Abstract

In this paper a novel de-noising method based on directionlet transform and on sub band adaptive Bayesian threshold is presented. The denoising scheme used in wavelet domain has been extended to the directionlet domain to make the image features to concentrate on fewer coefficients so that more effective thresholding is possible. Here the directionality of the spatially segmented image is first computed using a parameter called directional variance for selecting the optimum direction for decomposing the image using undecimated directionlet transform. The decomposed images with directional energy are used for threshold computation using Bayes scheme. This threshold is then applied to the sub-bands except the LLL subband. The threshold corrected sub-bands with the unprocessed first sub-band are given as input to the inverse directionlet algorithm for getting the de-noised image. Experimental results show that the proposed method outperforms the standard wavelet-based denoising methods in terms of perceptual and numerical estimates.

References

- Mallat S, Hwang W L, "Singularity detection and processing with wavelets",
- D. Jayachandra and A. Makur "Directional Variance: A Measure to Find the Directionality in a Given Image

Index Terms

Computer Science
Image Processing

Keywords
Undecimated directionlet transform Multi resolution analysis Directional variance
Image Denoising

Bayes threshold.