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Abstract

Image denoising is a well explored topic in the field of image processing. A denoising algorithm is designed to suppress the noise while preserving as many image structures and details as possible. This paper presents a novel technique for edge-preserving image denoising using wavelet transforms. The multi-level decomposition of the noisy image is carried out to transform the data into the wavelet domain. An adaptive thresholding scheme which employs arbitrary shaped local windows and is based on edge strength is used to effectively reduce noise while preserving significant features of the original image. The experimental results, compared to other approaches, prove that the proposed method is suitable for various image types corrupted by Gaussian noise.

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Index Terms

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Keywords

Wavelet transform; arbitrary shaped window; region-based approach; noise reduction; edge-preservation.