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SURVEY PAPER ON KNUCKLE BASED RECOGNITION USING GABOR TRANSFORM & NEURAL NETWORK

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ABSTRACT

The study in this different paper proposes an enhanced method for personal authentication based on finger Knuckle recognition. In finger-knuckle-print (FKP) is the inherent skin patterns of the outer surface around the phalangeal joint of one's finger. This paper a texture feature extraction methodology is proposed for these biometric traits. It is highly unique which makes it an emerging promising biometric identifier. In this proposed system is evaluated on prepared FKP database that involves all categories of FKP. In this paper, the study of the knuckle based recognition, Gabar transform and neural network using various techniques has been given. The comparison of the different classification methods of the image database is also given in the paper.

KEYWORDS: Biometric, Finger knuckle print, Gabar transform, Kekre's wavelet Transform, EER, etc.

INTRODUCTION

Biometric Authentication systems take the advantage of the uniqueness of the human body. They derive the classifying function from what a person is than what a person carries. For biometrics comprises methods for uniquely recognizing humans based upon one or more intrinsic physical and/or behavioral traits. The computer science, in particular, and biometrics is used as a form of identity access management and access control process. It is also used to identify individuals in groups that are under surveillance [1].

The human identification by gait can be achieved without any knowledge of internal or external camera parameters. A signature to the online detection of program memory and control flow error caused by transient and intermittent faults. The finger surface posses unique patterns that have been utilized in the personal identification.

Knuckle surface print is highly unique and makes this surface a distinctive biometric identifier. The features of finger geometry can be collected from the same image and same time and integrated to improve the performance of the system. The peg-free imaging of the knuckle surface is highly convenient to users.
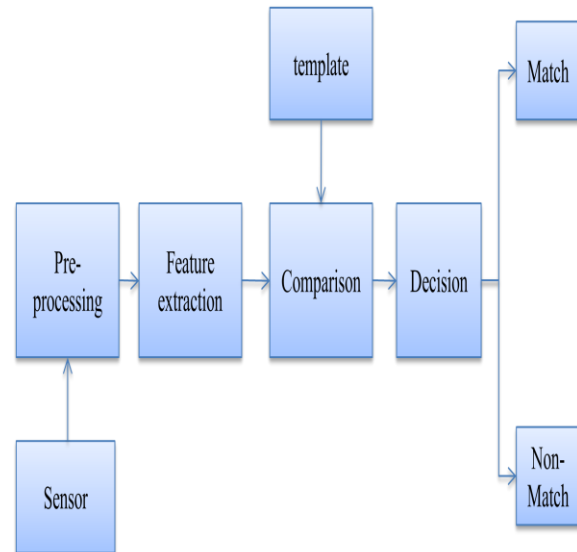
Fig: 1 Biometric system

The used different method for example artificial neural network (ANN) and Kekre's wavelet transform, Gabor transform etc, for classification as it gives better accuracy and performance than other classifiers etc.

LITERATURE REVIEW

In the many researchers have been done in field of economic dispatch problem some of the work is described in this paper.

Swati M R [1], The study shows that finger knuckle print of a person can be used as a biometric trait in a biometric authentication system due to its uniqueness property. This paper propose a biometric authentication system which makes use of finger knuckle image of a person as biometric trait. The use different feature extraction is done by applying a bank of Gabor filter to a pre-processed FKP recognition. Then dimensionality of the extracted feature is reduced by using kernel principal component analysis method. Then Linear Discriminate Analysis algorithm is applied on KPCA feature space to increase the between class reparability features. In this paper, proposed a method for personal identification based on Finger Knuckle Print biometric trait. In our method bank of Gabor filter with different orientation and scales are applied to extract feature from ROI FKP image. Then dimensionalities of the extracted feature are reduced by using Kernel principal component analysis method. Later Linear Discriminate Analysis (LDA) algorithm is applied to increase the class separability feature.

Neha Kudu, et.al. [2], done study in their paper, the main purpose of using biometrics is to avoid the risks related to password such as easy to find or Stoll. In this paper use method finger knuckle image authentication system employs a low resolution knuckle print images to achieve effective personal identification data. The efforts are concentrated to develop a biometric authentication system that consists of a finger knuckle print sensor which acts as a biometric sensor unit with a direct interface to an external PC for storing finger knuckle print database. Finger knuckle print sensor consists of a set of digital camera that captures the raw image of finger knuckle print (FKP). The image is processed through an algorithm to extract the features set and form the finger knuckle print template for biometric authentication using KWT transform using division method of original template. In the sensor is developed which is comparatively less complex and the resolution of the images acquired is high. The Euclidian distance matching gives a better result than absolute distance matching. In the test run on ready-made database using the implemented algorithm gives a lesser accuracy as only 10 user samples were

selected. This can be improved by increasing the number of samples.

