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GRAPH BASED APPROACH FOR DISTORTED PALM PRINT IMAGES

G. Hemanth Kumar[#1] and Shashirekha M [*2]

[#] *Msc.Phd, Computer Science, University of Mysore, Mysore, India*

[*] *MTECH, Computer Science, University of Mysore, Mysore, India*

***Abstract*— Now a day's distorted palm print is one of the major causes, due to false non-match. While this problem affects all palm print recognition applications. To overcome this affects, in this paper we introduce a novel algorithm to detect and rectify the skin distorted based on a single palm print image. For distorted detection of palm print images is viewed as a two-class classification method or problem. Palm prints are used as a feature vector and SVM classifier is used to train to perform the classification task of distorted palm print images. Here we give input as a distorted palm print and resulted output is the distorted field. According to this input and output we recognize a graph for each distorted palm print images. However for the reference of graph approach we detect and rectify the distorted palm print images.**

***Index Terms*— Distorted Palm images, Graph, SVM classifier.**

I. INTRODUCTION

Palm is the inner surface of the hand between the wrist and fingers. Palm area contains large number of features such as principle lines, wrinkles, minutiae, datum point features and texture. Palm print recognition system employs high or low resolution images. Most of the system uses the low resolution image. The palm print image is captured using a palm print scanner. Preprocessing has two parts, image alignment and region of interest (ROI) selection. ROI selection is the cropping of palm print image from the hand image. Feature extraction stage obtains proposed features from the preprocessed palm prints. At the detect and rectify the distorted palm print images. Methods belonging to low resolution images (75 or 150dpi); where only principal lines, wrinkles, and texture are evident . Some of them use different edge detection methods to extract palm lines, or after some feature transformations. Other approaches first extract some features like Gaussian filter or wavelets, then use a subspace projection like principal component analysis or linear discriminate analysis to reduce their dimensionality and adopt distance measures or classifiers to compare the reduced features.

There are two types of Palm print features with reference to the field at which palm print systems are used. The first type of features are the principal lines and wrinkles which could be extracted from low resolution images (<100 dpi) and it is used for identification in the commercial applications. The second type of features are the singular point, ridges and minutiae point which could be extracted from high resolution images (>100dpi) and it is used for forensic applications such as law enforcement application . Both high and low resolution image Features in palm print are shown in below fig:

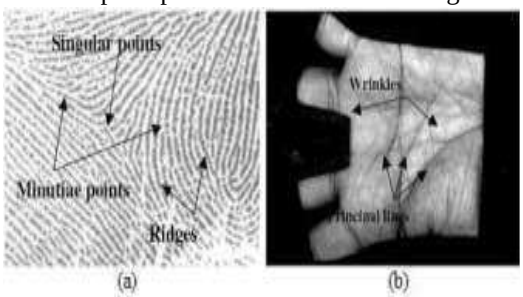


Figure 1

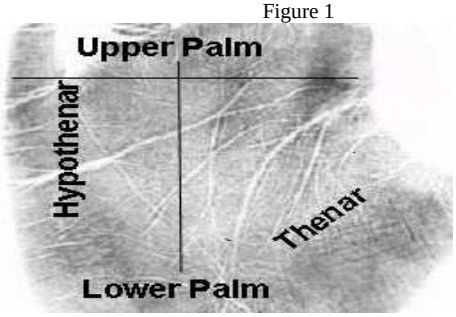


Figure 2

II. LITERATURE SURVEY

Due to the importance of recognizing distorted palm prints, Researchers have proposed a number of methods and several palm print matching approaches. Few of them are as follows:

Xinjian Chen, Jie Tian suggested Algorithm based on Normalized Fuzzy Similarity Measure for palm print Matching. This paper suggests a novel algorithm, normalized fuzzy similarity measure (NFSM), to handle the nonlinear distortions.. In Luo's method, an uncertain bounding box was used during the matching process. The process is robust to nonlinear deformations betwixt the palm print print images. However, the distortion among the palm prints from the same palms are captured from the Cross Match sensor is too large. In order to endure matching minutiae pairs that are further obscure because of distortions, the size of the bounding boxes has to be increased. However, as a side effect, it gives a very high probability for those non matching minutiae pairs to get paired, which results in a higher false acceptance rate. The suggested algorithm was assessed on palm prints databases . Disadvantage of this system: the algorithm used leads to false

acceptance which occasionally happens.

