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Multilingual Handwritten Text Verification

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Abstract- Text verification an innovation which possess the highest challenge. The new venture in this topic is to make Offline Handwritten Text verification more accurate & challengeable than Offline static Handwritten Text Recognition. In this paper we concentrate mainly on offline verification of handwritten English & Tamil words by individual characters are detected & later on recognized. These are two classifications namely Wholistic approach & segmentation. Wholistic approach is applied in recognition of limited size vocabulary where global features are derived from the entire word image are considered. When the size of the vocabulary increases, the complexity of wholistic based algorithms also increases & ultimately the recognition rate decreases rapidly. Next strategy involves segmentation. It adopts bottom-up approaches, starting from the character level & moving towards producing a meaningful word. After segmentation it changes into reduction of problem to the verification of simple isolated character. So the system paves the way for unlimited vocabulary.

***Index Terms*— text verification, handwritten, image perceptual**

I.INTRODUCTION

Handwriting verification is the capacity of as computer to receive &explain intelligible handwritten input from sources such as paper documents, photographs, touch-screens and other devices. Optical scanning helps us to sense the "offline" from a piece of paper. Alternatively the movements of the pen tip may be sensed "online" for example by a pen-based computer screen surface.

Handwriting verification mostly enhances optical character recognition. However, a complete handwriting verification system also employs formatting, performs correct segmentation into characters and finds the most plausible words.

The problem of handwriting verification is classified into two categories: offline and online handwriting. In the online case, the inputs are two-dimensional coordinates of successive pen points as a function of time, while, only natural images are available in the offline case. More accuracy can be obtained in online recognition than its offline counterparts.

Off-line handwriting verification means the automatic conversion of text in an image into letter codes which are usable within computer and text-processing applications. The data received from this form is regarded as a static representation of handwriting. Off-line handwriting verification is comparatively difficult, as different people have different handwriting styles. And, as of today, OCR engines are primarily focused on machine printed text and ICR for hand "printed" (written in capital letters) text. There is no OCR/ICR engine that supports handwriting recognition as of today.

The real problem lies in offline handwritten recognition involves detection of handwriting text in images, line segmentation and word recognition. Line and word segmentations are difficult problems in their own fields.

In this paper, the impart main emphasis on word recognition & hence assume that the handwritten texts are already segmented into words segment. characters are limited to be digits on account of time constraints. Since it requires less image processing & data collection efforts. This handwritten texts are varied. Using the lexicon text is taken out the possibility towards correcting recognition.

II. LITERATURE REVIEW

[1]Online handwritten signature has been widely used for identity verification. However, it lacks from large intra-class variation problem as individual's signature differ from time to time due to variations in signing position, signature size, writing surface, and other factors. In addition, signatures are likely to be forged than other biometrics and this leads to random and skilled forgeries issues. In this paper, we propose a novel Statistical Quantization Mechanism (SQM) to reduce the intra-class variation in signature features and thus show the difference between genuine signature and its forgery.

[2] content indexing, large-scale image database management, certification and authentication and digital watermarking are applied in image perceptual hashing . We propose a Block-DCT and PCA based image perceptual hash in this article and explore the algorithm in the application of tamper detection. The main idea of the algorithm is to integrate color histogram and DCT coefficients of image blocks as perceptual feature, then to compress perceptual features as inter-feature with PCA, and to threshold to create a robust hash. The robustness and discrimination properties of the proposed algorithm are evaluated in detail. Our algorithms first construct a secondary image, derived from input image by pseudo-randomly extracting features that approximately attract semi-global geometric characteristics. From the secondary image (which does not perceptually look alike the input), we further extract the final features which can be used as a hash value (and can be further suitably quantized). In this paper, we use spectral matrix invariants as embodied by Singular Value Decomposition. unexpectedly, formation of the secondary image turns out be quite important since it not only introduces further robustness, but also enhances the security properties

[3]Handwritten character recognition is occupying an important role in many areas of modern world. Even though considerable research work has been done in handwritten character recognition, comparatively fewer efforts have been made on handwritten Tamil character recognition. This paper proposes an adaptable method for recognizing handwritten Tamil characters. The adaptability is achieved using a type of artificial neural network called Kohonen self organizing maps (KSOM). In addition, a fine-tuning method, that uses global features, is admitted to fine tune the results. A demo for proposed concept is presented here, which is developed for a subset of Tamil alphabet.