Dr.Mrs.R.D.Raut, et.al, [3], This paper proposes an enhanced method for personal authentication based on finger Knuckle Print using Kekre's wavelet transform. The finger-knuckle-print (FKP) is the inherent skin patterns of the outer surface around the phalangeal joint of one's finger. Kekre's wavelet transform is constructed from Kekre's transform. The proposed system is evaluated on prepared FKP database that involves all categories of FKP. In focuses the different image and data base enhancement techniques for the pre-processing of the captured images for camera sensing image. in this paper are use performance parameters like True Acceptance rate, True rejection rate, false rejection rate (FRR), false acceptance rate. In the tested result demonstrated the improvement in EER which is very much important for authentication process. It can be using method Kekre's algorithm along with image enhancement shows that the finger knuckle recognition rate is better than the conventional method. They have new approach for personal authentication using the finger knuckle surface for feature extraction data. It is observed that pre-processing of the database eliminates the noise and also enhances the FKP image that improves the accuracy of the system.

Dr. Vinayak Ashok Bharadi [4], study in this paper, the feature vector generation is an important step in biometric authentication. In the biometric traits such as fingerprint, finger-knuckle prints (FKP), palm print, iris are rich in texture scheme. In this texture is unique and the feature vector extraction algorithm should correctly represent the texture pattern. The process of texture feature extraction methodology is proposed for these biometric traits. On one step transform of the two dimensional images and then using the intermediate transformation data to generate complex planes for feature vector generation process. In this paper are using method DCT, Hartley, Walsh, Kekre Wavelets and Kekre Transform. Results indicate the effectiveness of the feature vector for biometric verification. This feature extraction mechanism was implemented for Fingerprints, palmprint & iris feature vector generation, and Finger-knuckle prints. It is observed that the proposed method performs well for classification of genuine and forgery inputs. This shows the superiority of proposed method for texture feature based feature vector extraction method. The proposed method is tested in both unimodal & multi-algorithmic and multi-instance. The fusion improves the performance the various biometric systems tested.

Mobarakol Islam [5], the improved human authentication process using knuckle surface for personal identification has shown promising results. The texture pattern produced by the finger knuckle bending is highly unique and makes the surface a distinctive biometric identifier method. A specific data acquisition device is constructed to capture the finger knuckle surface images, then an efficient finger knuckle print algorithm is presented with trained artificial neural network (ANN). The finger back surface images from each of the users are normalized to minimize the scale, for translation and rotational variations in the knuckle images. These papers are method is that a hybrid feature selection method of Lempel-Ziv Feature Selection and Principle Component Analysis is used for feature extraction and an artificial Neural Network based on Scaled Conjugate Gradient is used for the recognition system. Compared with other existing human finger knuckle surface based systems, and the proposed finger knuckle surface authentication has merits of high speed, high accuracy, and small size and more secure. In this especially useful and effective in real commercial applications and a great potential to be future improved.

OBSERVATION AND RESULTS FOR DIFFERENT METHOD

The accuracy and time error is the major parameter on which the performance of different algorithm has been evaluated. In various results of different paper are summarized in the table below,

Table 1: observation diffrent method

S. No	Name of Another	Methods	Accuracy (%)	Mean Error (%)
1	Swati M R	Gabor+PCA	91	….
2	Neha Kudu	KWT	80	……..
3	Dr.Mrs.R.D. Raut	Kekre's wavelet transform	89.99	10.01
4	Dr.Vinayak Ashok Bharadi	Walsh transform	95	10
5	Mobarakol Islam	SCG	96.03	3.97

CONCLUSION

The various papers and literature has been studied for biometric techniques. The comparisons of the methods have been given in the form of table. A new biometrics recognition, finger-knuckle-print (FKP), has attractive interests of researchers. It is Based on the results of psychophysics and neurophysiology studies, both local and global information is crucial for the image perception. As a future work, we want to try different classifier combination.

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