Abstract

Images are nowadays, very fundamental type data for transmission. Due to the various components and high speed transmission, images are corrupted by the noises. The image denoising is required at the receiver end for the faithful communication. There are several methods for image denoising in spatial and transform domain. The current trends of the image denoising research are the evolution of mixed domain methods. In this paper, a mixed domain image denoising method is proposed, which is based on the wavelet transform, median filter and nonlinear diffusion based methods. The wavelet transform is used in this paper to convert the spatial domain image to wavelet domain coefficients. WT produces approximation, horizontal detail, vertical detail and diagonal detail coefficient which represent the various spatial frequency bands. The detail component are removed due to the most of the image part is in approximation part. The approximation coefficient is also filter by fuzzy filters and wiener filter separately. Median and moving average based fuzzy filter are used to apply the filtering on probabilistic way. The trapezoidal membership function are used for the filtering. The peak signal to noise ratio (PSNR) and mean square error (MSE) are used as the performance parameter. The Haar wavelet is used with various filters to optimize the performance of
denoising. The combination of Haar wavelet and ATMED filter are giving the best denoising result.

References

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Performance Analysis of Image de-noising using Fuzzy and Wiener Filter in Wavelet Domain

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