

Multi model biometrics Recognition using different transforms

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Abstract: To give secure support to biometrics recognition this system deals with multimodal recognition (finger print + Iris recognition) to give efficient performance in the biometrics recognition. The kaggle & MRL eye database is used for the image for both finger print and Iris recognition, 225X225 image size taken into the system and feature extraction made namely edge and color then, combine both the feature together and stored into database. The same procedure applicable for training image as well as testing image. Haar transform, Fourier Transform and Laplace Transform for the feature extraction used and compare the result among the transform result justify the efficiency of the best transform. Now, The testing image load into the system feature extraction made and match with the database for the secure process in multi model biometrics.

Keywords: Haar Transform, Fourier Transform, Laplace Transform, Iris Recognition, Finger print Recognition

1. Introduction

Insecurity level will increase day by day for every present technology in order to support the existing techniques this work mainly focus on the multi model techniques which is used to increase the level of the existing technique with the present technology and this system focus on the combination of fingerprint recognition and iris recognition by extracting the feature with different transforms choose the best transform from those transforms with respect to accuracy, FAR & FRR result will be justified and feature extraction & input image common for both training phase as well as testing phase and the figure 1. Show the basic block diagram of the proposed system[1-3].

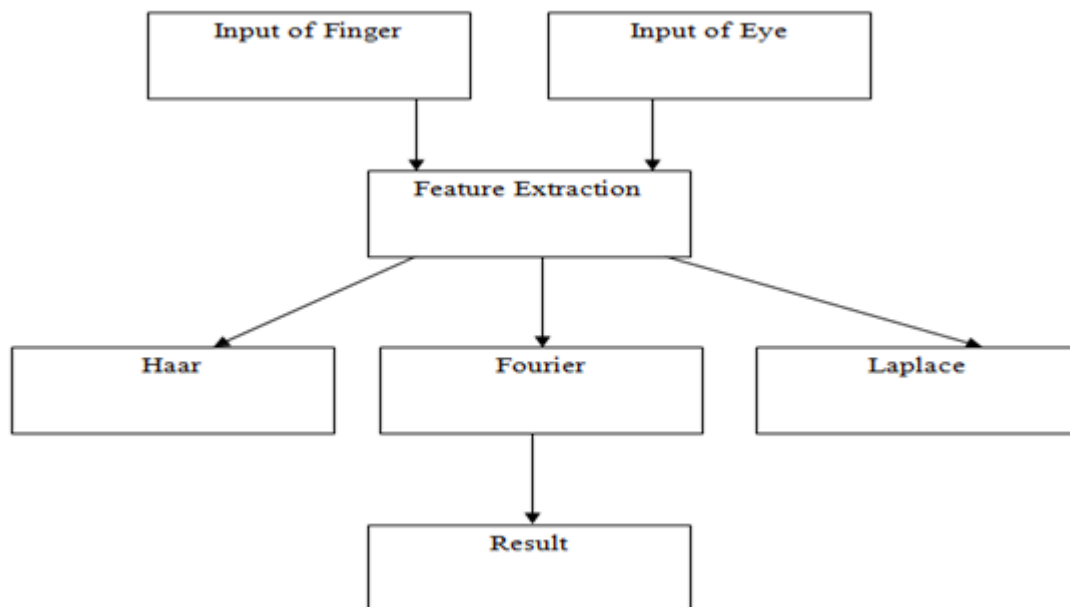


Figure 1. Basic block Diagram

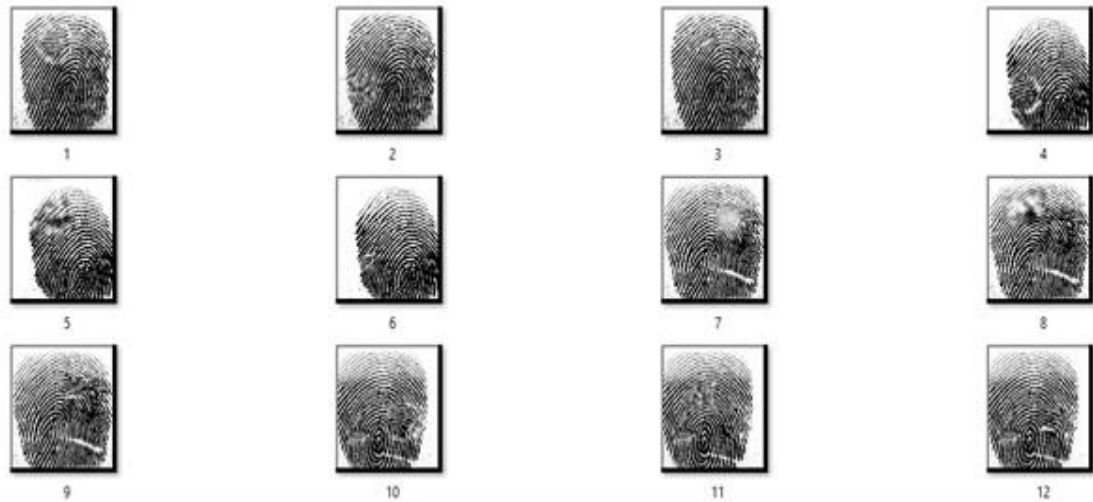


Figure 2. Finger Database

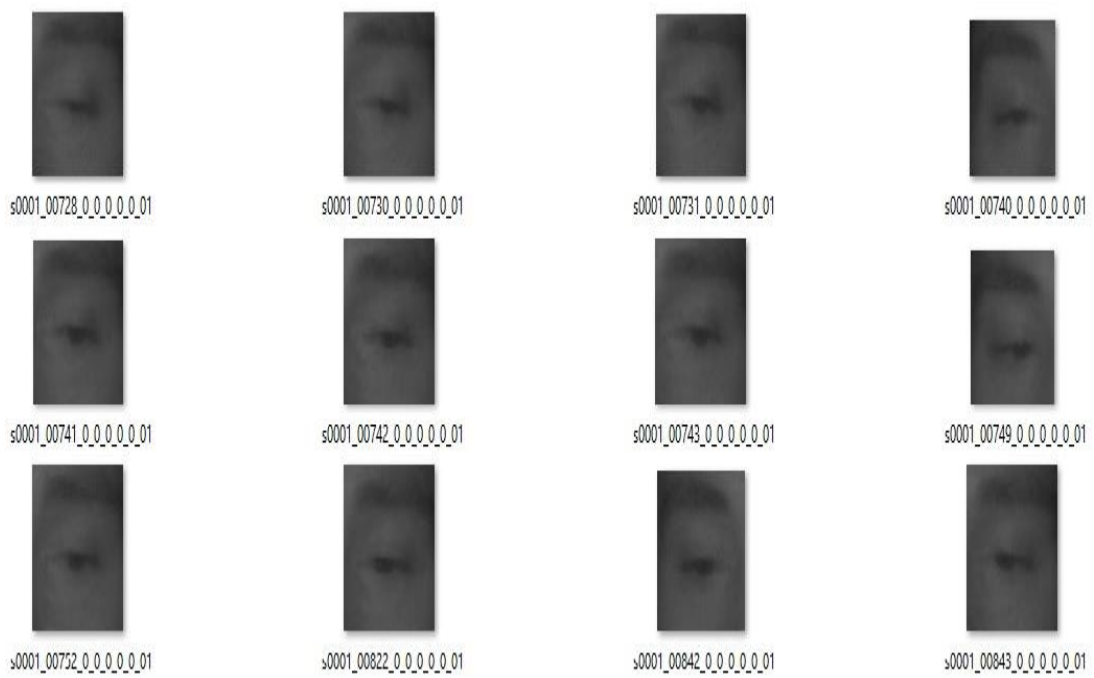


Figure 3. Eye Database

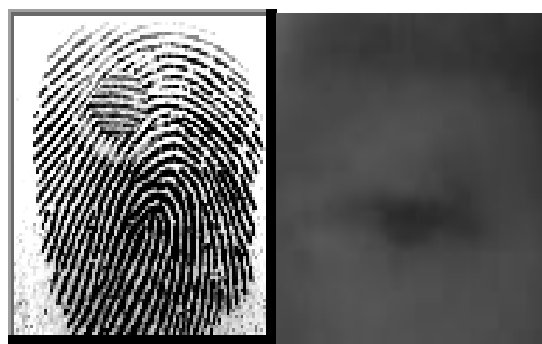


Figure 4. Sample Finger & Eye image

2. Materials & Methods

Initial step to train the images for both finger as well as eye image feature will be extracted namely finger & eye image will be feed into the system then, apply the edge detection technique for both the input images and apply the transforms like Haar, Fourier and Laplace Transforms result will be stored into the database. Now, the system is ready for the testing phase and feed the input image of both the finger & eye image to the system and feature will be extracted like edge as well as color and also apply the transforms for the identification of result with respect to the accuracy, FAR, FRR result[4-6].



Figure 5. Edge Detected Images

3. Implementation

