METHOD SIGNATURE VERIFICATION AND IDENTIFICATION

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Abstract-

Lots of work has been done in the area of signature verification over the past two decades. Signature Verification involves authentication of a person claimed signature in order to determine whether the claimed signature belong to the claimer or not. The signature verification can be done manually or automatically. The handwritten signature is a biometric attribute Biometric identification and verification system are being increasingly adopted in our environment. Well know biometric method include iris, retina, face and fingerprint based identification and verification. Depending on the data acquisition method, Automatic signature verification can be classified as either offline or online signature verification. This paper contains a study on the offline signature recognition system.

INTRODUCTION

Many systems are available to verify the signature in bank cheques. In this paper, they verify the offline signature by taking a boundary of the entire signature and do the pixel comparison. In this signature acquired using a scanner there is a boundary for the signature and signature exists within the boundary doing this they do data acquisition preprocessing and after detection process is proceed. Experimental result shows that 50% of accurate matching within the existing one from the database. Signature is acquired using a scanner signature scan has several weaknesses. A pseudo outer product based fuzzy neural network drives the signature verification system. Signature scan is designed to verify the subject based on the traits of their unique signature. As a result individuals who do not sign their names in a

identification system as indicate by the result . They achieve accuracy as high as 78.1% for verification and 93.18% for identification on a pure consistent manner series of signature that are similar enough that the system can locate a large percentage of the common characteristics between enrolment signatures. For the purpose of signature detection and verification of forgeries TS model they used in the existing methods. During verification enough characteristics must remain constant to determine with confidence that the authorized person signed. As a result, individuals with muscular illness and people who sometimes sign with only their initials might result in a higher false rejection rate(FRR), which measures the likelihood that a system will incorrectly reject an authorized user. Since many users are unaccustomed to signing on a tablet, some subjects signatures may differ to their signature on ink nad paper, increasing the potential for false rejection. This paper describe a novel approach for signature verification in an offline environment based on a quasi multi resolution technique using Gradient, Structural and concavity features for features extraction.

Exploring signature verification and identification offline handwriting verification and identification as offline handwriting verification and identification tasks respectively, they depict a mapping from the handwriting domain to the signature domain. They used a combination of gradient, structural and concavity(GSC) features here to extract the significant features of a signature at the local, intermediate and large scales for object recognition . These features captured the global statistical and geometric features of the signature. In the offline signature verification and identification domain respectively. The performance of this system is comparable to other offline signature verification and offline database using GSC word features. This approach could be combined with dynamic plane warping algorithm to improve the performance of

the system. Dynamic plane warping algorithm has been applied in the field of optical character recognition(OCR), which solves plane alignment problem with Dynamic plane warping, Dynamic features can be extracted from offline signatures and combined with the framework they presented.

A novel features extraction scheme has been suggested in this paper for offline signature verification. The geometric centre for feature extraction is used in proposed method. For classification Euclidean distance model was used. Using this classifier they make better computation and better feature extraction. Method proposed in the paper leads to selection based on statistical parameter like average and standard deviation. The geometric feature proposed by this paper are based on two set of points in two dimensional plane. Each set having six features points which represent the stroke distribution of signature pixel in image. These are two main steps to retrieve these features points. They proposed me method for threshold selection their method performs much better than any other off line signature verification methods. Feature direction in this is classifying the skilled forgeries correctly. For this they have to approach novel classification method. Horizontal and vertical splitting are one of them.

In this paper a general hill climbing attack to biometric system based on a modification of the downhill simplex algorithm is presented. In this approach the scores provided by the nature are used to adapt iteratively an initial estimate of the attacked template to the special cities of the client being attacked. The purposed attack is evaluated on a competitive feature based signature verification system over both the MCYT and the biosecur ID database(comprising 330 and 400 users, respectively). The result show a very high efficiency of the hill climbing algorithm, which successfully by passed the system for over 90% of the attacks with a remarkably low number of scores needed.

