genetic influence from genetic and environmental influence. Trying to identify people in photographs can be challenging. People can look so much alike at first glance. But to make a positive identification of a person, everything must be identical. Everything must look EXACTLY the same. Trying to match up two people's faces is not as easy as it seems. The Approached of this research to create a large area to the field of Image gesturing analysis with joint histogram mechanism for communication with people and computer application.

Face recognition with identical twins is a challenging task due to the closest genetics based relationship existing in the identical twins. First, the person need to be identified and to be physically present at the point of identification to provide his or her biometric traits Second, identification based on biometric characteristics avoids the need of carrying id card's or remembering the password. Finally, the biometric characteristics of identified person cannot be lost or forged.

Face comparision section shows you how to use the Recognition console to compare faces within a set of databases with multiple faces in them. When you specify a **input face** (source) and a **Comparison faces** (target) image, Recognition compares the largest face in the source image (that is, the input face) with up to 100 faces detected in the target image (that is, the comparison faces), and then finds how closely the face in the source matches the faces in the target image. The similarity score for each comparison is displayed in the **Results** pane.

If the target image contains multiple faces, Recognition matches the face in the source image with up to 100 faces detected in target image, and then assigns a similarity score to each match.
If the source image contains multiple faces, the service detects the largest face in the source image and uses it to compare with each face detected in the target image.

Data Collection:
Data collection is the systematic approach to gathering and measuring information from a variety of sources to get a complete and accurate picture of an area of interest.

Input Image:
First phase is to input the image for identification. Read an image into the workspace, using the imread command from the database.

Pre-processing:

Preprocessing includes face detection,enhancement and alignment.

- Face matching database contains 100 pictures of 10 subjects.
- Loading the database into matrix .

* Import an image with an optical scanner or directly through digital photography.

* Manipulate or analyze the image in some way. This stage can include image enhancement and data compression, or the image may be analyzed to find patterns that aren't visible by the human eye. For example meteorologists use image processing to analyze satellite photographs.

* Result: Output the result might be the image altered in some way or it might be a report based on analysis of the image.

Image Pre-processing is a desirable step in every pattern recognition system to improve its performance and used to reduce variations and produce a more consistent set of images. In this phase image pre-processing in Photoshop 512*512 pixels.

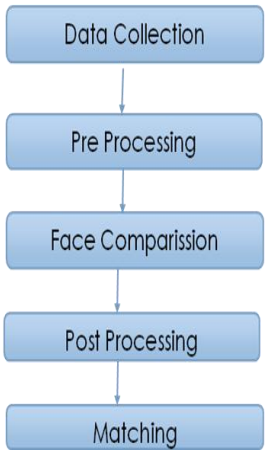

Fig. 1

The input to CompareFaces is an image. In this source and target images are loaded from the local file system. The SimilarityThreshold input parameter specifies the minimum confidence that compared faces must match to be included in the response.

Image Resize:

Resize images means to some changes an exact pixel size, file size in KB, or as a percentage of the original in images. It is to change the size of (something) to make it more suitable. In this phase image Resize using Matlab 8*8 pixels.

Histogram:

A histogram is an accurate representation of the distribution of numerical data. It is an estimate of the probability distribution of a continuous variable (quantitative variable).It is a kind of bar graph. To construct a histogram the first step is to "bin" the range value that is divide the entire range of values in to a series of intervals and then count how many values fall into each interval. The bins are usually specified as consecutive, non-overlapping intervals of variables.

II. RESULT ANALYSIS

The Face matching system that uses the data would have to take into account that the equal variance assumed between two images can be off by a certain threshold. In the result, you get an array of face matches, input face information, input and comparing image orientation. For each matching face in the comparing image, the response provides a similarity score (how similar the face is to the input face) and face data. Face data includes information such as the bounding box of the matching face and an array of facial landmarks.

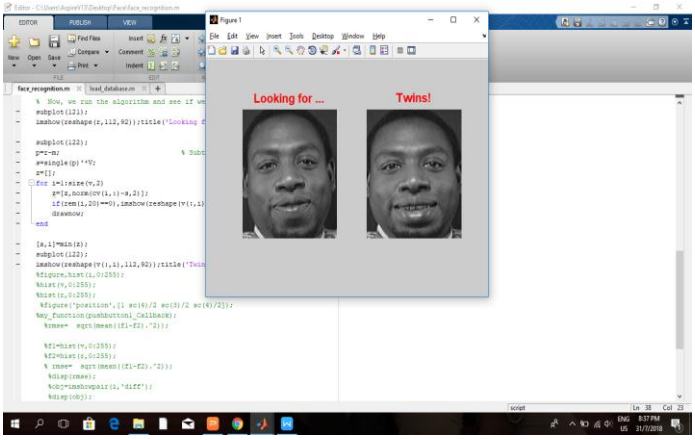

Fig. 2

Table 1

Data	Comparision Quality Factor value	Similarity score
image A,B	80	0.9
image C,D	90	0.91
image X,Y	75	0.89

The example shows that one face match was found in the comparing image. For that face match, it provides a bounding box and a confidence value (the level of confidence that face recognision has that the bounding box contains a face). The Similarity score of nearest 1.

III. CONCLUSION

In order to demonstrate the validity of the proposed method in distinguishing identical twins, several experiments have been conducted on dataset images. The matching system

would have to be both efficient in theory and the code that implements it because the goal would be to make it run faster and more accurate then pre-existing software. Also, more work can be done on the T-test for equality of the means are supposed to be compared between two images. A way this can be accomplished is to take the nearest value into consideration. Future work on this project would include the creating of a matching algorithm that uses the regional data created in this preprocessing system.

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