Face Recognition Using Android and Python

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Abstract—We will initially have a dataset of images that are to be compared. using this dataset we will compare any random images taken from the phone's camera and then using OpenCV we will perform various image processing algorithms and identify the similarity between the images. Face recognition is an important part of the capability of human perception system and is a routine task for humans, while building a similar computational model of face recognition.

Indexed Terms—Combined classifiers, face recognition, graph matching, neural networks.

I. INTRODUCTION

Recently, with the development of hardware technologies and the expansion of software applications, technologies for various contents have emerged. In particular, the recent propagation of smart mobile devices facilitates the public interest in intelligent systems that exploit various machine learning techniques applicable to diverse image data. Among these technologies, face recognition is commonly used and can be applied in various fields including broadcast content, entertainment, access control, security, and surveillance. Many algorithms for face recognition have been reposed. Depending on the necessary information extracted from certain images, the algorithms can be divided into the holistic-features-based method, the local-features based method, and the hybrid method. Such methods using holistic features such as Eigenface, Fisher face, Null space Linear Discriminant Analysis (LDA). Eigen feature Regularization and Extraction (ERE), and Discriminant Discrete Cosine Transform (D-DCT) extract the necessary features from the whole image of a face using various linear transforms.

II. RELATED WORK

A. Line Edge Map (LEM) Edge information is a useful object representation feature that is insensitive to illumination changes to certain extent. Though the edge map is widely used in various pattern recognition fields, it has been neglected in face recognition except in recent work reported in [60]. Edge images of objects could be used for object recognition and to achieve similar accuracy as gray-level pictures. Reference [60] made use of edge maps to measure the similarity of face images. A 92% accuracy was achieved. Takács argued that process of face recognition might start at a much earlier stage and edge images can be used for the recognition of faces without the involvement of high-level cognitive functions. A Line Edge Map approach, proposed by [61], extracts lines from a face edge map as features. This approach can be considered as a combination of template matching and geometrical feature matching. The LEM approach not only possesses the advantages of feature-based approaches, such as invariance to illumination and low memory requirement, but also has the advantage of high recognition performance of template matching. Line Edge Map integrate the structural information with spatial information of a face image by grouping pixels of face edge map to line segments. After thinning the edge map, a polygonal line fitting process [62] is applied to generate the LEM of a face. An example of a human frontal face LEM is illustrated in Fig. 1. The LEM representation reduces the storage requirement since it records only the end points of line segments on curves. Also, LEM is expected to be less sensitive to illumination changes due to the fact that it is an intermediate-level image representation derived from low level edge map representation. The basic unit of LEM is the line segment grouped from pixels of edge map.

Features of Existing system:

- Principle Component Analysis (PCA) Eigenface [1][2]
- Linear Discriminant Analysis (LDA)

a. Fisher face [3]

- Skin Colour Based Algorithm

a. Red-Green-Blue (RGB) [4][5]
b. Huc-Saturation Intensity (HIS)

- Wavelet Based Algorithm

a. Gaber Wavelet [6][7]

- Artificial Neural Networks Based Algorithm

a. Face Forward [8]

b. Back Propagation [9]

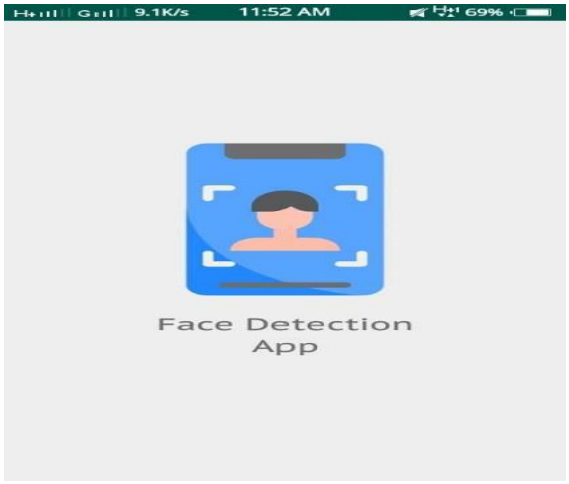
c. Radial Basis Function (RBF

III. PREPOSE SYSTEM

The two methods which are used in proposed system to detect and recognition of faces are as follows:

- Constellation method:All methods discussed so far are able to track faces but still some issue like locating faces of various poses in complex background is truly difficult. To reduce this difficulty investigator form a group of facial features in face- like constellations using more robust modelling approaches suchas statistical analysis.
- Linear sub space method: An early example of employing eigen vectors in face recognition was done by Kohonen in which a simple neural network is demonstrated to perform face recognition for aligned and normalized face images.