In the present work an adaption of down hill simplex, a hill climbing attack based on the uphill simplex algorithm, was presented and evaluated on easily applied to other zone based feature extraction techniques in which the accumulation of the information occurs. This is an advantage of a feature based signature based verification system using two different database comparison 330 and 400 users, respectively. Several experiments proved its high efficiency, reaching success rates over 90% for the best configuration found. The algorithm performance was also compared to that of the Bayesian hill climbing attack, Resulting in very similar success rate but with a conversions speed which is around four times faster. The purposed algorithm requires 5 different real signatures to be initialized, In opposition to the Bayesian based attack, where over 150 simples where used . There experiments have also shown that the performance of the proposed attack is independent of the data being used, as the results obtained in both database(MCYT and Biosecur ID) where almost identical although the attack parameter had been specifically fixed for the MCYT database. It should finally emphasized that the proposed attack can be applied to the evaluation of the vulnerabilities of the any biometric system based on fixed length templates of the real numbers, regardless of the matcher of the biometric trait being used.

In this paper, they describe a grid based feature extraction technique that utilize directional information extracted from the signature counter, i.e. the chain code histogram. There experimental results for signature verification indicated that, by applying a suitable 2 D Gaussian filter on the matrices containing the chain code histogram, an average error rate(AER) of 13.90% can be obtained whilst maintaining the false acceptance rate(FAR) for random forgeries as low as 0.02%. They gave some favours which are comparable or better than those reported by other state of the art feature extraction techniques such as the modify direction feature(MDF) and the gradient feature they have demonstrated that the performance of a particular grid based feature extraction technique can be improved using a 2 D Gaussian filter although the features and the extraction process appeared to be much less sophistiscated compare to the other techniques, its performance is comparable or better than and other state of the art techniques. Nevertheless, the Gaussian filter can be

information preservation using a Gaussian filter or blurring a pattern directly.

In this paper, they proposed a new method for signature verification using local radon transform. The proposed method used radon transform locally as feature extractor and spot vector machine(SVM) as classifier. The main idea of their method is using radon transform locally for line segment detection and feature extraction, against using it globally. The advantages of the proposed method are robustness to noise, size invariance and shift invariance. Having used a dataset of 600 signature from 20 persian writers, and another dataset of 924 signature from 22 English writers, their system achieves good results. The experimental result of their method are compared with two methods. This comparison shows that their method has got performance for signature identification and verification on different cultures.

In this work they presented an approach to offline signature identification and verification problem based presented , express on local radon transform and SVM classifier. Using random transform as a local feature extraction methods gives us fine information and more detailed features. The main advantages of their algorithm with respect to identification method in is its ability to produce good results for verification purpose beside in identification purpose. Also, it exhibits a good performance for signature identification and verification in different cultures.

The paper presents a new technique for offline signature recognition and verification. The proposed system based on global, grade and texture feature. For each one of the feature sets a special to stage perception OCON(one class- one-network) classification structure has been implemented. In the first stage, the classifier combines the decision results of the neural network and the Euclidean distance obtain using the three feature sets. The results the first stage classifier.

Feed a second stage radial base function neural network structure, which makes final decision. The recognition and verification rates. This paper

The main objective of this work is to present a robust system for off line signature verification. For this purpose, they use simple features, different cell resolution and multiple codebooks in an HMM framework. The simple and random forgery error rates have shown to be low and close to each other .

proposes a new of line signature verification and recognition technique. The entire system is based on 160 features grouped to three subsets and on two stage neural network classifier that is arranged in an one class one network scheme. During the training system stage, only small, fixed size neural network has to be trained , while, for the second stage the training processes straight forward. In the designing the proposed system, most of their efforts were towards of embodying most of the intelligence to the structure of the system itself. No feature reduction process was used and the basic rule of thumb in deciding which feature to include and which not was use all features and leave the neural network decide which of them are important and which are not. Usually such a rule leads to very large and complicated neural network, very difficult to get trained. The innovation of the proposed system is the categorization of the features into groups and the adoption of a two stage structure. They showed that such a structure leads to small, easily trained classifier without hazarding performance by leaving out features that may be useful to the system. The proposed structure offers the substantial benefit of the ability to expand with new signature without having to retrain the entire system from the starting point. That is , no a priori knowledge concerning the number of persons and the number of signatures is required at design time. It is also to be noted that the performance of the system, as it is illustrated by the recognition and the verification rates that they worst case scenario. The signers were asked to use as much variation in their as they should ever use under real circumstances.

This paper reports the contribution to signature verification considering different forgery typed in an HMM framework the experiment have shown that the error rates of the simple and random forgery signatures are very closed. This reflects the real application in which the simple forgeries represent the principal fraudulent case. In addition, the experiments show promising results in skilled forgery verification by using simple static and pseudo dynamic features.

