

Palm Print Compression Based on Sparse Representation

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ABSTRACT: This project, combines the left and right palm print images to identify the accurate personal identification. The proposed techniques can integrate three kinds of scores generated from the left and right palm print images to perform matching score-level fusion. The first two kinds of scores are generated from the left and right palm print images and can be obtained by any palm print identification method and the third kind of score was obtained using a specialized algorithm. To identify the accurate personal identification by combining the left and right palm print images. The proposed methodology carefully takes the nature of left and right palm print images into account, it can properly exploits the similarity of left and right palm prints of the same subject.

KEYWORDS: palm print, sparse representation, image enhancement.

I. INTRODUCTION

Palm prints have been used for over a century and are the most widely used form of biometric identification. Fingerprint identification is commonly employed in forensic science to support criminal investigations, and in biometric systems such as civilian and commercial identification devices. Fingerprint identification methods are widely used by police agencies and customhouse to identify criminals or transit passengers since the late nineteenth century. ISO standardized the characteristics of the fingerprint files in 2004. However, with tens of thousands of persons being added into the repositories daily, the management of these data becomes a critical issue. Developing fine and delicate methods for fingerprint compression is necessary to both reduce the memory storage and identification time. Among many efforts, the compression technique is considered as one of the most effective solutions. The compression techniques make the database able to store more reference fingerprints, and also help to extract the effective features in improving the accuracy of fingerprint recognition.

II. PROPOSED SYSTEM

The proposed method carefully takes the nature of the left and right palm print into account, and design an algorithm to evaluate the similarity between them and it exploits the crossing matching score of the left and right palm print for improving the accuracy of identity identification. The Compression technologies can be classed into lossless and lossy. Lossless compression allows the exact original images to be reconstructed from the compressed data. Lossless compression technologies are used in cases where it is important that the original and the decompressed data are identical. Avoiding distortion limits their compression efficiency. When used in image compression where slight distortion is acceptable, lossless compression technologies are often employed in the output coefficients of lossy compression technologies usually transform an image into another domain, quantize and encode its coefficients.

III. EXISTING METHOD

A. Line Based Method

It use lines or edge detectors to extract the palm print lines and then use them to perform palm print verification and identification.

B. Coding Based Method

It include competitive code method, ordinal code method, palm code method and binary orientation co-occurrence method.

C. Subspace Based Method

It include the PCA, LDA, and ICA

A. DISADVANTAGES OF EXISTING METHOD:

No single biometric technique can meet all requirements in circumstances .

The limitation of the existing system is unimodal biometric technique and have less performance.

Processing time is high.

B. PALM PRINT COMPRESSION USING SPARSE CODING

Sparse coding is the modeling of data vectors as sparse linear combinations of basic elements which is widely used in machine learning, neuroscience, signal processing, and statistics. It may focuses on the large-scale matrix factorization problem that consists of learning the basic set in order to adapt it to specific data. Variations of this problem include dictionary learning in signal processing.

IV. ARCHITECTURAL DESIGN

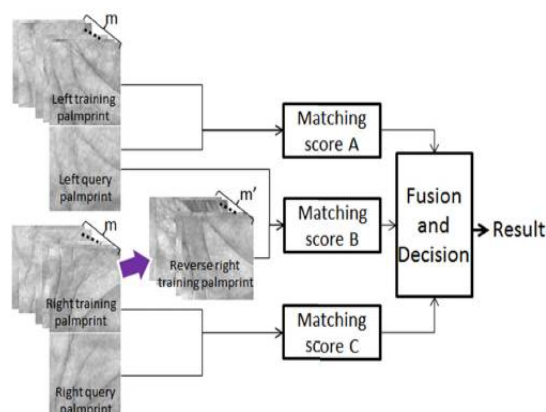


Fig. 1. Procedures of the proposed framework.

