Mladen Victor Wickerhauser

Abbreviated Curriculum Vitae

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1 Professional Information

- *Regular Affiliation:* Professor of Mathematics, Washington University in St. Louis
- *Address:* Dept. of Mathematics, Campus Box 1146, Washington University, One Brookings Drive, St. Louis, MO 63130 USA, phone +1(314)935-6760, fax +1(314)935-6839.
- *Email:* `Victor@WUStL.Edu`
- *Education:*

  BS (Mathematics, with honor) 1980, California Institute of Technology, Pasadena, California.

  MS (Mathematics) 1982, Yale University, New Haven, Connecticut.

  PhD (Mathematics) 1985, Yale University.
- *Thesis Advisor:* Professor Ronald R. Coifman, Yale University.

2 Patents

1. *Method and Apparatus for Encoding and Decoding Using Wavelet-Packets*, U.S. Patent No. 5,384,725 (with R. Coifman and Y. Meyer), issued 24 January 1995.
2. *Method and Apparatus for Encoding and Decoding Using Wavelet-Packets*, U.S. Patent No. 5,526,299 (with R. Coifman and Y. Meyer), issued 11 June 1996.
3. *A Method and Apparatus for Radiotherapy Treatment Planning*, U.S. Patent No. 6,792,073 (with Joseph O. Deasy), issued 14 September 2004.
4. *Fast Wavelet Estimation of Weak Bio-signals Using Novel Algorithms for Generating Multiple Additional Data Frames*, U.S. Patent No. 7,054,454 (with Elvir Causevic and Eldar Causevic), issued 30 May 2006.
5. *Fast Wavelet Estimation of Weak Bio-signals Using Novel Algorithms for Generating Multiple Additional Data Frames*, U.S. Patent No. 7,333,619 (with Elvir Causevic and Eldar Causevic), issued 19 February 2008.
6. *Applying Renyi Entropy to Detect Changes in Scattering Architecture*, U.S. Patent No. US8500644 B2 (with Michael S. Hughes, John McCarthy, Gregory Lanza, and Samuel Wickline), issued August 6th, 2013.

3 Computer Programs

1. Contributions to `CADAM` computer-aided design program (FORTRAN and mainframe assembler language), 1979–80.
2. `Qube` educational program to display 4-dimensional polytopes (Pascal), 1988, available from various PC bulletin boards.
3. `Wavelet Packet Library v1` programs (C, for various computers), 1989–92, available from `pascal.math.yale.edu` by anonymous FTP.
4. `WPLab` programs (Objective-C, for the NeXT), 1991-92 (with David Rochberg), available from `wuarchive.wustl.edu` in by anonymous FTP.
5. `WPL v1.06` (Standard C, for DOS), 1991, (with Krešimir Ukrainčik and Aaron Fand), available from Digital Diagnostics Corporation, 1020 Sherman Avenue, Hamden, Connecticut, 06514.

6. `Adapted Waveform Analysis Library, v2.0` (Standard C, for Unix and VMS), June, 1992. Available from FMA&H Corporation, 1020 Sherman Avenue, Hamden, Connecticut, 06514.

7. `XWPL` (Standard C, for X-Windows), 1993, (with Fazal Majid), available from `math.yale.edu` by anonymous FTP.

8. `WPLW` (Standard C, for Windows), (with Krešimir Ukrainčik), ISBN 1-56881-036-9, published in 1994 by A. K. Peters, Ltd., 289 Linden Street, Wellesley, MA, 02181.

9. `Graphical Work Station` (C++, for Windows), (with Krešimir Ukrainčik), 1994, Simulation software for adapted scanning LCD displays.

10. `wsq0` and `iwsq0` (Standard C), 1995, conforming implementation of the FBI's WSQ fingerprint image compression algorithm.

11. `Adapted Waveform Analysis Library, v3.0` (Standard C, for Unix). June, 1995. Available from FMA&H Corporation, 1020 Sherman Avenue, Hamden, Connecticut, 06514.

12. `wsq1` and `iwsq` (Standard C), October, 1998, WSQ fingerprint image codec with FBI Encoder 1, compliant to IAFIS-IC-0110v2, 16 Feb 1993. Versions for ten HW/OS/CC combinations.

13. `wsq2` and `iwsq` (Standard C), June, 2011, WSQ fingerprint image codec with FBI Encoder 1 and 2, compliant to IAFIS-IC-0110(v3.1), 4 Oct 2010. Versions for two HW/OS/CC combinations.

