

Multiscale Transforms: A Short Reading List

1 Multiscale Transforms

- M. Antonini, M. Barlaud, P. Mathieu, and I. Daubechies. Image coding using wavelet transform. *IEEE Transactions on Image Processing*, 1(2):205–220, 1992.
- J.C. Feauveau. *Analyse multirésolution par ondelettes non-orthogonales et bancs de filtres numériques*. PhD thesis, Université Paris Sud, 1990.
- S. G. Mallat. A theory for multiresolution signal decomposition: the wavelet representation. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 11(7):674–693, 1989.
- W. Sweldens. The lifting scheme: A construction of second generation wavelets. Technical Report 1995:6, Department of Mathematics, University of South Carolina, 1995.
- M.J. Shensa. Discrete wavelet transforms: wedding the à trous and Mallat algorithms. *IEEE Transactions on Signal Processing*, 1992.

2 Noise modeling

- E. Slezak, F. Durret, and D. Gerbal. A wavelet analysis search for substructures in eleven X-ray clusters of galaxies. *Astrophysical Journal*, 108(6):1996–2008, 1994.
- P. Bury. *De la distribution de matière à grande échelle à partir des amas d'Abell*. PhD thesis, Université de Nice Sophia Antipolis, Janvier 1995.
- F. Murtagh and J.L. Starck. Pattern clustering based on noise modeling in wavelet space. *Pattern Recognition*, 31(7):847–855, 1998.
- F. Murtagh and J.L. Starck. Image processing through multiscale analysis and measurement noise modeling. *Statistics & Computing*, 1999. to appear.
- J.L. Starck and F. Murtagh. Automatic noise estimation from the multiresolution support. *Publications of the Astronomical Society of the Pacific*, 110(744):193–199, 1998.
- J.L. Starck and M. Pierre. Structure detection in low intensity X-ray images. *Astronomy and Astrophysics, Suppl. Ser.*, 128, 1998.
- F. Murtagh and J.L. Starck. Overcoming the curse of dimensionality in clustering by means of the wavelet transform. *Computer Journal*, 1999, submitted.

3 Compression

- A. Bijaoui, Y. Bobichon, and L. Huang. Digital image compression in astronomy – morphology or wavelets. *Vistas in Astronomy*, 40(4):587–594, 1996.
- L. Huang and A. Bijaoui. Astronomical image data compression by morphological skeleton transformation. *Experimental Astronomy*, 1:311–327, 1991.
- F. Murtagh, J.L. Starck, and M. Louys. Very high quality image compression based on noise modeling. *International Journal of Imaging Systems and Technology*, 9:38–45, 1998.
- R. White, M. Postman, and M. Lattanzi. In H.T. MacGillivray and E.B. Thompson, editors, *Digitized Optical Sky Surveys*, pages 167–175. Kluwer, 1992.
- J.L. Starck, F. Murtagh, B. Pirenne, and M. Albrecht. Astronomical image compression based on noise suppression. *Publications of the Astronomical Society of the Pacific*, 108:446–455, 1996.
- M. Louys, J.-L. Starck, S. Mei, F. Bonnarel, and F. Murtagh. Astronomical image compression. *Astronomy and Astrophysics*, 1999, to appear.
- Y. Bobichon and A. Bijaoui. A regularized image restoration algorithm for lossy compression in astronomy. *Experimental Astronomy*, 7(3):239–255, 1997.

4 Detection

- F. Rué and A. Bijaoui. A multiscale vision model to analyse field astronomical images. *Experimental Astronomy*, 7(3):129–160, 1997.
- A. Bijaoui and F. Rué. A multiscale vision model adapted to astronomical images. *Signal Processing*, 46:345–362, 1995.
- J.L. Starck, R. Siebenmorgen, and R. Gredel. Spectral analysis by the wavelet transform. *Astrophysical Journal*, 482:1011–1020, 1997.