This demonstrates the potential of the system in a real application. It is important to observe that there is no forgery sample in the learning database. The high type II error rate in skilled forgery signatures demonstrates that is necessary to evaluate more discriminate features for this forgery type.

In this paper they present a framework for real time online signature verification scenarios. The proposed framework is based on state of the art feature extraction and Gaussian mixture Model (GMM) classification. While their signature verification library is generally applicable any input device using digital pens. They have implemented verification scenarios using the anoto digital pen. As such our automated signature verification framework become an interesting commodity for industry, because the Anoto SDK is easy to apply and the GMM based classification can be seamlessly integrated. The novelty of this work is the application of there framework that takes are real time online signature verification to every scenario where digital pens may potentially be used in this paper we describe several scanners where there framework has been apply, including signatures in financial contracts or ordering process. They also purpose a general approach to integrate a GMM descriptions into electronic ID card in order to also store we have behavioural bio matrices on the card. In experiments we have measured the performance of the signature verification system when skilled for forgeries we represent. In initial evaluations indicate that there signature verification frameworks suits exactly the demands of there clients.

In the paper they have presented a signature verification framework that is seamlessly integrable to scanner where digital pens can be applied for data acquisition. They have reported the application scanner in which our framework is applied. In novel idea of integrating GMM description in electronic ID cars using our framework is also proposed. The evaluation results indicates initial success that is also triggering the interest of our customers in the areas in future they plan to apply the signature verification framework proposed.

In this paper for other application areas. Any other important area they are going to target a signature verification in forensic scanner. They will make there framework produce decision in terms of log likelihood ratios(LLRS) based on Bayesian approach. They also a plan to develop a portable live application for industrial user to demonstrates the robustness of their framework. Note that DLLR analysis required more data for more writes. Thus they plan to perform to analysis on data that contains signature for more reference writers and skilled forgers. Large and diverse test said where signature are produce by different authors under various different psychological and physical condition may also and physical condition may also yield interesting results.

In this paper a novel offline signature verification scheme has been proposed. The scheme is based on selecting 60 features points from the geometric centre of the signature and compares them with the already trained features points. The classification of the features points utilize statistical parameters like mean and variance The suggested scheme discriminates between two types of originals and forged signatures. The method takes care of skill, simple and random forgeries . The objective of the work is to reduce the two vital parameter False Acceptance Rate (FAR) and False Rejection Rate(FRR) normally used in any signature verification scheme. In the end comparative analysis has been made with standard existing schemes.

Biometrics, which refer to identifying an individual based on his or her physiological or behavioural characteristics, has the capability to reliably distinguish between an authorized person and an imposter. This paper presents a neural network based recognition of offline handwritten signature system that is trained with low resolution scanned signature images. In modern pattern recognition system all the stages of pattern recognition could be performed by a signal scheme such as neural network and genetic algorithms which has the inherit capability of noise filtering, data reduction , feature extractions and classification. The advantage of using neural network is that we can extract the most discriminative and representative set of feature. They have represent learning vector quantization neural network architecture based on wearing parameters and eliminating redundant hidden layer units or behind neurons that learns the correlation of parameters and recognitions hand returns signatures. The network classifier is trained on the random training samples to perform recognition task on the input signature image. Empirical results yields an accuracy rate of the 98% for a random test set of 150 handwritten signature image of 10 persons on the network that is trained with another set of 120 images of same subjects.

The Algorithm which is based on the 60 features points is more efficient and gives more accurate results than the existing. Techniques and survives against the skilled forgeries. The algorithm results result the FAR which is very much less as compared to the FARs of the previously existing techniques based on polar and Cartesian coordinates. But as their algorithm takes 60 features points for threshold calculations , a small variation of a signature results in a large chance in the values of threshold distance from the geometric center . Therefore in their algorithm the FRR value is increased.

So it is important for a user to sign his signature with utmost care so that there is not a large variation of his signature to his training signatures. Otherwise there is a probability of rejection of an original signature. Moreover, since they have extracted 30 features points by vertical splitting and 30 by horizontal splitting for the calculation of the threshold value, the time complexity is higher than the time complexity of the existing technique which uses feature points for threshold calculations.

Conclusion

In this paper we reviewed various techniques for signature verification methods, The advantage of the support vector machine based method is they are robustness to noise, size, invariance and shift invariance, in the neural network based technique we can extract the most discriminative and representative set of features. In the same manner we discussed various techniques. Our study is not a complete study. To complete the method we are in the process of future survey study.

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