Abstract

Image Preprocessing is an important step in the area of image processing and pattern recognition. This paper aims to present a review of recent as well as classic fingerprint image enhancement techniques. The umbrella of techniques used for evaluation varies from histogram based enhancement, frequency transformation based, Gabor filter based enhancement and its
A Quantitative Survey of various Fingerprint Enhancement techniques variants to composite enhancement technique. The effectiveness of enhancement techniques proposed by various researchers is evaluated on the basis of peak signal to noise ratio and equal error rate which refers to robustness and stability of identification process. Experimental results shows that incorporating the enhancement technique based on Gabor filter in wavelet domain and composite method improves equal error rate. Improved error rate and peak signal noise ratio improves the identification/verification accuracy marginally. The major goal of the paper is to provide a comprehensive reference source for the researchers involved in enhancement of fingerprint images which is essential preprocessing step in automatic fingerprint identification and verification.

Reference

- Wei Wang, Jianwei Li, Feifei Huang, Hailiang Feng (2008), Design and implementation of Log-Gabor filter in fingerprint image enhancement, Pattern Recognition Letters 29, 301–308.

**Index Terms**

Computer Science  
Pattern Recognition

**Key words**

WFT (Windowed Fourier Transformation)  
Gabor Filters
PSNR (Peak Signal-to-noise ratio)
EER (Equal Error Rate)