Simulation results for alternative approach to Iris Recognition Technology exploiting intensity parameters as well as dimensional characteristics of pupil and iris

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Abstract: In present day world when identity circumferences many social, personal, professional outlooks, the identification of identity is highly critical. In pursuit of the same if we consider biological identity of person as a resource to identify his identity, we are approaching towards a new arena of a metric system call biometric system which enables us for automatic identification of an individual based on a unique feature or characteristic biologically possessed by the individual. This paper gives simulation results for complete iris recognition exploiting Intensity Parameters as well as Dimensional Characteristics of Pupil and Iris using MATLAB software version 2010b to improve feature extraction.

Keywords: Iris Recognition, coordinates, intensity, co-centric, biometric, test/real-time input.

I. INTRODUCTION

A biometric system provides automatic identification of an individual based on a unique feature or characteristic possessed by the individual. Iris recognition is regarded as the most reliable and accurate biometric identification system available. In present day world when identity circumferences many social, personal, professional outlooks, the identification of identity is highly critical. [1, 2]. Iris recognition is an automated method of biometric identification that uses mathematical pattern-recognition techniques on images of the iris of an individual’s eyes, whose complex random patterns are unique and can be seen from some distance. [3, 4]

The first phase of iris biometric systems is capturing the sample of the iris. Then iris samples are pre-processed and segmented to locate the iris. Once the iris is located, it is then normalized from polar coordinate to Cartesian. Next, a template representing a set of features from the iris is generated. The iris template can then be objectively compared with other templates in order to determine an individual’s identity. This paper presents the novelty involved in first step for the segmentation pupil by determining coordinates of image [5,6,7].

Fig. 1: Flowchart of implemented algorithm.
II. EXPERIMENTAL RESULTS

The simulation results showing sequential simulation of complete iris recognition exploiting Intensity Parameters as well as Dimensional Characteristics of Pupil and Iris using MATLAB software version 2010b to improve feature extraction.

a. Pupil Detection Module

![Figure 2: Pupil detection (sample image 1)](image)

b. Iris Detection Module

In Iris detection module we examined the sample images for which the corresponding detected iris region is as follows:

![Figure 3: Iris detection (sample image 1)](image)

c. Eyelid Detection Module

The eyelid detection module gives corresponding results as follows:

![Figure 4: Eyelids detection (sample image 1)](image)

d. Normalization Module

Corresponding Normalized iris and its normalized mask are shown below:

![Figure 5: Normalized iris and normalized mask (sample image 1)](image)

e. Feature Encoding Module

The corresponding encoded templates are:

![Figure 6: Encoded template of iris region (sample image 1)](image)
III. RESULTS AND OUTPUT IN RUNNING MANNER

Now the matching module compares the generated template of one iris image with other and gives the results correspondingly:

Figure 7: Loaded view of sample image

Figure 8: Pupil detection

Figure 9: Iris detection

Figure 10: Eyelid detection

Figure 11: working of normalization module

Figure 12: working of template encoding module

Figure 13: working of matching module (selecting template ‘a’)

Figure 14: working of matching module (again selecting template ‘a’)

Figure 15: working of matching module (giving ‘Match Found’ as result)

Figure 16: working of matching module (again selecting template ‘b’)

Figure 17: working of matching module (giving ‘No Match Found’ as result)
IV. CONCLUSION AND FUTURE WORK

The iris recognition technology has been implemented with a novel approach exploiting Intensity Parameters as well as Dimensional Characteristics of Pupil and Iris. Moreover it comes to conclusion that its characteristic features of images pay off more in any biometric system along with the efficiency of operation performed. The future work involves reducing computational complexity of the above new algorithm.

REFERENCES