A Tehnique To ROI Of Palmprint For Palmline Matching

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ABSTRACT
        This paper proposed a technique to obtain ROI of a palmprint. The popular method is a fixed size square region chosen as the centre part of the palm, which is then divided into square blocks for extraction of local features. Instead of square blocks, we scan the image aligning left side with index finger and thumb crossing point, then select a point bottom of little finger in opposite diagonal direction draw a rectangle by joining these points and crop the image. This cropped part of image can be used for further matching.

KEYWORDS: Palmprint, ROI etc.

1. Introduction

        Palmprint recognition has been investigated over the past years, during this period many different problems related to palmprint recognition has been addressed. Researchers have focused on developing accurate verification algorithm. Various feature extraction and matching algorithm have been proposed. To achieve high verification accuracy, researchers combine different biometric trails with palmprint and combine different features in palmprints.

        Palmprint, the inner surface of our palm normally contains flexion creases, secondary creases and ridges. The flexion and secondary creases are also called principal lines and wrinkles, respectively. Human being were interested in the palm lines for fortune telling long time ago. In this century scientists discovered that palm line were associated with some genetic diseases including Down Syndrome, Aarskog Syndrome, Cohen Syndrome and fetal alcohol Syndrome. Scientist and fortune tellers named the lines and the region differently.

        There are two types of palm recognition research, high resolution and low resolution approaches. High resolution approach employs high resolution images while low resolution approach employs low resolution images. High resolution approach is suitable for forensic applications such as criminal detection, while low resolution is more suitable for civil and commercial applications such access control. Generally speaking, high resolution refer to 400 dpi or more and low resolution refer to 150 dpi or less. In low resolution image, generally use principal lines, wrinkles and texture[1]. At the beginning of palmprint research, the high resolution approach was focused but almost all current research is focused on low resolution approach because of the potential application.

2. Objective (s) and scope

        Today, in our daily life we are often being asked for verification of our identity. Normally this is done through the use of password when pursuing activities with line domain access, single sign-on, application logon etc. In the process, the role of personal identification and verification becomes increasingly important in our society. With the onslaught of improved forgery and identity impression methods, previous ways of correct authentication are not sufficient[5].

        Palmprint are believed to have the critical properties of universality, uniqueness, permanence and collect ability for personal authentication. Palm are large in size and contains abundant feature of different levels, such as creases ,palm lines, texture, ridges, delta points and minutiae. Faking a palmprint is more difficult then faking a fingerprint because the palmprint texture is more complicated and are seldom leaves his/her complete palmprint somewhere unintentionally. Also compare to fingerprint palm are more robust to damage and dirt. What is more low resolution imaging can be employed in the palmprint recognition based on creases and palm lines, making it possible to perform real time image processing and feature extraction[6].

        Texture and palm lines are the most clearly observable palmprint feature in low resolution image and thus have attracted most researchers[6]. Our work is concentrated on particular one of palm where principal lines having maximum intensity. A famous fortuneteller Kiroo written in his book that every person have different palm shape, principal lines. Such lines don't match with other person[11].The line structure are stable and remain unchanged throughout the life of an individual. More importantly, no two palm prints from different individuals are same[13]. This concept inspired to use these principal lines for person identification and authentication. This process is less complex and less time consuming because it don't require any information about biometrics, hand geometry and

palm veins etc. Hence, this method can be used in various security systems, criminal identification, person identification etc. We are introducing a technique to obtained ROI of a palmprint which can be useful to get show palmlines. These palm lines can be used in authentication.

3. Methodology

A palmprint recognition system generally consists of four parts :-

- Palmprint scanning   - Collect palmprint images.
- Processing - Setup a coordinate system to align palmprint images and to segment a part of palmprint image for feature extraction.
- Feature extraction - Obtain effective features from pre processed palmprint.

(i) Scanning the Image

The image is scanned from simple flat scanner . A fix point is being set on the crossing of Thumb and index finger. To get this fix point a wooden strip will be pasted on scanner. By using this technique all handprint will be aligned from left side.

(ii) Obtaining the ROI

After the scanning palm samples, we set Region of Interest by using following technique.

Steps –

(i)	The image is inputted aligning at key point that is crossing of thumb and index finger.
(ii)	Set point bottom of little finger
(iii)	Draw a rectangle by joining these two opposite point and crop the image . It is assumed that this is most intensity full area of principal lines.
(iv)	The sub image is extracted. .

(iii) Texture feature extraction

After getting ROI of Palm image we apply following filters for feature extraction to eliminate the variation caused by rotation and translation . Some filters are commonly used for texture extraction as under –

- (a) Gabor Filter
- (b) Fourier Transforms,Wavelet Transforms

4.Summary

Palmprint Scanning /Acquisition
(Image is captured by Scanner)

Preprocessing
(Co-ordinate System is Setup)

Texture Feature Extraction
(By filters like Gabor Filter,
Fourier Transformation or wavelet Transformation)
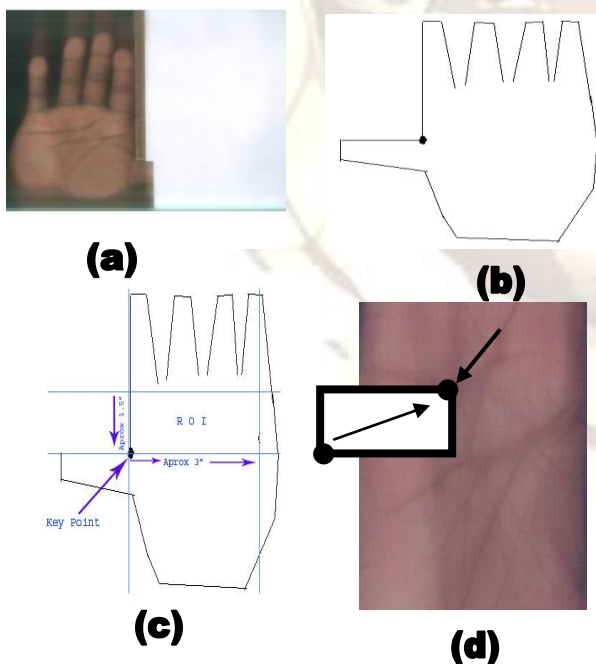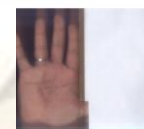
Pictorial Representation of Complete Process

Scanning the image from simple flat scanner

Scanned Image of palm

Marking key point and   valuable part of image

Extraction of Valuable part from the image

Fig.1 Method will be used to find ROI
(a)   Palm Scanned image (b) Skeleton of Palmprint
(c)   Marking area of ROI (d) Extraction ROI

Grey Scaling of image

Extraction of Principal Lines by using different filters

5. Conclusion

Thus we have observed that the palmprint recognition system can be implemented using various transforms in image processing . Today we are living in the information age, where because of advent of the technology there is a situation like information explosion. The Image have giant share in this information .More précised retrieval techniques are needed to access the large image archives being generated ,for finding relatively similar image. Our work is not require any complicated ROI extraction . This process can be performed on low resolution image and can give better results . The new technique of getting ROI and simple matching definitely will reduce the complicacies and errors.

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