

عنوان مقاله:

Using Heavy-Tailed Levy Model in Nonsubsampled Shearlet Transform Domain for Ultrasound Image Despeckling

محل انتشار:

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خلاصه مقاله:

For any coherent imaging systems including ultrasound, synthetic aperture radar and optical laser, the multiplicative speckle noise degrades both the spatial and contrast resolution of the image. So, speckle suppression or despeckling is necessary before processing like image segmentation, edge detection, and in general any medical diagnosis. It is quite a mind-numbing task to analyze the corrupted images. Among many methods that have been proposed to perform this task either in spatial domain or in transformed domain, there exists a class of approaches that use coefficient modelling in transform domain. The purpose of the paper is developing a novel despeckling method in nonsubsampled shearlet transform (NSST) based on coefficient modelling. Bayesian maximum a posteriori (MAP) estimator is used where heavy-tailed Lévy (HTL) distribution is assumed for estimating the noise-free NSST coefficients. The main contribution of this paper is considering HTL for modeling the NSST coefficients for the first time because of its low computational complexity. The proposed algorithm maintains a balance between speckle suppression and feature preservation. Finally, experiments show that the proposed method outperforms others in terms of visual evaluation and assessment parameters.

کلمات کلیدی:

Network Lifetime; Clustering; W-LEACH; Energy Consumption

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