5 Filtering

- A. Bijaoui, J.L. Starck, and F. Murtagh. Restauration des images multi-échelles par l’algorithme à trous. *Traitement du Signal*, 3:11, 1994.

- D.L. Donoho and I.M. Johnstone. Ideal spatial adaptation by wavelet shrinkage. Technical Report 400, Stanford University, 1993.
- F. Murtagh, J.L. Starck, and A. Bijaoui. Image restoration with noise suppression using a multiresolution support. *Astronomy and Astrophysics, Suppl. Ser.*, 112:179–189, 1995.
- F. Murtagh, J.L. Starck, and A. Bijaoui. Multiresolution in astronomical image processing: A general framework. *The International Journal of Image Systems and Technology*, 6:332–338, 1995.
- A. Bijaoui, Y. Bobichon, Y. Fang, and F. Rué. Méthodes multiéchelles appliquées à l’analyse des images radar à ouverture synthétique. *Traitement du Signal*, 14(2):179–193, 1997.
- J.L. Starck and F. Murtagh. Image restoration with noise suppression using the wavelet transform. *Astronomy and Astrophysics*, 288:343–348, 1994.
- J.L. Starck and F. Murtagh. Multiscale entropy filtering. *Signal Processing*, 1998, to appear.
- J.L. Starck, F. Murtagh, and R. Gstaad. A new entropy measure based on the wavelet transform and noise modeling. Special Issue on Multirate Systems, Filter Banks, Wavelets, and Applications of *IEEE Transactions on CAS II*, 45(8), 1998.
- J.L. Starck and F. Murtagh. Image filtering from multiple vision model combination. *Image and Vision Computing*, 1999, submitted.

6 Deconvolution

- J.P. Burg. Annual Meeting International Society Exploratory Geophysics, Reprinted in *Modern Spectral Analysis*, 1978, D.G. Childers, ed., IEEE Press, New York, 34–41, 1978, 1967.
- B.R. Frieden. *Digital Image Processing*. John Wiley & Sons, Berlin, Springer-Verlag, 1978.
- S.F. Gull and J. Skilling. *MEMSYS5 User’s Manual*, 1991.
- J.L. Starck and A. Bijaoui. Filtering and deconvolution by the wavelet transform. *Signal Processing*, 35:195–211, 1994.
- J.L. Starck and A. Bijaoui. Multiresolution deconvolution. *Journal of the Optical Society of America A*, 11(4), 1994.

- J.L. Starck, A. Bijaoui, B. Lopez, and C. Perrier. Image reconstruction by the wavelet transform applied to aperture synthesis. *Astronomy and Astrophysics*, 283:349–360, 1994.
- J.L. Starck, A. Bijaoui, and F. Murtagh. Multiresolution support applied to image filtering and deconvolution. *CVGIP: Graphical Models and Image Processing*, 57:420–431, 1995.
- E. Pantin and J.L. Starck. Deconvolution of astronomical images using the multiscale maximum entropy method. *Astronomy and Astrophysics, Suppl. Ser.*, 315:575–585, 1996.

7 Image registration

- J.P. Djamdjji, A. Bijaoui, and R. Maniere. Geometrical registration of images: the multiresolution approach. *Photogrammetric Engineering and Remote Sensing.*, 59(5):645–653, May 1993.
- J.P. Djamdjji, A. Bijaoui, and R. Maniere. Geometrical registration of remotely sensed images with the use of the wavelet transform. *SPIE International Symposium on Optical Engineering and Photonics*, pp. 412–422, 12–16 April - Orlando 1993. Volume 1938.
- J.P. Djamdjji. *Analyse en ondelettes et mise en correspondance en télédétection*. PhD thesis, Université de Nice Sophia Antipolis, 2 Décembre 1993.

8 Wavelet and Fractal analysis

- A. Arneodo, F. Argoul, E. Bacry, J. Elezgaray, and J. F. Muzy. *Ondelettes, Multifractales et Turbulences*. Diderot, Arts et Sciences, Paris, New-York, Amsterdam, 1995.