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Comparative analysis of palm print recognition system with Repeated Line Tracking method

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Abstract

Palmprint is defined as that line pattern which is located within the area of palm. Palmprint is proved to be distinguishable from other features because of a number of attributes. These attributes include color, clarity, position, continuity, length and variation in thickness. In proposed work the line patterns are analyzed because these patterns are highly effective for shape representation. Lines are represented in a very efficient way and it needs low storage and consistency in detection and these are efficient for shape matching involving large database. But there will always be a problem of missing or broken lines during the extraction process of palmprint which causes difficulty in the matching process. Therefore to remove this problem there is a need for an efficient technique in order to reduce the number of repeated lines or broken lines in the binary images. Therefore the enhancement technique for recognition of palmprint gives us the efficient matching score and accuracy.

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*Keyword:*Palmprint; Log Gabor filter;Repeated line tracking method;matching score.

1. Introduction

Palm print is one of the most reliable physiological characteristics that can be used to distinguish between individuals. The palm print is a new and emerging biometric feature for personal identification. The palm lines are also called stable line features[5]. These palm lines are made up of principal lines and wrinkles. Palmprint is

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clearly simplified by the use of these palm lines. From the low-resolution images these palm lines can be extracted. Palm print is unique to every person [6].

Palmprint verification system

It is a one-to-one matching process. It verifies the identity of claimed person with the stored pattern in the system. In this verification system there are two inputs.

- The first input is that sample which is taken from every individual. This sample has been set as the stored database.
- The second input is the palm print that needs to be verified. In this stage, the line features of the palm prints are extracted and matched [7].

Palmprint Recognition System:

1. Palm print scanner: This imaging device is used for capturing palm print images. Any type ofpalmprint images must be in Bmp format. These images are appropriate to extract principal lines, wrinkles line[10].

2. Pre-processing: It is used to align various images of Palm print and the centre is segmented for feature extraction.

3. Feature extraction: After getting the central part which is called ROI the effective features are extracted from this pre-processed image. Feature extraction detects some stable and unique perceptive features.

4. Matching: In this phase two Palm print features are compared. This phase saves the extracted features from the training establish the reference features vector for each registered person[12].

5. Database: This phase match the extracted features with the corresponding features extracted from the same person that is previously enrolled in the system [8].

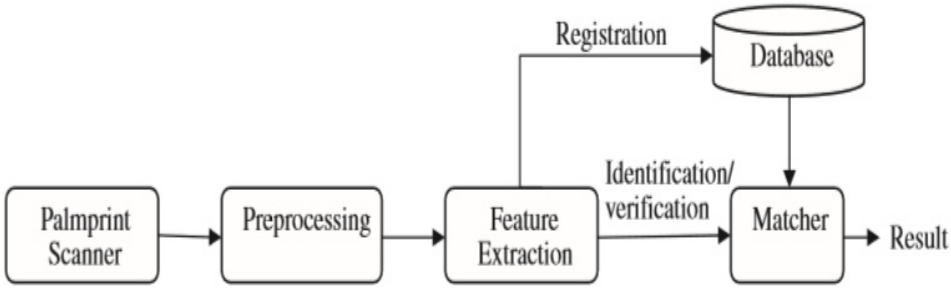

Fig1.1

2. Literature Survey

Wei et al. proposed a method [1] in which firstly principal lines are extracted from the palm surface area. After that some tests are performed during the extraction and principal line extraction procedure are analysed. For the period of the analysis the broken lines are connected by the use of morphological operations. Analysis of trivial branches and poor quality principal lines are performed. Then the ICP algorithm is used to align two line dataset. For feature extraction and matching six Gabor filters are used with different orientations. The proposed method is very powerful for correcting the rotation variations in palmprint.

Zhang et al. proposed structured light imaging method for 3-D scanning [2]. In this method the light source projects structured light patterns onto the surface of the object. For this method three features are used: mean curvature image (MCI), surface type (ST) and Gaussian curvature image (GCI). Then the depth information of different shape structures is also well preserved by the use of these features. For classifying the palmprints fast feature matching method and score level and feature-level fusion strategies were used. The recognition rate of proposed method is high but it requires more advanced and powerful feature extraction and matching techniques for a better recognition performance.