III. METHODOLOGY

This image perceptual hashing algorithm has been already analyzed & used in "A Novel Block-DCT and PCA Based Image Perceptual Hashing Algorithm" but I proposed to highlight my innovation in modifying this algorithm & implementing in "Multilingual Handwritten Text Verification"

Image perceptual hashing, also known as image robust hashing, is defined as mapping images to a short bit string following the human perception. The two principal properties of image perception hashing are robustness and discrimination. Robustness means that the hash algorithm should result in the same out bit string for images with the same underlying content.

Image perceptual hash value can be used for content identification and digital signature. The former is mainly used in content indexing and analysis, large-scale image database management. The latter is mainly used in the image certification and authentication, digital watermarking. According to the needs of applications, image perceptual hashing should also meet other two properties—randomness and scale-independence. Randomness means that the hash function should withstand all kinds of forgery attack since the hash values are impossible to be reconstructed by the attacker. Scale-independence implies that the length of hash values should always be an even number, although the input images are in different resolution.

Robust and Discriminative Image Perceptual Hashing

[2]The main idea of the algorithm is to integrate color histogram and low-frequency Discrete Cosine Transform (DCT) coefficients of image blocks as perceptual features, then to compress perceptual features as inter-features with Principal Component Analysis (PCA), and to threshold to create robust hash. The framework of this algorithm is shown in fig. 1

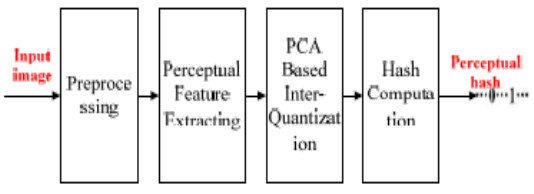

Figure 1. Flow chart of our image perceptual hash method

IV. EXPERIMENTAL RESULTS

To assess the performance of each method, we apply them to multilingual. Here we present some preliminary results under compression. Note that the practical choice of algorithmic parameters can further be optimized in order to improve the results.

Figure 2. shows the signature is realistic in practice

Figure 2(a).Shows the selected signature

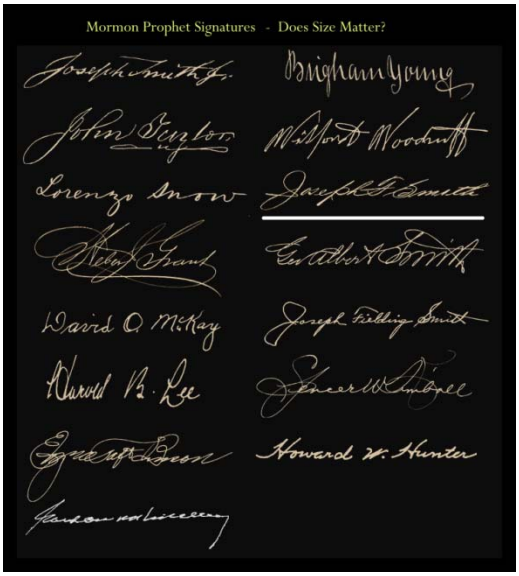

Figure 3. Experimental results show the proposed method is feasible in practice

[4]The First International Signature Verification Competition 2004 (SVC 2004) is used for evaluation purpose as they are currently the most widely used benchmark for online signature system. The database released consists of two separate tasks. Task 1 contains coordinate information only and the other task contains additional information including pen orientation and pressure.

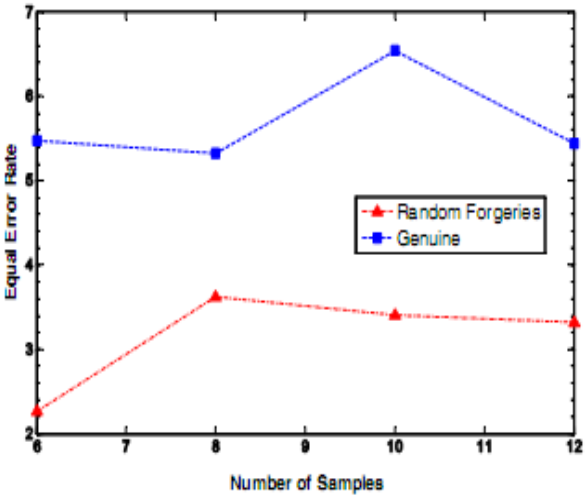

Figure 4. Equal Error Rate (EER) of random and skilled forgeries signatures.

V. CONCLUSION

Hence the system can be employed for unlimited vocabulary. The proposed method is limited size of vocabulary is overcome with an innovative method. Experimental results show the proposed method is feasible in practice. Multilingual usage is another salient feature. This method is noted for its transparency & reliability.

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