

{tag}

{/tag}

Computer Science and Information Technology

IJCA Proceedings on National Conference on

© 2018 by IJCA Journal

NCCSIT 2017 - Number 1

Year of Publication: 2018

Authors:

Aziz Makandar

Bhagirathi Halalli

{bibtex}nccsit2017019.bib{/bibtex}

### Abstract

In the Medical image preprocessing image denoising is a basic analysis step to provide a processed image from the raw image and it typically needs a previous application of filters to cut back the noise level of the image, whereas conserving necessary details, which can improve the standard of digital mammography images associated contribute to efficient diagnosing. From the literature, we are able to realize an outsized quantity of de-noising techniques available for various forms of images. We got some of the prevailing denoising algorithms for mammography images. Proposed work compares several denoising techniques for mammographic images we tend to compare the impact of various denoising filters engaged on

digitized mammograms. The considered filters are: Median, Gabor, DWT (separable, real, complex Dual-Tree) filters accustomed takes away the random noise that was added at the time of acquisition of mammography image. The results are experimented on Digital Database for Screening Mammography (DDSM) using MATLAB. The noise reduction is measured by the Root Mean Square Error (RMSE) and Peak Signal to Noise Ratio (PSNR) which illustrates the denoising capability for all methods the complex Dual-Tree DWT technique is that the best denoising technique for mammography image.

## Refer

## ences

- J. Dengler, S. Behrens, J. F. Desaga, "Segmentation of microcalcifications in mammograms", IEEE Trans. on Medical Imaging, vol. 12, pp. 634-642, 1993.
- D. Donoho, I. Johnstone, G. Kerkycharian, D. Picard, "Wavelet shrinkage: asymptopia?", Journal of the Royal Statistical Society B, vol. 57, pp. 301-369, 1995.
- F. Catté, P. Lions, J. Morel, T. Coll, "Image selective smoothing and edge detection by nonlinear diffusion", SIAM Numerical Analysis, vol. 29, pp. 182-193, 1992.
- A. Hyvarinen, "Sparse code shrinkage: denoising of nongaussian data by maximum likelihood estimation", Neural Comput. vol. 11, pp. 1739-1768, 1999.
- A. Hyvärinen, P. Hoyer, E. Oja, "Image denoising by sparse codes shrinkage". In Intelligent Signal Processing, S. Hykin, B. Kosko, Eds. IEEE Press, 2001.
- A. P. Dhawan, G. Buellon, and R. Gordon, "Enhancement of mammographic feature by optimal adaptive neighbourhood image processing," IEEE Trans. Med. Imag. , vol. MI-6, no. 1, 1986, pp. 82-83.
- TomklavStojiC, IriniReljin, BranimirReljin, "Local contrast enhancement in digital mammography by using mathematical morphology," IEEE Transactions, 2005.
- N. G. Kingsbury. "Complex wavelets for shift invariant analysis and filtering of signals. " Applied and Computational Harmonic Analysis, 10(3):234-253, May 2002.
- Vishnukumar K. Patel, Prof. Syed Uvaid, Prof. A. C. Suthar, "Mammogram of Breast Cancer detection Based using Image Enhancement Algorithm", International Journal of Emerging Technology and Advanced Engineering, Vol. 2(8), August 2012, pp. 143-147.
- ShihuaCai&Keyong Li, "Matlab implementation of Wavelet transform"<http://eeweb.poly.edu/iselesni/WaveletSoftware/denoise.html>
- Muller H, Michoux N, Bandon D, Geissbuhler A. "A Review of Content-based Medical Image Retrieval Systems in Medical Application – Clinical Benefits and Future Directions. " International Journal of Medical Informatics, 2004, 73(1):1-23.
- Bhattacharya, Debmalya, Mrs Jibanpriya Devi, and Ms Payal Bhattacharjee. "Brain Image Segmentation Technique Using Gabor filter parameter", American Journal of Engineering Research (AJER) Vol-02, Issue-09, pp-127-132.
- Rafael C. Gonzalez, Richard E. Woods, "Digital Image Processing," third edition, Pearson Publication. Pp. 466-474.
- The Digital Database for Screening Mammography, Michael Heath, Kevin Bowyer, Daniel Kopans, Richard Moore and W. Philip Kegelmeyer, in Proceedings of the Fifth

International Workshop on Digital Mammography, M. J. Yaffe, ed. , 212-218, Medical Physics Publishing, 2001. ISBN 1-930524-00-5.

- Current status of the Digital Database for Screening Mammography, Michael Heath, Kevin Bowyer, Daniel Kopans, W. Philip Kegelmeyer, Richard Moore, Kyong Chang, and S. MunishKumaran, in Digital Mammography, 457-460, Kluwer Academic Publishers, 1998; Proceedings of the Fourth International Workshop on Digital Mammography.

Computer Science

### Index Terms

Wireless

### Keywords

Discrete Wavelet Transform(dwt) Complex Dual-tree Dwt Root Mean Squared Error (rmse) Threshold Point.