Jianjiang Feng, Jie Zhou proposed work for Orientation Field Estimation for Latent Fingerprint Enhancement. In this case, identifying latent palm prints is of critical importance for law enforcement agencies to arrest criminals and terrorists. The image quality of latent palm prints is much lower, with complex image background, unclear ridge structure, and even overlapping patterns as compared to live-scan and inked palm prints. A robust orientation field estimation algorithm is essential for enhancing and recognizing poor quality latent. However, conventional orientation field approximation algorithms, which can process most live-scan and inked palm prints, do not provide satisfactory results for most latent. We believe that a major limitation of conventional algorithms is that they do not utilize anterior knowledge of the ridge structure in palm prints.

III. . PROPOSED SYSTEM

The Proposed scheme was explained at two levels : Palm level and subject level .

In Palm level, we explained the performance of distinguishing between natural and changed palm prints.

In subject level , we explained the performance of differentiate between the subjects with natural or original normal palm prints and those compare with the altered palm prints. The proposed model is simple to use and understand The architecture is shown in the following block model in fig -1:

Fig 3:System Architecture of Palm print images

In proposed model we described a novel distorted palm print detection and rectification algorithm. For distorted palm print image detection the two class classification is used and a palm print images are used as the feature vector and a SVM classifier is trained to classify the input distorted palm print images as distorted or normal.

INPUT PALM PRINT IMAGE: In this phase the distorted palm print image as give as a input.

FEATURE EXTRACTION: Distorted palm print images feature can be extracted palm has a features like geometric features delta points features, principal lines features, minutiae, ridges and creases.

SVM CLASSIFIER: After the feature extraction of distorted palm print images are used as a feature vector and after a SVM classifier is trained to perform the classification task. SVM classifier act as a "**DETECTOR".**

Once the classification task is completed whether the image is distorted or normal recognizes by the detector, the detection of distorted palm print images rectification process can be apply.

RECTIFICATION: It's a process of purification of a images, here distorted field can be identified by the classification method, that distorted field will be purify in this process or phase.

Finally the output image as a rectified distorted field palm print image.

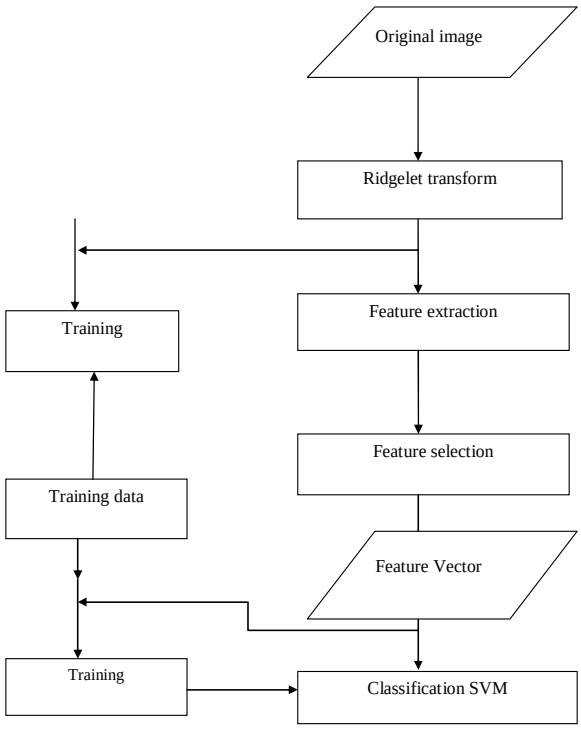
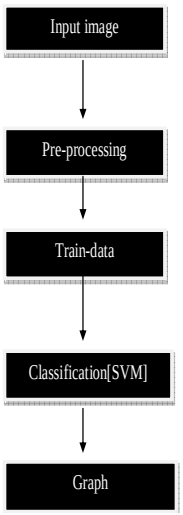