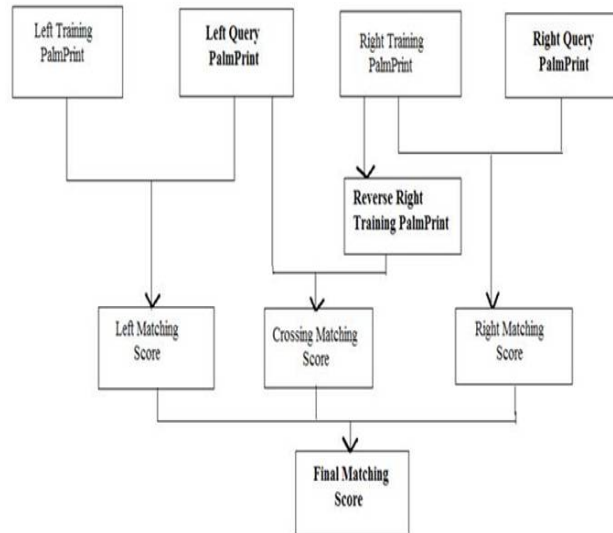


Fig 2: Architectural Design

The design process for identifying the subsystem making up a system and the frame work for subsystem control and communication is architectural design. The output of this design process is a description of the software architecture. An early stage of the system design process represents the link between specification and design processes. Often carried out in parallel with some specification activities. It involves identifying major system components and their communication.

A. DESIGN PROCESS:

There are three designing processes are used in this architecture. That are

- System structuring
- Control modelling
- Modular decomposition

4.1.1. System structuring:

The system is decomposed into several principal subsystems and communication between this subsystems are identified.

4.1.2. Control modelling:

A model of the control relationships between the different parts of the system is established.

4.1.3. Modular decomposition

The identified subsystems are decomposed into modules.

V. ALGORITHM DESCRIPTION

A. PALM PRINT IDENTIFICATION ACROSS RIGHT PALM:

The palmprint identification method to the right palmprint images to calculate the score of the test sample with respect to each class. Consider m available right palmprint images for training. Let Y_i^k denote the i th right palmprint images of the k th subject, where $i=1 \dots m$ and $k=1 \dots c$. Let Z_2 stand for right palmprint image [test sample]. Then PalmPrint Principal Lines extraction performed by Modified Finite Radon Transform.

B. PALM PRINT IDENTIFICATION ACROSS LEFT PALM:

The framework first works for the left palmprint images and uses a palmprint identification method to calculate the scores of the test sample with respect to each class. Consider m available left palmprint images for training. Let X_i^k denote the i th left palmprint images of the k th subject ,where $i=1\dots m$ and $k=1\dots c$. Let Z_1 stand for left palmprint image [test sample]. Then PalmPrint Principal Lines extraction performed by Modified Finite Radon Transform. After the extract of principal lines such as left palmprint principal lines and left training palmprint principal lines ,then matching score is calculated.

C. PALM PRINT IDENTIFICATION ACROSS CROSSING PALM:

Crossing matching score of the left palmprint image for testing with respect to the reverse right palmprint images of each class is obtained. Generate the reverse images of the right palm print images Y_i^k . Both Y_i^k and will be used as training samples. ($l= 1\dots L_y$, $c=1\dots C_y$), where L_y and C_y are the row number and column number of Y_i^k respectively. Then PalmPrint Principal Lines extraction performed by Modified Finite Radon Transform. After the extract of principal lines such as left palmprint principal lines and reverse right training palmprint principal lines ,then matching score is calculated.

D. PALM PRINT IDENTIFICATION ACROSS LEFT, RIGHT, CROSSING PALM:

Finally the framework performs matching score level fusion to integrate these three scores such as left matching score, right matching score.

crossing matching score to obtain the identification result. w_i ($i =1,2,3$), which denotes the weight assigned to the i th matcher, can be adjusted and viewed as the importance of the corresponding matchers.

VI. RESULT AND DISCUSSION

First store the fingerprint images in a directory called the database for performing the various steps of proposed method. The input image is preprocessed using median filter. The median filter identifies the noisy pixel in the image. The pixels neighboring to the noisy pixel were collected and they were arranged in a straight line. The median value is calculated and the noisy pixel is replaced by the obtained median value.

