

Recognition and Face Detection Using Infrared Images and Visible Light

Mohammad Ali Banaee¹, Ali Akbar Khazaei²

1-Department of Electrical Engineering, Khorasan e Razavi Science and Research Branch, Islamic Azad University, Neyshabur, Iran. mali.banaee@yahoo.com

2-Department of Electrical Engineering, Mashhad Branch, Mashhad, Iran. khazaei@mshdiau.ac.ir

Corresponding Email : mali.banaee@yahoo.com

Abstract : Face recognition in recent decades has been the attention of many researchers. Identification in controlled environments and still images have been significant improvements, but still in an uncontrolled environment is a challenge. In this paper, face detection and recognition by visible-light and infrared images will do and unlike other studies that made use of a method to identify two methods in the study of vascular network extraction and identified as an area that is very simple and has a high rate will use. The results prove that this method will also detect changes in the face like a beard, glasses, smile, frown, plastic surgery, etc. can determine. In this method, a rapid calculation of the similarity between visible and infrared image and use the criteria for identifying and implementing actions carried out similarities between them. With this method, an image that has little resemblance in some cases are investigated and that the number of samples will be identified high speeds.

Keywords: face recognition, face matching, infrared images, Biometric

I. Introduction

Due to the need for new technologies and innovative safety and maintenance information is used for protection. Biometric technologies based on automated methods have been developed which identify and, in particular, faces one of the most important issues in this context is considered. So far, many activities have been carried out by this method, which can be detected by blood vessels, retina and iris identification, identification of how to walk, recognition of hand geometry, etc. [i], [ii].

In this study, using the existing procedures in the field of face recognition to detect visible light and infrared images look for in regard to the proposed algorithm then adapt these images to examine and the result of changes in the face of these images are going to see .

II. Face recognition based on vascular network in infrared images

Interception method called face in the images based on the expression. Because of the relative similarity of temperature distribution for different people together. The temperature distribution of the arteries caused due to human form is the same

and so can be used to intercept any way. After you identify the image face done in the vascular network is extracted. Reggae morphology algorithm is used to extract network. This algorithm is called White Top Hat and highlighted a number of bright spots in the picture and eliminates dark spots. Also, to reduce the error of this algorithm filters used plasticizer. Figure i and Figure ii is an example of the algorithm of the image shows the output of the system. [iii]

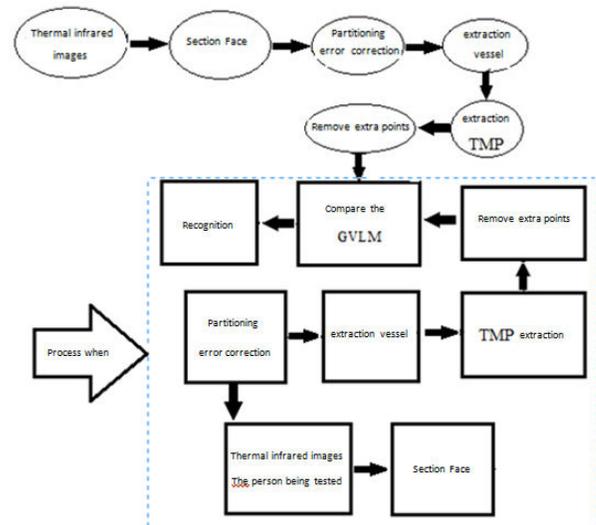


Figure i - vessel detection algorithm face infrared images



Figure ii - An example of the output image

III. Face recognition by area

It is possible either that both methods are shown in Figure iii. This identification method based on the work and the overall performance review of the face is in the details. For example, as seen in Fig. In a first, the characteristics of this field is checked, then the forehead and brow area, the eyes, nose and lips are

examined and all the features of each of these areas (eg mole) are analyzed. The method B. using the pixel pattern and packing, different areas are One by one study. [iv]

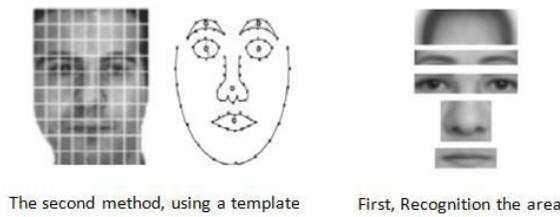


Figure iii - identified as an area

IV. Matching face infrared image with the visible image

In this method, according to the images in the database and identify an image taken from the first operation carried out in case the new image and the database is not found then the comparison between the face in the visible light and infra-red is carried out. Overall system performance Bhayngvnh that the image processing is done first, before it is removed and zero frequency and the normalized images. Finally new images are stored in a database and then to compare new images from them will be used. If images are at the end of a two-picture adaptation exports messaging system. Figure 4 shows a block diagram of the proposed method.

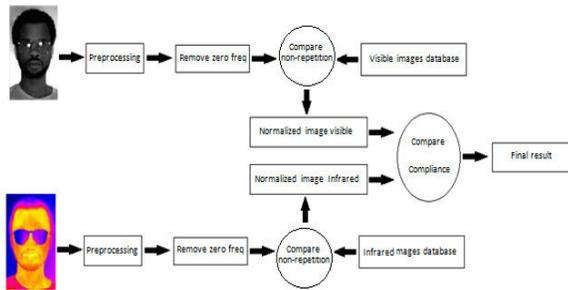


Figure iv - Performance accommodating infrared and visible image

V. While face identification and implementation of changes

Using this method can detect changes caused in the face. In this part of the test results, you will see that despite the use of glasses, smile and change all the light intensity according to the natural state of man is recognizable. Figure v shows some of the results of the proposed method. [v]

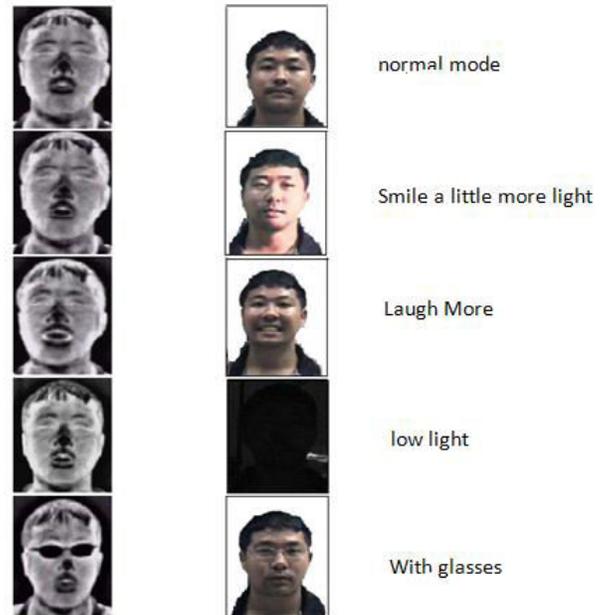


Figure v - Results of the change in the face

VI. Conclusion

The results of this trial were presented in recognition of the ability to correct images with the changes (light intensity, smile, glasses, etc.) show. Although the extraction method reduces network reggae But with the second method, which presented the results due to its resistance to noise ratio up to 10% improvement in the results of the process saw. On the other hand it can be noted that the advantage of this method compared to other methods is simpler and more speed. Also, because of the existence of the database and store new images, video detection rate of about 96% was achieved in the bank.

VII. Reference

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