

FINGERPRINT IMAGE PROCESSING – ENHANCEMENT, MINUTIAE EXTRACTION AND MATCHING

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Abstract

The aim of this work is to investigate the current techniques for fingerprint enhancement and matching. This target can be mainly decomposed into image preprocessing, feature extraction and feature match. For each sub-task, some classical and up-to-date methods in literatures are analyzed. Based on the analysis, an integrated solution for fingerprint recognition has been developed.

The proposed work has been implemented using MATLAB 7.5. Some optimization at coding level and algorithm level are proposed to improve the performance of fingerprint recognition system. The fingerprints are enhanced by histogram equalization and Fourier transforms methods and minutiae are extracted. False minutiae have been removed before subjecting them to matching process. These performance enhancements are shown by experiments conducted upon a variety of fingerprint images. Also, the experiments illustrate the key issues of fingerprint recognition that are consistent with what the available literatures say.

Keywords: Fingerprint, Enhancement, Matching, Minutiae and histogram etc.