4 Awards, Contracts, Fellowships, and Grants

- Grant DACA-64620, "Laser Doppler Vibrometry Signal Processing," (PI John Rohrbaugh), June, 2007.

- Wavelet Pioneer Award, Society of Photo-Optical Instrumentation Engineers, 4 April 2002.

- Grant DMS-0072234, "Adapted Wavelet Algorithms," National Science Foundation, 1 July 2000 to 30 June 2004.

- Grant MRI-9977670, "Acquisition of a Parallel Computer for Research and Research Training in Science" (with Wai-Mo Suen, Claude Bernard, Barbara Pickard, and Michael Wysession), National Science Foundation, 1 September 1999 to 31 August 2002.

- Grant F49620-99-1-0068, "Spatio-Temporal Wavelets for Motion Detection and Target Tracking" (with Jean-Pierre Leduc), Air Force Office of Scientific Research, 1 December 1998 to 30 November 2000.

- Grant DMS-9631359, "Research and Training in Computational Harmonic Analysis" (with Richard H. Rochberg, Albert Baernstein II, Steven G. Krantz, John McCarthy, Mitchell H. Taibleson and Guido L. Weiss), National Science Foundation, 1 September 1996 to 31 August 1999.

- Grant DMS-9531967, "Mathematical Sciences: Research Group in Analysis" (with Richard H. Rochberg, Steven G. Krantz, Guido L. Weiss, Mitchell H. Taibleson and John McCarthy), National Science Foundation, 1 August 1996 to 31 July 2001.

- Grant F49620-96-1-0287, "Stable Feature Classification in the Wavelet Domain" (with Guido L. Weiss), Air Force Office of Scientific Research, 1 June 1996 to 31 December 1998.

- Grant F49620-95-1-0231, "Feature Extraction by Best-Basis and Wavelet Methods," (with Ronald R. Coifman and Guido L. Weiss), Air Force Office of Scientific Research, 1 March 1995 to 29 Feb 1996.

- Grant DMS-9302828, "Research Group in Harmonic Analysis," (with Richard Rochberg, Mitchell Taibleson and Guido L. Weiss), National Science Foundation, 1 July 1993 to 31 December 1995.

- Grant CRG-930456, "Collaborative Research in Turbulence" (with Marie Farge and Peter

Frick), North Atlantic Treaty Organization, 1 April 1993 to 31 December 1995.

- Grant to support "Research Group in Wavelet Analysis and Applications," (with Guido L. Weiss and members of the School of Engineering), Southwestern Bell Telephone Company, 1993–96.

- Grant F49620-92-J-0106 (continuation) "Feature Extraction by Best-Basis and Wavelet Methods" (with Ronald R. Coifman), Air Force Office of Scientific Research, 15 January 1993 to 14 May 1994.

- Grant F49620-92-J-0106, "Feature Extraction by Best-basis Wavelet Methods" (with Guido L. Weiss), Air Force Office of Scientific Research, 15 January 1992 to 14 January 1993.

- Contract A107183, "Evaluation of Fingerprint Image Compression Algorithms," Federal Bureau of Investigation, August, 1991.

- Membership, Mathematical Sciences Research Institute, Berkeley, California, Winter, 1988.

- Grant DMS-8611352, "Conference in Harmonic Analysis," (with John A. Gosselin), National Science Foundation, March, 1987.

- Faculty Research Grant, "Inverse Scattering and Partial Differential Equations," University of Georgia Research Foundation, 1986.

- University Fellowship, Yale University, 1980–1984.

- Richter Fellowship in Mathematics, California Institute of Technology, 1978.

5 Employment History

7/98—present Professor, Washington University.

1/22–7/22 Sabbatical Visitor, University of Zagreb.

2/98–6/98 Sabbatical Visitor, University of Maryland.

7/96 Visiting Associate Professor, CEREMADE—Université Paris-Dauphine.

7/95 Visiting Associate Professor, Universitá di Messina, Italy.

5/95 Visiting Associate Professor, Université Paris-Nord, France.

7/93 Visiting Associate Professor, CNRS/CPT, Luminy, France.

6/93 Visiting Associate Professor, CEREMADE—Université Paris-Dauphine.

5–6/92 Visiting Associate Professor, CNRS/CPT, Luminy, France.

1/92 Visiting Associate Professor, CEREMADE—Université Paris-Dauphine.

9/91–6/98 Associate Professor, Washington University.

