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HANDWRITTEN BIOMETRIC SIGNATURE VERIFICATION USING DIFFERENT FEATURES

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Abstract: Now a days biometric is widely used for human verification anywhere in the world. Handwritten of signature of human being is unique and for identification of human being is accepted in banking and other financial transaction. Signature an important biometric for authenticating the identity of human beings and reducing forgeries. The major challenging aspect of signature verification and identification has been for a long time true motivation for researches. Researched into signature verification has been pursued work for number of years and still being explored, especially of offline signature mode. The recognition of handwritten signature still considered an open research problem due to its variation in appearance. In this paper we have discussed a brief overview of offline handwritten signature recognition and verification technique for reducing forgeries by using k-nn algorithm. User provide scanned image into the computer modifies images quality by pre-processing then feature extraction, for classification k-mean algorithm and genetic algorithm.

Keywords: Biometric, Image Pre-processing, Feature Extraction, Offline Signature Verification System

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INTRODUCTION

In recent years biometrics has an important in personal authentication and identification. The used of handwritten signature has become most important and convenient method for verification and identification of human being and to reduce forgeries. Nature of signature mainly depends the factors such as age illness, emotional state of the person. Off-line method uses an optical scanner to obtained data i.e handwritten signature written on paper. Input signature image is a two dimensional image. Signature verification is difficult for reducing forgeries because mainly signature is depend on the physical and psychological state of signer. So there is chances of occurrences of variation in signature. So researches pursuing many challenges into signature recognition and verification.

Signature verification mainly involves two tasks: first identification of signature and other is decision about whether signature is genuine of forged. Contribution of our system is to extract the structural features such as major axis, minor axis, eccentricity, Euler number, mean brightness, eccentricity. Mainly focus of the system is to reduce forgeries by using calculating these features, along with for classification purpose using k nearest neighbourhood algorithm. And finally for manipulating results using genetic algorithm.

Related Work

[1] Kritika Raghuwanshi Niketa Dubey, Riju Nema Rishabh Sharma The image verification of tested signature has to be done by classifying each of user test image of signature image implementation of this work is carried out using MATLAB 2012a platform.

[7] M. H. Sigari, M. R. Pourshahabi & H. R.Pourreza, in this author developed offline handwritten signature verification system(SVM) based on different feature extraction method..in this cases for extracting features of signature whole signature image is used. Features are extracted by using wavelet transform

[2] R. Anjali, and M.R. Mathew, "An efficient approach to offline signature verification based on neural network," Author proposes model of two stages for reducing and eliminating the background disturbances. This model also used for extracting original signature from the complex background. The proposed methodology explained how images is extracted from the background and how to reduced background complexity. There are mixing mode like lightness, darkness. In this paper author used multiply mixing mode .the function of this mode is to multiply cheque image with signature image. In this way forgeries detected. Each people have

to sign six times. After formation of training samples, when signature is given it correctly identify group of signature

[10] E. J. Justino, A. El Yacoubi, F. Bortolozzi, and R. Sabourin, "An off-line signature verification system using HMM and graphometric features," In this author generates local features instead of using global descriptors, by dividing the signature in Cartesian grid. Features of signature were calculate from the grid of cartesion.

[11] M. I. Malik, M. Liwicki, A. Dengel, S. Uchida, and V. Frinken, "Automatic Signature Stability Analysis and Verification Using Local Features," This paper presents a method for offline signature verification and recognition by using MLP neural network. It includes Image Pre-Processing, Feature Extraction-For this signature recognition and verification research, four main features will be extracted. These features are: eccentricity, skewness, kurtosis, orientation. Pattern Recognition through Neural Network and it used Multi-Layer Perceptrons MLPs neural network. The structure of this neural network depends on the multi-layer feed forward, where all the nodes in any layer have connections to all the nodes in the next layer and so on, but these nodes do not have any connections with the previous layers. Then, it was modified to function as a backpropagation neural network, using theBP algorithm. The implementation of BP learning, updates the network weights and biases in the direction in which the performance function decreases most rapidly. Hazem Hiary,Raja Alomari, Thaeer Kobbaey, Radi Z. Al-Khatib,

(Mohammad Aiham) Al-Zu'bi, Hashem Hasan, "Off-Line Signature Verification System Based On Dwt And Common Features Extraction", This paper presents an off-line signature verification system including specially Arabic and Persian signatures. The proposed system is based on Discrete Wavelet Transform (DWT) to extract common features to aid the verification step. This system consists of four steps: pre-processing, signature registration, feature extraction, and signature verification. Each sample is decomposed using DWT into four images , the first image represents the low pass values, while the other three images represent the high pass in vertical, diagonal and horizontal directions, respectively. DWT is mainly used to extract the features from the image. The proposed technique uses the high pass images to extract the necessary information for the signature verification.

