Abstract

Speckle noise is a significant property of medical ultrasound imaging, and it typically degrades the resolution and contrast of images, sinking the diagnostic importance of the imaging modality. As a consequence, filtering speckle noise in the ultrasound images is a critical step for further analysis by the medical experts. In this paper, a speckle noise filtering technique have been suggested via wavelet thresholding for denosing ultrasound images. For each wavelet coefficient, in the first step, two optimal threshold parameters are estimated through the genetic algorithm and fisher discriminant analysis respectively. In the second step, thresholding of wavelet coefficient is performed by both threshold parameters. Finally, thresholded coefficient which corresponds to lowest mean square error is selected for obtaining the denoised ultrasound image. Results show that, the proposed technique outperforms different existing denoising techniques.

Index Terms

Computer Science
Image Processing
Keywords

Genetic Algorithm; Fisher Discriminant Analysis; Speckle Noise; Ultrasound Image; Wavelet Transform