5–6/91 Visiting Associate Professor, Université Aix-Marseilles.

9/90–9/91 Visiting Assistant Professor, Yale University.

9/85–9/90 Assistant Professor of Mathematics, University of Georgia.

6/84–9/85 Assistant in Research, Yale University. Supported by National Science Foundation grant DMS 8402637 with principal investigators Professors Richard Beals and Ronald R. Coifman.

9/82–5/84 Teaching Fellow, Yale University.

1–5/82 Teaching Assistant, Yale University.

6–8/81 Technical Assistant, NASA Ames Research Center, Moffett Field, California.

10/79–8/80 Programmer, Lockheed California Company, Burbank, California.

9/78–6/79 Grader for Mathematical Analysis at Caltech.

6–8/78 Richter Fellow in Mathematics at Caltech.

6–8/76, 6–8/77 Laboratory Technician, Red Cross Blood Research Laboratory, Bethesda, Maryland.

6 Publications

[1] Mladen Victor Wickerhauser. Cyber 2xx performance on an implicit factored Navier–Stokes algorithm. Preprint, NASA Ames Research Center, 1981.

[2] Mladen Victor Wickerhauser. *Nonlinear Evolutions of the Heat Operator*. PhD thesis, Yale University, New Haven, Connecticut, May 1985.

[3] Mladen Victor Wickerhauser. Inverse scattering for the heat operator and evolutions in 2+1 variables. *Communications in Mathematical Physics*, 108:67–89, 1987.

[4] Mladen Victor Wickerhauser. Hamilton's form for the Kadomtsev–Petviashvili equation. *Journal of Mathematical Physics*, 29:2300–2302, 1988.

[5] Ronald R. Coifman and Mladen Victor Wickerhauser. The scattering transform for the Benjamin–Ono equation. *Inverse Problems*, 6:825–861, 1990.

[6] Elliot Gootman and Mladen Victor Wickerhauser. Elementary wavelets. Preprint, 02021-88, Mathematical Sciences Research Institute, Berkeley, California, 1987-88.

[7] Mladen Victor Wickerhauser. Fast approximate factor analysis. In Martine J. Silbermann and Hemant D. Tagare, editors, *Curves and Surfaces in Computer Vision and Graphics II*, volume 1610 of *SPIE Proceedings*, pages 23–32, Boston, October 1991. SPIE.

[8] Lareef Zubair, Kannan R. Sreenivasan, and Mladen Victor Wickerhauser. Characterization and compression of turbulent signals and images using wavelet packets. In T. Gadsky, S. Sirkar, and C. Speziale, editors, *Studies in Turbulence*, pages 489–513. Springer Verlag, New York, 1991.

[9] Mladen Victor Wickerhauser. Acoustic signal compression with wavelet packets. In Chui [114], pages 679–700.

[10] Mladen Victor Wickerhauser. INRIA lectures on wavelet packet algorithms. In Pierre-Louis Lions, editor, *Problémes Non-Linéaires Appliqués, Ondelettes et Paquets D'Ondes*, pages 31–99. INRIA, Roquencourt, France, June 1991. Minicourse lecture notes.

[11] Mladen Victor Wickerhauser. *Lectures on Wavelet Packet Algorithms*. Washington University, Saint Louis, Missouri, 18 November 1991.

[12] Marie Farge, Eric Goirand, Thierry Philipovitch, Freédéric Pascal, and Mladen Victor Wickerhauser. Wavelet packets compression of a 2d turbulent flow. Video recording of a computer simulation performed at LMD-CNRS, Paris, 1991.

[13] Ronald R. Coifman, Yves Meyer, and Mladen Victor Wickerhauser. Wavelet analysis and signal processing. In Ruskai et al. [113], pages 153–178.

[14] Ronald R. Coifman, Yves Meyer, and Mladen Victor Wickerhauser. Size properties of wavelet packets. In Ruskai et al. [113], pages 453–470.

[15] Ronald R. Coifman and Mladen Victor Wickerhauser. Entropy based algorithms for best basis selection. *IEEE Transactions on Information Theory*, 32:712–718, March 1992.

[16] Pascal Auscher, Guido Leopold Weiss, and Mladen Victor Wickerhauser. Local sine and cosine bases of Coifman and Meyer and the construction of smooth wavelets. In Chui [114], pages 237–256.

[17] Mladen Victor Wickerhauser. *Adapted Waveform Analysis Library, v2.0*. Fast Mathematical Algorithms and Hardware Corporation, Hamden, Connecticut, June 1992. Software Documentation.

