

# A New Total Variation Based De-noising Techniques

OMAR ELFAROUK MAMDOUH IBRAHIM FOUAD FAHMY ,M. F. Fahmy ; G.  
M. Abdel Raheem ; U. S. Mohammed

## Abstract

This paper, describes a new total variation based de-noising scheme. The proposed technique optimally finds the threshold level of the noisy image wavelet decomposition that minimizes the energy of the error between the restored and the noisy image. The minimization algorithm is regularized by including 1st as well as 2nd order derivatives effects of the noisy image, into the minimization scheme. Next, the problem of blind deconvolution of noisy images is addressed. First, the order of the blurring Point Spread Function (PSF), is accurately estimated using a de-noised version of the noisy blurred image. Then, the deconvolution algorithm is modified by including the effects of the 1st as well as 2nd order derivatives of the blurred noisy images into the image update algorithm. Simulation results have shown significant performance improvements of the proposed schemes in both de-noising as well as deblurring noisy image.

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