

# Feature Extraction Technique Based On Circular Strip For Palmprint Recognition

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**Abstract:** Palm print recognition is a method where there is no chance of forgetting password and even no one can theft password and it is used by only the intended human being. In this method only palm of human is password and the ID as well. Here we are developing a system or software where palm image is used for the authentication purpose of the person and similarly palm print image of human works as a password for the person. The image of palm is used for the enrolment and verification purpose. The image of palm works as the password for human who may be used at different place by the same person such as for the login purpose, gate entry, attendance purpose or for any other system as well where authentication of the person is possible. Main work in this technique is to pre-process the image and then enrolment in the system because while during verification purpose the data must already present in the database for the authentication purpose. This palm print provides better security for identification purpose as compared to other method and services where person need to prove their identity.

**Keywords :** Palmprint, Authention, Feature Extraction

## I. INTRODUCTION

Biometrics refers to methods for uniquely recognizing humans based upon one or more physical or behavioral traits. Physiological characteristics are related to the physical characteristics of the body. Examples include fingerprints, face, DNA, hand and palm geometry, iris feature, which has largely replaced retina, and odour/scent. Behavioral characteristics are related to the behaviour of a person. Examples include gait, and voice. The major advantage of biometric system over traditional methods is that they are typically unique for each person and cannot be forged. Palm print patterns are a very reliable biometric and require minimum cooperation from the user for extraction. Palm normally contains three flexion creases (principal lines), secondary creases (wrinkles) and ridges. Palm area contains large number of features such as principle lines, wrinkles, minutiae, datum point features and texture images. Most of the system uses the low resolution image. Thus palmprint recognition is a very interesting research area. A lot of work has already been done in this area, but there is still a lot of scope to make the systems more efficient. Here, we have tried to analyze the already existing systems and thereby propose a new approach.

## II PROPOSED WORK

A novel approach to extract palm-print features called Circular strip is introduced. The main goal of this method is find features of palm in circular path. This method can be used for any authentication. . Biometric and biometric security systems will provide a greater understanding of the concept of network security. Biometrics is defined as the unique (personal) physical/logical characteristics or traits of human body.

The proposed model focuses on the below objectives which are helpful in improving the results and are practically implemented using MATLAB environment.

A typical palmprint recognition system consists of five parts: palmprint scanner, preprocessing, feature extraction, matcher and database illustrated in figure 1. The palmprint scanner collects palmprint images [2]. Mostly CCD-based scanners are used. CCD-based palmprint scanners capture high quality palmprint images and align palms accurately.

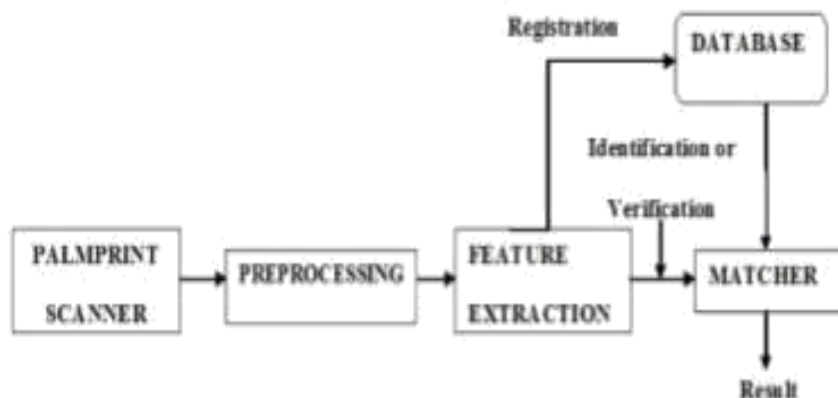


Figure 1: A typical palmprint recognition system

**1. Palmprint Acquisition :**

In this section we capture image of palm using Digital scanner.

**2. Preprocessing :**

Preprocessing is the name used for operations on images at lowest level of abstraction-both input and output are intensity images. Palmprint image is converted to gray scale image.