Fig 4: Gaussian blur flow chart

IV. IV.IMPLEMENTATION

A. MODULES:

1. Input image 2.Pre-Processing 3.Train-data 4.Classification 5.Graph



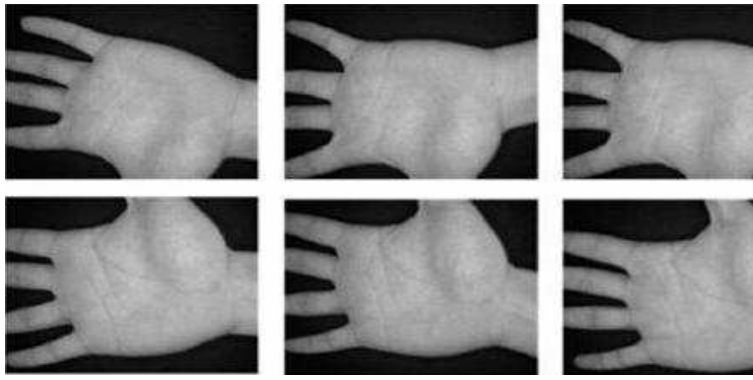


Fig 5: CASIA Palm Print Database

V. EXPERIMENTAL RESULTS

The experimental results are reported in terms of dataset used to determine the concept. A sample image showing the results for distorted palm print recognition in the form of graph based approach. To solve the distorted palm print image problem a database (reference database) of various distorted reference palm prints and corresponding distortion field is built in the offline stage or where the palm prints are inked on the paper and later it will be scanned into the palm print image is stored in distorted folder, select the distorted image as a input by the folder to detect the distorted palm print recognition and to calculate the accuracy of the images.

A. DataSets:

One palm print image databases available for the implemenation of this project purpose i.e.., CASIA .CASIA palmprint database contains 5502 palm print images captured from 312 subjects.For each subjects, the left and right palm images have been captured . All the palm print images are 8-bit gray level JPEG files.These have been captured by their self-developed palmprint recognition device. For Training we take a 100 distorted Palm Print images and for testing 20 Distorted Palm Print images to select to detect and rectification of distorted Palm Print images. Calculate Accuracy of the Distorted Palm Print images to used a similarity and dissimilarity between normal and distorted Palm print Images . Here we get a accuracy of the Particular Distorted palm print image. In this device, there are no pegs to restrict the postures and positions of the palms. Some of the palm print images captured by the CASIA palm print recognition device are shown in the figure. Fig. 1


Fig 5.1:CASIA Distorted Palm Print Database

CID[Case id]	Training Image	Testing Image	Gaussian Filter	SVM Classifier	Accuracy
1	1 (13).JPG	13.JPG	70%	EXECUTED	27%
2	1 (14).JPG	13.JPG	50%	EXECUTED	30%
3	1 (15).JPG	13.JPG	40%	EXECUTED	21%
4	1 (16).JPG	13.JPG	55%	EXECUTED	35%
5	1 (23).JPG	13.JPG	60%	EXECUTED	28%
6	1 (44).JPG	13.JPG	80%	EXECUTED	33%
7	1 (19).JPG	13.JPG	52%	EXECUTED	42%
8	1 (55).JPG	13.JPG	79%	EXECUTED	40%
9	1 (18).JPG	13.JPG	23%	EXECUTED	9%
10	1 (11). JPG	13.JPG	44%	EXECUTED	10%