VII. SIMULATION OUTPUT

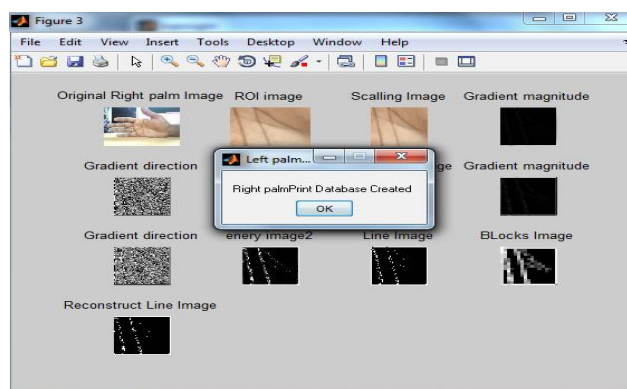


Fig 3:Right Palm Print Creation

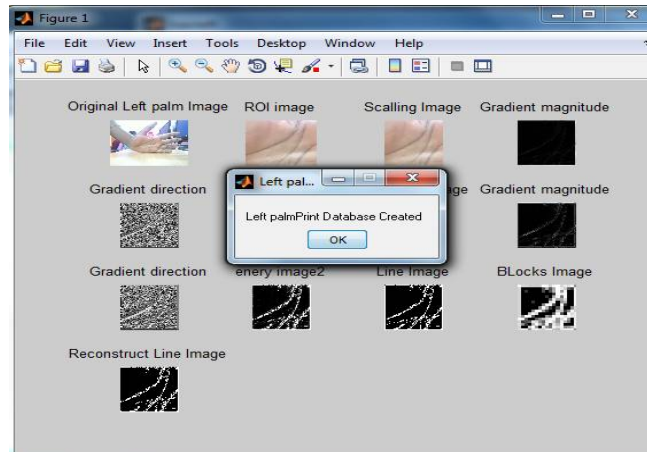


Fig 4: Left Palm Print Creation

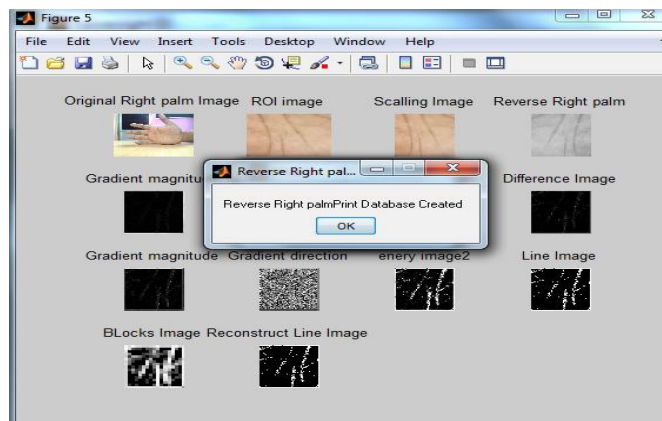


Fig 5: Reverse Right Palm Print Creation

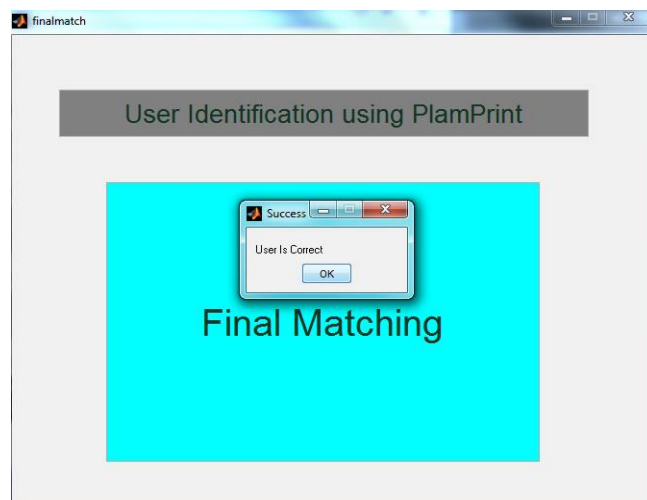


Fig 6: Final Matching

VIII. CONCLUSION

The Left and Right palmprint identification is simple and faster. Thus, there are several applications and devices coming with palmprint identification. The preprocess stage is the first and vital stage in the palmprint identification process. So the left and right palmprint images obtains very high accuracy and the use of the similarity score between the left and right palmprint leads to important improvement in the accuracy.

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