[18] Mladen Victor Wickerhauser. High-resolution still picture compression. *Digital Signal Processing: a Review Journal*, 2(4):204–226, October 1992.

[19] Ronald R. Coifman, Yves Meyer, and Mladen Victor Wickerhauser. Numerical harmonic analysis. In Charles Fefferman, Robert Fefferman, and Stephen Wainger, editors, *Essays on Fourier Analysis in Honor of Elias M. Stein*, pages 162–174, Princeton, New Jersey, 1991. Princeton University Press. Proceedings of the Princeton Conference in Harmonic Analysis, held 13–17 May 1991.

[20] Ronald R. Coifman, Yves Meyer, and Mladen Victor Wickerhauser. Adapted waveform analysis, wavelet-packets and applications. In Robert E. O'Malley Jr., editor, *ICIAM 91: Proceedings of the Second International Conference on Industrial and Applied Mathematics, 8–12 July, 1991*, pages 41–50, Philadelphia, 1992. SIAM, SIAM Press.

[21] Mladen Victor Wickerhauser. Computation with adapted time-frequency atoms. In Meyer and Roques [115], pages 175–184.

[22] Ronald R. Coifman, Yves Meyer, Stephen R. Quake, and Mladen Victor Wickerhauser. Signal processing and compression with wavelet packets. In Meyer and Roques [115], pages 77–93.

[23] Ronald R. Coifman and Mladen Victor Wickerhauser. Wavelets and adapted waveform analysis. In Benedetto and Frazier [116], pages 399–423.

[24] Frédéric Heurtaux, Fabrice Planchon, and Mladen Victor Wickerhauser. Scale decomposition in Burgers' equation. In Benedetto and Frazier [116], pages 505–523.

[25] Marie Farge, Eric Goirand, Yves Meyer, Frédéric Pascal, and Mladen Victor Wickerhauser. Improved predictability of two-dimensional turbulent flows using wavelet packet compression. *Fluid Dynamics Research*, 10:229–250, 1992.

[26] Mladen Victor Wickerhauser. Smooth localized orthonormal bases. *Comptes Rendus de l'Académie des Sciences de Paris*, 316:423–427, 1993.

[27] David Rochberg and Mladen Victor Wickerhauser. WPLab version 3.03 (for NeXT computers). Available by anonymous FTP from wuarchive.wustl.edu, 1992.

[28] He Ouyang and Mladen Victor Wickerhauser. WSQ – the FBI/Yale/Los Alamos [W]avelet-packet [S]calar [Q]uantization fingerprint compression algorithm, for Windows 3.1 or higher. Executable is available by anonymous FTP from wuarchive.wustl.edu, 8 September 1993.

[29] Ronald R. Coifman and Mladen Victor Wickerhauser. Wavelets and adapted waveform analysis: A toolkit for signal processing and numerical analysis. In Daubechies [117], pages 119–153. Minicourse lecture notes.

[30] Mladen Victor Wickerhauser. Best-adapted wavelet packet bases. In Daubechies [117], pages 155–171.

[31] Eva Wesfreid and Mladen Victor Wickerhauser. Adapted local trigonometric transform and speech processing. *IEEE Transactions on Signal Processing*, 41(12):3596–3600, December 1993.

[32] Christophe D'Alessandro, Xiang Fang, Eva Wesfreid, and Mladen Victor Wickerhauser. Speech signal segmentation via Malvar wavelets. In Meyer and Roques [115], pages 305–308.

[33] Eric Goirand, Mladen Victor Wickerhauser, and Marie Farge. A parallel two dimensional wavelet packet transform and its application to matrix-vector multiplication. In Rodolphe L. Motard and Babu Joseph, editors, *Wavelet Applications in Chemical Engineering*, pages 275–319. Kluwer Academic Publishers, Norwell, Massachusetts, 1994.

[34] Eva Wesfreid and Mladen Victor Wickerhauser. Traitement de la parole par ondelettes de Malvar. In J. P. Haton, editor, *Reconnaisance Automatique de la Parole*, Actes du Séminaire. CRIN/INRIA–Nancy, 10–11 March 1994.

[35] Mladen Victor Wickerhauser. Large-rank approximate principal component analysis with wavelets for signal feature discrimination and the inversion of complicated maps. *Journal of Chemical Information and Computer Science*, 34(5):1036–1046, September/October 1994.

