Abstract

Denoising is an essential step for most of the digital image processing systems. Image denoising involves the manipulation of the image data to produce a visually high quality image. MRI images are always corrupted by random noises. In denoising of magnetic resonance images it is very important to preserve the useful details rather than just increasing its peak signal to noise ratio (PSNR) value. Different noise models including additive and multiplicative types are used. They include Gaussian noise, salt and pepper noise, speckle noise. This paper uses Independent component analysis (ICA) for denoising of noisy MRI's. A comparative analysis was also performed, the output obtained by independent component analysis were compared with that obtained from discrete wavelet transform (DWT). The comparative analysis shows that the independent component analysis is better than the discrete wavelet transform in terms of peak signal to noise ratio (PSNR), Mean square error (MSE) and Mean structural similarity index metric (MSSIM).

References

Independent Component Analysis based Denoising of Magnetic Resonance Images


Index Terms

Computer Science
Signal Processing

Keywords
Discrete wavelet transform (DWT) Independent component analysis (ICA)
Independent Component Analysis based Denoising of Magnetic Resonance Images

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