The input image size preprocessed into 225X225 into the system for both training as well as testing phase and after feature extracted 3 different transforms applied for the feature extraction purpose with respect to accuracy, FAR & FRR

Table 1. Comparison of Haar, Fourier & Laplace Transforms

S.No	Transforms	Accuracy	FAR	FRR
1	Haar	98.5%	98.5%	99.27
2	Fourier	98.5%	98.5%	98.5%
3	Laplace	98.5%	97.8%	98.5%

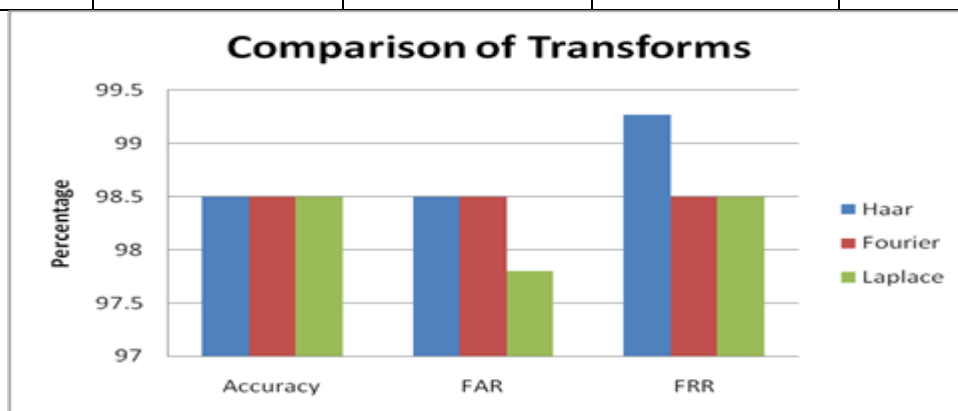


Figure 6. Graph for Transforms result

For the implementation part totally 137 finger print image from kaggle and 137 eye image from MRL database taken then, feature will be extracted as mentioned above accuracy for the transforms mentioned in the

Table 1. With respect to accuracy, FAR, FRR shown in table among the 3 transforms comparing with other transform Haar transform which gives better result for the multi model biometrics recognition.

4. Conclusion

Combination of both finger as well as iris recognition which leads to the high in security to strengthen the existing system feature extraction made from the input image of both and applicable for training phase & testing phase and apply the transforms from the result itself easily identify that Haar transform produced 98.5% in the aspects of accuracy and high in FAR, FRR. So this particular system recommended the Haar transform for the feature extraction one of the algorithm for the multi model biometrics algorithm.

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