

Biometric Ear Recognition System

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ABSTRACT – Biometric authentication using ear image is new research technique. Multiple unique features of human are explored but not many are used. This project focuses on one such area, that is Authentication using picture of image. If sign up user will facilitate userid, password, email address. Also user will register his ear image using HD camera. In this application, user will be authenticated, using user id, password and ear image clicked from camera. In first step, user who log in will be authenticated based on user id and password. User will capture his ear Image it will be converted to 3Dimensional and this captured image will be saved in drive. In 2nd step, user will provide his ear image using HD camera, and authentication will be done by matching real time ear image with ear image stored while sign-up.

Keywords: morphological operation, template matching algorithm.

1. INTRODUCTION - Biometric authentication using ear image is new research technique. Multiple unique features of human are explored but not many are used. This project focuses on one such area that is Authentication using ear image. While sign up, user will facilitate user id, password, email address. Also user will register his ear image using High Definition camera. In this application, user will be authenticated, using user name, password and ear image which is captured from camera. In 1st step of log in, user will be authenticated based on user name and password. User will capture his ear Image, it will be transformed to 3Dimensional and this image will be saved in drive. In 2nd step of user will provide his ear image using High Definition camera, and authentication will be done by matching real time ear image with the stored ear image while sign-up.

2. LITERATURE SURVEY

2.1 Person Identification Using Ear Biometrics :

Checking contents from images is one of the most important work of vision systems. To this, the stability of tracking Systems greatly depends on the detection of targets. A different class of biometrics depend on ear characteristics there was launched for use in the construction of passive identification Systems by Alfred

Iannarelli. Identification by ear biometrics is promising because it is traceable like face recognition, but instead of the problems to extract face biometrics, it uses robust and simply extracted biometrics like those in finger printing. The ear is a unique feature of human beings. In this paper, described a system that tracks and detects ear features simply and robustly. First of all, appropriate threshold value is identified and then ear boundary is recognized. After that edge linking is complete. Data taken from the ear image is compared with the database. Ear detection algorithm is quite simple and, hence, has low computation complexity and can be applied in many real-time applications.

2.2 An evaluation of face and ear biometrics :

Face detection depend on the features of component verification is not lightly researched subject in computer vision. The ear has been proposed as a biometric, with claimed advantages over the face. Here used the PCA approach to images of the face and ear with similar collection of subjects. Testing was done with three different gallery/probe combinations. For faces we have:

Results indicate that the face provides a more reliable biometric than the ear. Performed initial experiments on the use of combined face and ear data and found that even a simple fusion technique yields improved performance over either the face or ear alone.

2.3 Image-based ear biometrics Smartphone App for patient identification in field

Setting:

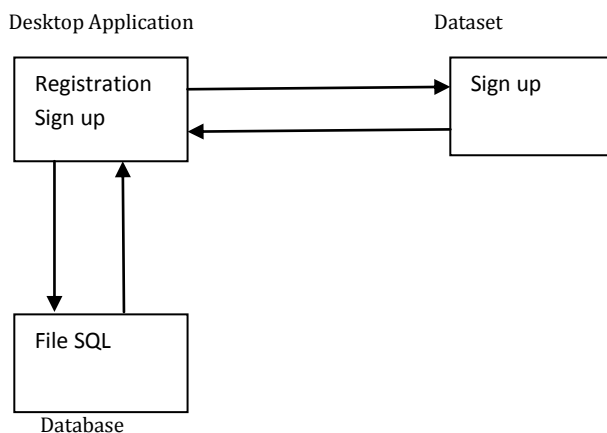
This paper present, a work in progress of a computer vision application that would directly impact the delivery of healthcare in underdeveloped countries. Describe the development of an image-based Smartphone application prototype for ear biometrics. The application prototype for ear biometrics. The application targets the public health problem of managing medical records at on-site medical hospitals in not more developed countries where most of the

peoples do not take Identities. The domain presents challenges for an ear biometric system, including varying scale, rotation, and radiance. It was unclear which feature descriptors would work very good for the various application, so a comparative study of three ear biometric extraction technique was performed, one of which was used to built an iOS application prototype to create the identity of humans using a Smartphone camera image. A pilot study was then conducted on the developed application to test feasibility in naturalistic settings.

2.4 3-dimensional ear recognition based iterative closest point with Stochastic clustering matching :

Ear recognition is a latest technology and future trend for human identification. So, the false detection rate and matching recognition are very challenging due to the ear complex geometry. The advantage of the study is to presented a combination of Iterative Closest Point (ICP) and Stochastic Clustering Matching (SCM) algorithm for 3D ears matching based on biometrics field with a good steadiness to decrease the negative detection rate. The corresponding ear extracts from the side range image and characterized by 3D features. The proposed method used mat lab simulation and defined the average can define similar detection time 35ms and identification is similar to 98.25% for the collection of different database. The result shows that the proposed combined method get results than the existing of ICP or SCM in terms of recognition time and correctness in training.

3. ARCHITECTURE



ALGORITHM-

- Step 1: video capture.
- Step 2: get video frame.
- Step 3: call vc function.
- Step 3.1: get U as input to VC.
- Step 3.2: get ear image.
- Step 3.3: output as VF.
- Step 4: call to IE function.
- Step 4.1: get VF as input.
- Step 4.2: call ear recognition function.
- Step 4.3: process recognition technique to authenticate user.
- Step5: display result.
- Step 6: stop

Morphological Operation -

Morphological image processing is a collection of non linear operation related to the shape. Morphological operation rely only on the relative ordering of pixel values not a numerical values and therefore are especially suited to processing of binary images.

Fundamental operation-

Erosion and dilation:

The erosion of binary image f by a structuring element s produced a new binary image $g = f * s$ with one's in all locations (x,y) of structuring element origin at which that structuring element fits input image f, i.e $g(x,y) = 1$ is s fits f and 0 otherwise, repeating for all pixel co-ordinates(x,y).

Template matching algorithm -

Image matching is an most important topic in the field of image processing, and it is most widely used in a image registration and image fusion. This algorithm based on a projection and sequential similarity detecting is proposed. Algorithm strategy is from sketch matching to detail matching. Firstly, real time images are projected to obtain one dimension data and its employes for sketch matching with one dimension data with reference image. Secondly, sequential similarity detecting principle is used for detail matching employing the points with larger similarity in sketch matching. This algorithm was efficient and faster than other image template matching algorithm.

4. CONCLUSION- This system is going to authenticate the person who is new or/and already have a login username and password with is stored and processed 3D image of ear. This system provides more

authentication facility with the more secure authorization of the application. We conclude that ear biometrics can be used for identification and for the further development it is a good biometric and is comparable to that of face.

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