Abstract

Ultrasound imaging owing to its low cost and non-invasive nature is a widely accepted imaging technique. The image quality in ultrasound images is degraded by a special type of acoustic noise known as speckle. Speckle noise is a random presence of bright and dark spots which hinders human interpretation of images and computer assisted diagnostic techniques. The success of ultrasonic examination depends upon image quality; therefore, despeckling is necessary to improve visual quality for better diagnosis. Several speckle reduction methods are applied to the ultrasound images to suppress noise and preserve the useful diagnostic information. This paper presents a review of multi-scale filters (wavelets), single scale spatial adaptive filters (viz. Median, Wiener, Lee, Frost, Kuan, and Gamma MAP filter) and two Diffusion filters (viz. Anisotropic Diffusion filter and Speckle Reduction Anisotropic Diffusion filter) that are widely used for speckle reduction in biomedical ultrasound B-scan images.


Index Terms

Computer Science

Signal Processing

Keywords
Ultrasound imaging, speckle, single scale spatial adaptive filters, multi scale filters, anisotropic diffusion filters, shrinkage methods.