Pradeep Kumar, Shekhar Singh, Ashwani Garg, Nishant Prabhat, "Handwritten Signature Recognition & Verification using Neural Network"author uses two most widely used methods such as Artificial Neural Network and Hidden Markov Model for verification of offline handwritten signature. In paper the authors proposed a system based on Neural Network. For

the training of dataset .ANN has been used. First features had been extracted from signature images. Then that feature used as an input to an Artificial Neural Network. Feed forward back propagation neural network algorithm is used during training, weights of the neural network were initialized with some random values. The training samples in the training set were input to the neural network. Classifier perform classification in random order and weights were adjusted according to the error back-propagation learning rule. Feed forward back propagation neural network classifier is used to verify the signatures.

PROPOSED SYSTEM:

In the proposed methodology were divided into in to various phases such as input, signature pre-processing, feature extraction, Formation of template, storing that template in database.

Pre-processing:

Pre-processing is the process in which various impurities which is present while capturing the image has been removed. In this phase first colour signature is converted into gray scale image. After converting the image of signature into gray dilatation function is used. After all these processing got pre-proceed image. For removing the noise Gaussian filter is used.

Feature Extraction:

This is important part of the paper. We are going to extract structural features. Along with that some geometrical features also

Verification:

In this phase verification or classification of given features have to be performed. After performing this phase genetic algorithm is used for evaluating results.

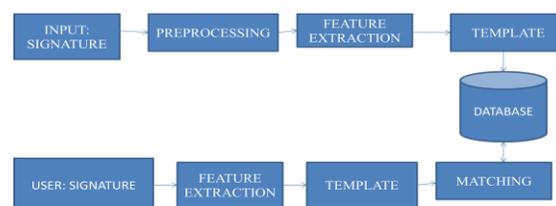


Fig. system flow diagram

CONCLUSION

This paper presents the brief information on offline signature verification. Various classifiers such as knn classification is used to train the system. The major contribution of this paper is the briefing of offline signature verification using different extracted features. In this survey, we studied adaptive technique for reducing forgeries of signature .Mainly handwritten signature variation depending upon the illness, mood, physical and psychological condition of signer. So we are planning to used Genetic algorithm for the evaluating the result.

REFERENCES

1. Kritika Raghuwanshi Niketa Dubey, Riju Nema Sharma, Signature Verification through MATLAB with concept of Image Processing, *International Journal Emerging Trends Electronics and Computer Science*, volume 2, issue4, 2013, pp203-206.
2. R. Anjali, and M.R. Mathew, "An efficient approach to offline signature verification based on neural network," *IJREAT International Journal of Research in Engineering & Advanced Technology*, vol.1, pp. 1–5, June-July 2013.
3. V. M. Deshmukh, and S.A. Murab, "Signature recognition & verification using ANN," *International Journal of Innovative Technology and Exploring Engineering*, vol.1, pp. 6–8, November 2012.
4. M. A. Ferrer, J.F. Vargas, A. Morales, and A. Ordonez, "Robustness of offline signature verification based on gray level features," *IEEE Transactions on Information Forensics and Security*, vol.7, pp.966–977, June 2012.
5. C. R. Prashanth, and K.B. Raja, "Off-line signature verification based on angular features," *International Journal of Modeling and Optimization*, vol.2, pp. 477–481, August 2012.
6. S. Srihari. K. M. Kalera. and A. XU, "Offline Signature Verification and Identification Using Distance Statistics," *International Journal of Pattern Recognition And Artificial Intelligence* ,vol. 18, no. 7, pp. 1339–1360, 2004
7. M. H. Sigari, M. R. Pourshahabi & H. R. Pourreza, Offline Handwritten Signature Identification and Verification Using Multi-Resolution Gabor Wavelet, *International Journal of Biometrics and Bioinformatics*, Volume (5), Issue (4), 2011, pp 234-248
8. Meenakshi K. Kalera, Sargur Srihari and Aihua Xu, —Offline Signature Verification and Identification using Distance Statistics||, *International Journal of Pattern Recognition and Artificial Intelligence*, Vol.18, No.7, pp.1339-1360, 2004.
9. R. Anjali, and M.R. Mathew, "An efficient approach to offline signature verification based on neural network," *IJREAT International Journal of Research in Engineering & Advanced Technology*, vol.1, pp. 1–5, June-July 2013.

10. E. J. Justino, A. El Yacoubi, F. Bortolozzi, and R. Sabourin, "An off-line signature verification system using HMM and graphometric features," in Fourth IAPR International Workshop on Document Analysis Systems (DAS), Rio de. Citeseer, 2000, pp. 211–222
11. M. I. Malik, M. Liwicki, A. Dengel, S. Uchida, and V. Frinken, "Automatic Signature Stability Analysis and Verification Using Local Features," in Frontiers in Handwriting Recognition(ICFHR), 2014 14th International Conference on. IEEE, 2014, pp. 621–626.
12. Sandeep Patil, Shailendra Dewangan, "Neural Network-based Offline Handwritten Signature Verification System using Hu's Moment Invariant Analysis", International Journal of Engineering and Advanced Technology (IJEAT) ,ISSN: 2249 – 8958, Volume-1,
13. Madhuri Yadav, Alok Kumar, Tushar Patnaik, Bhupendra Kumar, offline signature verification survey paper International Journal of Engineering and Innovative Technology (IJEIT), Volume 2, Issue 7, January 2013
14. www.mathworks.com