Abstract

Reducing or removing random noise from medical images is a very active research area in medical image processing. In recent years, technological development has significantly improved in analyzing medical images. This paper proposes various fuzzy hybrid filtering techniques for the removal of random noise from medical images, by topological approach. Each of these fuzzy filters, which apply a weighted membership function to an image within a 8-neighbours of a point, is simple and easy to implement. The quality of the noise reduction in images is measured by the statistical quantity measures: Root Mean Square Error (RMSE) and Peak Signal-to-Noise Ratio (PSNR). The performances of these fuzzy filters on images tainted with low, medium and high random noise are compared with various existing filtering techniques.

References

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**Index Terms**

Computer Science  
Image Processing

**Keywords**

Ultrasound Medical Image  Fuzzy hybrid filters  Random noise  Noise reduction