Experimental Table 1: Normal Palm print image

CID[Case id]	Training Image	Testing Image	Gaussian Filter	SVM Classifier	Accuracy
1	1 (2).JPG	92.JPG	50%	EXECUTED	5%
2	1 (12).JPG	92.JPG	27%	EXECUTED	31%
3	1 (24).JPG	92.JPG	47%	EXECUTED	40%
4	1 (21).JPG	92.JPG	68%	EXECUTED	3.3%
5	1 (10).JPG	92.JPG	40%	EXECUTED	4%

Experimental Table 1(a) : Normal Palm print image

CID[Case id]	Training Image	Testing Image	Gaussian Filter	SVM Classifier	Accuracy
1	1 (61).JPG	20.JPG	50%	EXECUTED	20%
2	1 (33).JPG	20.JPG	33%	EXECUTED	23%
3	1 (82).JPG	20.JPG	62%	EXECUTED	9.5%
4	1 (17).JPG	20.JPG	49%	EXECUTED	NIL

Experimental Table 2 : Distorted Palm print image

CID[Case id]	Training Image	Testing Image	Gaussian Filter	SVM Classifier	Accuracy
1	1 (13).JPG	13.JPG	70%	EXECUTED	27%
2	1 (14).JPG	13.JPG	50%	EXECUTED	30%
3	1 (15).JPG	13.JPG	40%	EXECUTED	21%
4	1 (16).JPG	13.JPG	55%	EXECUTED	35%
5	1 (23).JPG	13.JPG	60%	EXECUTED	28%
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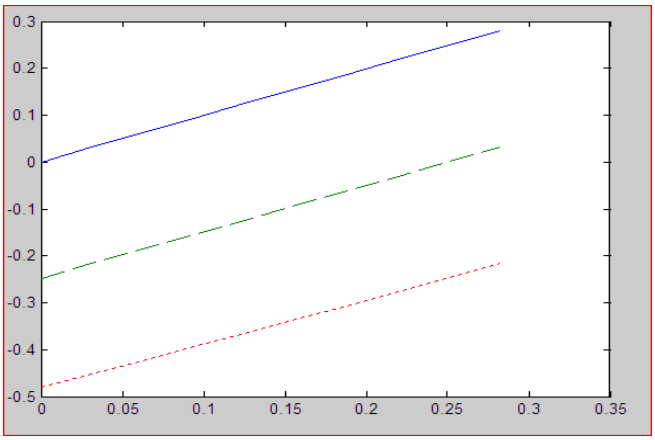
Experimental Table 2 : Distorted Palm print image



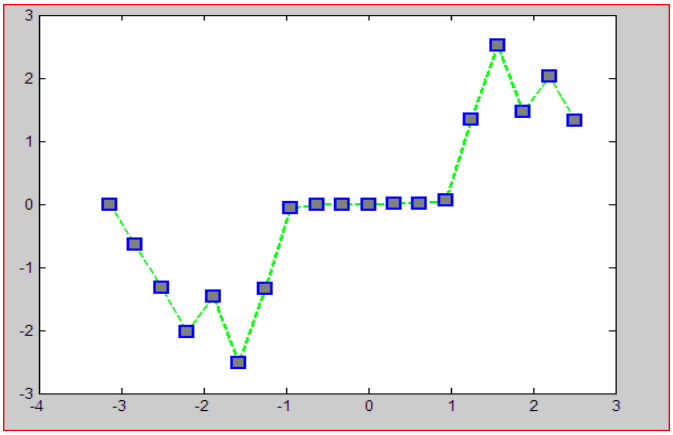


Fig 5.2 :Graphical Representation of Images

VI. CONCLUSION

The distorted palm print recognition is detected and rectify on graph based approach. We introduce a novel algorithm to detect and rectify the skin distorted based on a single palm print image. For distorted detection of palm print images is viewed as a two-class classification method or problem. Palm prints are used as a feature vector and SVM classifier is used to trained to perform the classification task of distorted palm print images. Here we give input as a distorted palm print and resulted output is the distorted field. According to this input and output we recognize a graph for each distorted palm print images. However for the reference of graph approach we detect and rectify the distorted palm print images.

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