

Sparse Image and Signal Processing – Wavelets, Curvelets, Morphological Diversity

Starck, Jean-Luc, Fionn Murtagh and Jalal M. Fadili. *Sparse Image and Signal Processing – Wavelets, Curvelets, Morphological Diversity*. New York, NY: Cambridge University Press, 2010, 316 pp. \$70.00 (Hardbound).

This book presents the state of the art in sparse and multiscale image and signal processing, covering linear multiscale transforms, such as wavelet, ridgelet, or curvelet transforms, and non-linear multiscale transforms based on the median and mathematical morphology operators. Recent concepts of sparsity and morphological diversity are described and exploited for various problems such as denoising, inverse problem regularization, sparse signal decomposition, blind source separation, and compressed sensing.

This book weaves theory and practice in examining applications in areas such as astronomy, biology, physics, digital media, and forensics. A final chapter explores a paradigm shift in signal processing, showing that previous limits to information sampling and extraction can be overcome in very significant ways.

MATLAB and IDL code accompany these methods and applications to reproduce the experiments and illustrate the reasoning and methodology of the research available for download at the associated Web site.

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Jalal M. Fadili graduated from the École Nationale Supérieure d'Ingénieurs (ENSI), Caen, France, and received MSc and PhD degrees in signal processing, and a Habilitation, from the University of Caen. He was McDonnell-Pew Fellow at the University of Cambridge in 1999-2000. Since 2001, he is Associate Professor of Signal and Image Processing at ENSI. He has held visiting appointments at Queensland University of Technology, Stanford University, Caltech, and EPFL.