A. Figures and Tables



Homepage of Face Detection and Face Recognition Application

Fig:User Homepage of Face Detection and Face Recognition Application

Fig: Selected Image Window of Face Detection

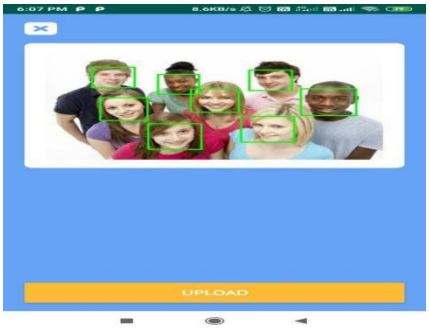


Fig: Processing to Detect Face

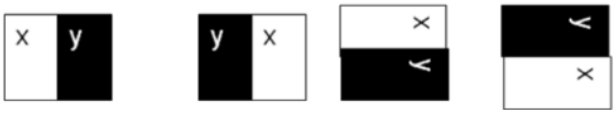
B. Equations

Algorithm to detect and recognition of face from database:

Step1: Finding out shapes of face i.e., circle, oval and rectangle.

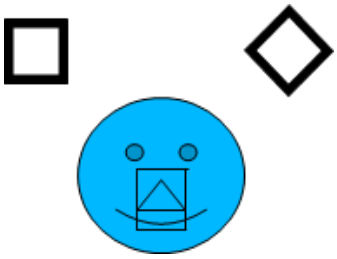
Step2: finding out edge features of face Everyone's face's half portion is divided in to two portions i.e., dark portion and fair portion of the face.

let, x= dark_portion_of_face and y=fair_portion_of_face
face=x+y; or face=y+x;

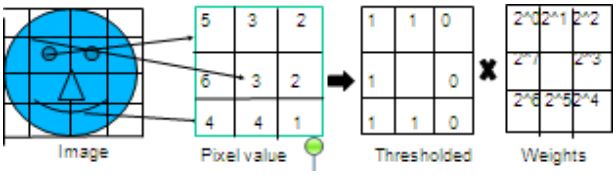


Step3: Finding out Line Features Letx=dark_portion_of_face and y=fair_portion_of_face and equation=y+x+y or x+y+x It is divided in to three level to finding out line features of face. It is a combination of (dark,fair,dark) or (fair,dark,fair) part of face.

Step4: Finding out Center Surround Features. the center surround features is finding out on the basis of center part of the face i.e. nose.

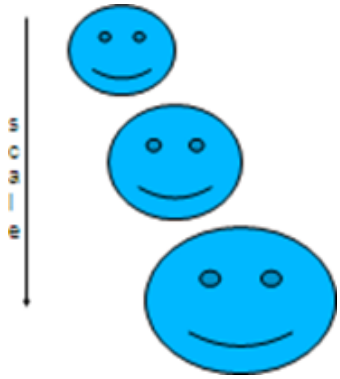


Step5: Converted RGB or BGR image in to gray scale image and finding out its LPB on the basis of pixel values.

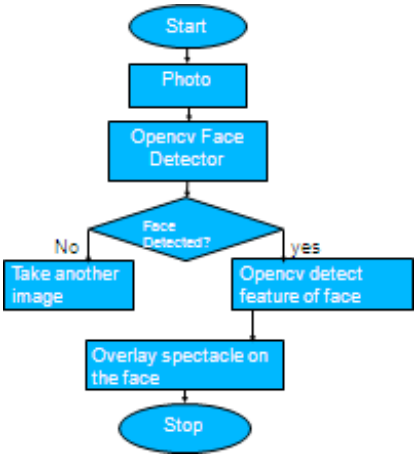


Step6: Set->image*200;

In this stage we convert image into large scale or expand the image size. This image size is incremented by 2 at each time. This stage is performed because some of the it is very complicated to finding out particular face from group photo.