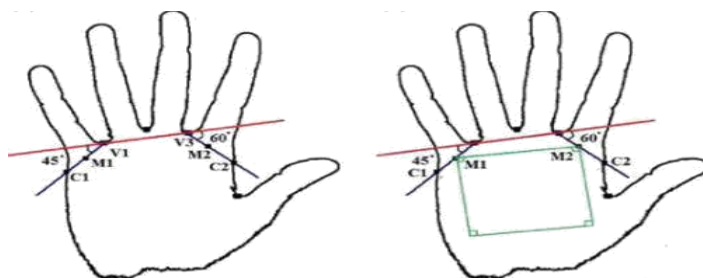
**3. Palmprint Enhancement :**

Once the binary image is obtained the image is given to the image enhancement unit.

Histogram Equalization is performed to enhance the image. The histogram of the enhanced palmprint image is used to correct the non- uniform brightness of the image.

**4. Region of Interest Extraction:**

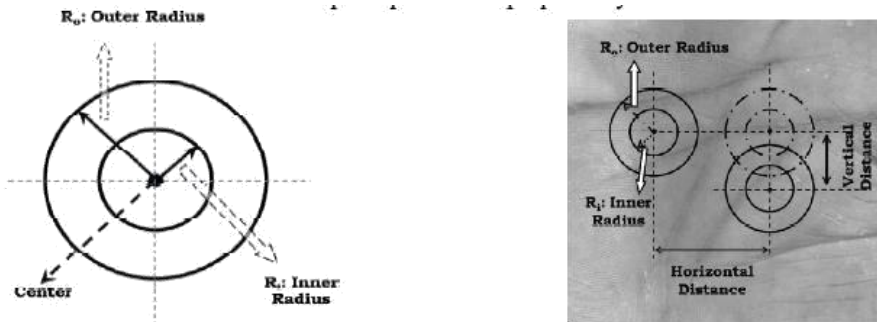
The square area inside palm region of the hand image is considered as palm-print or region-of-interest (ROI). Two reference points C1 and C2 are determined on the contour of hand image as shown in figure and M1 and M2 are the mid points of line segments C1-V1 and V3-C2 .



Reference points C1 and C2, and mid points M1 and M2

### 5. Segmented Circular Strip :

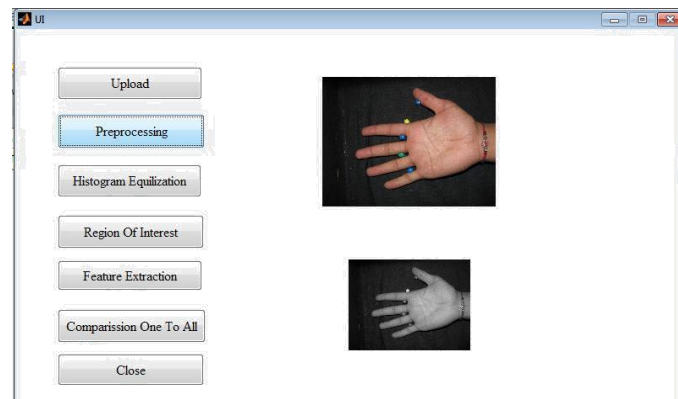
The objective of any palm-print feature extraction technique is to obtain good inter-class separation in minimum time. Features should be obtained from the extracted palm-print. The local variation of instantaneous-phase of circular strips is used to extract features from palm-print. The extracted and enhanced palm-print is segmented into overlapping circular-strips. A circular-strip which is the circular region of inner radius  $R_i$  and outer radius  $R_o$  as shown in figure, is the basic structure used to extract features of the palm-print in the proposed system.



