Denosing of natural image based on non-linear threshold filtering using discrete wavelet transformation

ABSTRACT

The denoising (noise reduction) of a natural image contaminated with Additive and white noise of Gaussian model is an important preprocessing step for many visualization techniques and still a challenging problem for researchers. This paper treats with threshold estimation technique to reduce the noise in natural images by using on discrete wavelet transformation. Calculating the value of thresholding, the way it works in the algorithm (derivation of thresholding function) and the type of wavelet mother functions, are pivotal issues in the field of denoising based wavelet approach. In this study the result shows that the proposed denoising algorithm based on semi-soft threshold algorithm outperforms the traditional wavelet denoising techniques in terms of visual quality and subjective scales, where it preserved the edges, ridges details of the reconstructed image and the quality of visualization shape as well. The execution time was taken into consideration as well; it shows that the new algorithm presents competitive results compared with the standard methods such as Wiener filter, SureShrink, Oracle Shrink, BM3D and BayesShrink. To accomplish the denoising process, our algorithm was compared with the various the standard denoising algorithms that were mentioned earlier.