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SPECKLE REDUCTION BASED ON OPTIMUM MUTIRESOLUTION LEVEL

RITHU JAMES & SUPRIYA M. H

Department of Electronics, Cochin University of Science and Technology, Cochin, India

ABSTRACT

Sonar images are highly affected by speckle noise which reduces spatial resolution. Denoising is required in sonar images to distinguish a number of different regions by analyzing the image. Sparsity of the wavelet representation of the images is exploited in speckle denoising in sonar images. The proposed technique enhances the denoising property of the classical thresholding and the Bayes soft thresholding technique by proper selection of time scale level. The optimum mutiresolution level for speckle reduction is found to be the maximum level of decomposition possible for the image of size S to be denoised and the chosen basic wavelet function. The proposed denoising method is compared and evaluated based on the Peak Signal to Noise Ratio (PSNR). Simulation results revealed that an improvement was achieved by implementing the proposed method.

KEYWORDS: Denoising, Mutiresolution, Speckle, Wavelet Transform