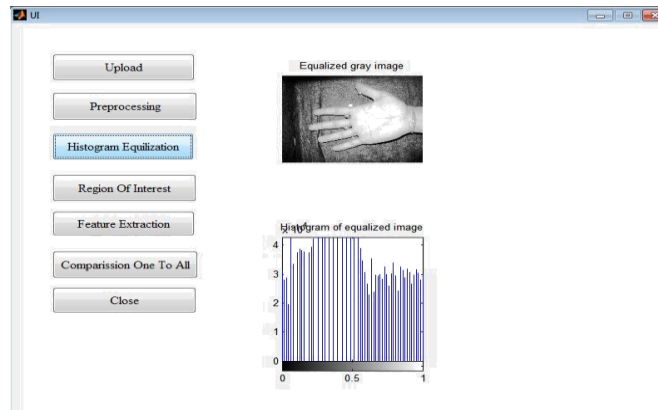
## III Results And Discussion

Steps involved in palmprint recognition :-

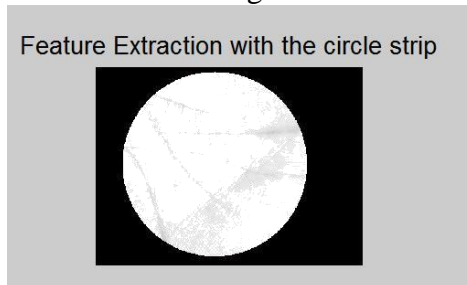
- First we have to upload the image for preprocessing.



- On click of preprocessing button the uploaded image is converted to gray scale image.



- On click of Feature Extraction button we get the feature of palm in circular path



#### IV CONCLUSION

Several existing methods have been reviewed for palmprint recognition. In the proposed approach, instead of using the whole palmprint image at a time, circular path features have been extracted such as the major lines. This approach helps in increasing the performance and accuracy of the system. A lot of work has to be done with the feature extraction algorithms. The aim of working on the palmprint recognition system is to develop a system with increased speed and accuracy. In this project, the image acquisition, preprocessing and feature extraction modules of palmprint recognition system are presented. A novel approach to extract palm-print features called Circular strip is introduced. A procedure to extract palm-print from the classified hand image of a user is presented.

#### V REFERENCES

1. Wai Kin Kong, David Zhang, Wenxin Li, "Palmprint Feature Extraction Using 2-D Gabor Filters", Hong Kong, 2003
2. JuFu Feng, ChongJin Liu, Han Wang, Bing Sun, "High-resolution palmprint minutiae extraction based on Gabor feature"
3. Sree Rama Murthy kora Praveen Verma Yashwant Kashyap, "Palmprint Recognition"
4. Hafiz Imtiaz, Shaikh Anowarul Fattah, "A DCT-based Local Feature Extraction Algorithm for Palm-print Recognition", International Journal of Scientific & Technology Research Volume 1, Issue 2, March 2012
5. Xiangqian Wu, David Zhang, Kuanquan Wang, "Fisherpalms based palmprint recognition", Hong Kong, 2002
6. Sandeep kaur1, Gaganpreet kaur, "Optimized Palm Recognition Using Cuckoo Search Algorithm", International Journal of Advanced Research in Computer and Communication Engineering Vol. 2, Issue 11, November 2013
7. Guangming Lu, David Zhang, Kuanquan Wang, "PALM RECOGNITION USING EIGENPALMS FEATURES", Biometrics Research Centre, Hong Kong Polytechnic University, Hong Kong, 2003
8. Shervin Minaee, AmirAli Abdolrashidi, "On The Power of Joint Wavelet-DCT Features for Multispectral Palmprint Recognition", New York University, USA, 2014



9. R.Vivekanandam, M. Madheswaran, "Principal Component Analysis based Palmprint Recognition with Center of Mass Moments", International Journal of Scientific & Engineering Research Volume 3, Issue, 2012
10. Shuang Xu, Jifeng Ding, "Palmprint Image Processing Using Linear Discriminant Analysis Method", Journal of Multimedia, Vol. 7, 2012