C. FLOWCHART



Some Common Mistakes

The word "data" is plural, not singular. The subscript for the permeability of vacuum μ0 is zero, not a lowercase letter "o." The term for residual magnetization is "remanence"; the adjective is "remanent"; do not write "remnance" or "remnant." Use the word "micrometer" instead of "micron." A graph within a graph is an "inset," not an "insert." The word "alternatively" is preferred to the word "alternately" (unless you really mean something that alternates). Use the word "whereas" instead of "while" (unless you are referring to simultaneous events). Do not use the word "essentially" to mean "approximately" or "effectively." Do not use the word "issue" as a euphemism for "problem." When compositions are not specified, separate chemical symbols by en- dashes; for example, "NiMn" indicates the intermetallic compoundNi0.5Mn0.5 whereas "Ni–Mn" indicates an alloy of somecomposition NixMn1- x.

Be aware of the different meanings of the homophones "affect" (usually a verb) and "effect" (usually a noun), "complement" and "compliment," "discreet" and "discrete," "principal" (e.g., "principal investigator") and "principle" (e.g., "principle of measurement"). Do not confuse "imply" and "infer."

Prefixes such as "non," "sub," "micro," "multi," and ""ultra" are not independent words; they should be joined to the words they modify, usually without a hyphen. There is no period after the "et" in the Latin abbreviation "et al." (it is also italicized). The abbreviation "i.e.," means "that is," and the abbreviation "e.g.," means "for example" (these abbreviations are not italicized).

An excellent style manual and source of information for science writers is [9].

VII. CONCLUSION

Face recognition technology has come a long way in the last twenty years. Today, machines can automatically verify identity information for secure transactions, for surveillance and security tasks, and for access control to buildings etc. These applications usually work in controlled environments and recognition algorithms can take advantage of the environmental constraints to obtain high recognition accuracy. However, next generation face recognition systems are going to have widespread application in smart environments where computers and machines are more like helpful assistants.

REFERENCES

[1] Song Ci, Dalei Wu, Yun Ye, Zhu Han, Guan-Ming Su, Haohong Wang,Hui Tang (April2012),"Video Summary Delivery Over Cooperative Wireless Networks". Ieee Wireless Communications.

[2] Ivan Kastelan, Mihajlo Katona, Goran Miljkovic, Tomislav Maruna, Mirko Vucelja, (2012) "Cloud Enhanced Smart Home Technologies", Ieee International Conference on Consumer Electronics.

[3] . Lei Lei And Zhangdui Zhong,Chuang Lin, Xuemin (Sherman) Shen (April 2012), "Operator Controlled Device-To-Device Communications In Lte-Advanced Networks", Wireless Communications.

[4] Jun Zhang And Khaled B. Letaief, (June 2012) "Interference Management with Relay Cooperation in Two-Hop Interference Channels", Ieee Wireless Communications Letters, Vol.1, No.3.

[5] Jin-Bum Hwang And Chae Y.Lee, Member, Ieee (2012), "Effective Video Multicast Using Svc With Heterogeneous User Demands Over Tdma Based Wireless Mesh Networks",Ieee Transactions On Mobile Computing.

[6] M. Majid Butt, (June2012) "Energy-Performance Trade-Offs In Multi user Scheduling: Large System Analysis", Ieee Wireless Communications Letters, Vol.1, No. 3.

[7] P. Ubaidulla, And SoniaA¨ Issa, Senior Member, Ieee, (June2012) "Optimal Relay Selection and Power Allocation for Cognitive Two-Way Relaying Networks". Ieee Wireless Communications Letters, Vol.1, No.3.

[8] N of Abuzainab, Anthony Ephremides, (June2012), "Energy Efficiency of Cooperative Relaying Over a Wireless Link". Ieee Transactions on Wireless Communications, Vol.11, No.6