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Performance analysis on denoising filters with new edge-directed interpolation for fingerprint images

Abstract

In image processing such as image interpolation, denoising filters are one of the most fundamental requirements. It is important in order to preserve the image quality and its edges' properties. In this paper, we analyse the performance of seven different image denoising filters on fingerprint images. The fingerprint images were filtered and interpolated using New Edge-Directed Interpolation (NEDI) method. The image quality assessment (IQA) metrics that were used to assess the denoising filters quality are Edge-Based Image Quality Assessment (EBIQA), Non-Shift Edge Based Ratio (NSER), and Gradient Conduction Mean Square Error (GCMSE). The best image denoising filter is the Conservative Smoothing filter while the worst is the Laplacian filter.

Keywords

Biometric Images; Denoising Filters; Edge Based IQA; Fingerprint Images; NEDI