[36] Mladen Victor Wickerhauser. Two fast approximate wavelet algorithms for image processing, classification, and recognition. *Optical Engineering*, 33(7):2225–2235, July 1994. Special issue on Adapted Wavelet Analysis.

[37] Ronald R. Coifman and Mladen Victor Wickerhauser. Adapted waveform analysis as a tool for modeling, feature extraction, and denoising. *Optical Engineering*, 33(7):2170–2174, July 1994. Special issue on Adapted Wavelet Analysis.

[38] Mladen Victor Wickerhauser. Wavelet approximations to Jacobians and the inversion of complicated maps. In Harold H. Szu, editor, *Wavelet Applications*, volume 2242 of *SPIE Proceedings*, pages 100–118, Orlando, Florida, 5–8 April 1994. SPIE.

[39] Mladen Victor Wickerhauser. An adapted waveform functional calculus. In Moody Chu, Robert Plemmons, David Brown, and Donald Ellison, editors, *Proceedings of the Cornelius Lanczos Centenary, Raleigh, North Carolina, 12–17 December 1993*, pages 418–421, Philadelphia, 1994. SIAM, SIAM Press.

[40] Mladen Victor Wickerhauser. *Adapted Wavelet Analysis from Theory to Software*. A K Peters, Ltd., Natick, Massachusetts, 1994.

[41] Mladen Victor Wickerhauser, Marie Farge, Eric Goirand, Eva Wesfreid, and Echeyde Cubillo. Efficiency comparison of wavelet packet and adapted local cosine bases for compression of a two-dimensional turbulent flow. In Chui et al. [118], pages 509–531.

[42] Mladen Victor Wickerhauser. Comparison of picture compression methods: Wavelet, wavelet packet, and local cosine transform coding. In Chui et al. [118], pages 585–621.

[43] Mladen Victor Wickerhauser. Time localization techniques for wavelet transforms. In Richard J. Mammone and J. David Murley Jr, editors, *Automatic Systems for the Identification and Inspection of Humans*, volume 2277 of *SPIE Proceedings*, page 18, San Diego, California, 24–29 July 1994. SPIE, SPIE.

[44] Ronald R. Coifman, Yves Meyer, Stephen R. Quake, and Mladen Victor Wickerhauser. Signal processing and compression with wavelet packets. In James S. Byrnes, Jennifer L. Byrnes, Kathryn A. Hargreaves, and Karl Berry, editors, *Wavelets and Their Applications*, volume 442 of *NATO ASI Series C: Mathematical and Physical Sciences*, pages 363–379. Kluwer Academic Publishers, Dordrecht/Boston/London, 1994. Proceedings of the NATO Advanced Study Institute at Il Ciocco, Barga, Italy in August, 1992.

[45] Mladen Victor Wickerhauser. Smooth localized orthonormal bases. In Alfred Z. Msezane and Katrina L. Barnum, editors, *Proceedings of the Sixth Annual Conference of the National Alliance of Research Centers of Excellence*, pages 160–173, Clark Atlanta University, Atlanta, Georgia 30314, 17–19 March 1994. The Center for Theoretical Studies of Physical Systems. Longer version of [26].

[46] Mladen Victor Wickerhauser. *AWA 3: Adapted Wavelet Analysis Library, version 3*. Fast Mathematical Algorithms and Hardware Corporation, Hamden, Connecticut, June 1995. Software Documentation.

[47] Mladen Victor Wickerhauser. Time localization techniques for wavelet transforms. *Croatica Chemica Acta*, 68(1):1–27, April 1995. Proceedings of the Ninth Dubrovnik International Course and Math-Chem-Comp 1994.

[48] Ronald R. Coifman and Mladen Victor Wickerhauser. Adapted waveform

"de-noising" for medical signals and images. *IEEE Engineering in Medicine and Biology*, 14(5):578–586, September/October 1995.

[49] Mladen Victor Wickerhauser. **Wavelets: Algorithms and Applications** by Yves Meyer. *SIAM Review*, 36(526–528):526–528, September 1994. Book review.

[50] Nikolaj Hess-Nielsen and Mladen Victor Wickerhauser. Wavelets and time-frequency analysis. *Proceedings of the IEEE*, 84(4):523–540, April 1996. Special issue on wavelet applications.

[51] Valerie Perrier and Mladen Victor Wickerhauser. Multiplication of short wavelet series using connection coefficients. In Ka-Sing Lau, editor, *Advances in Wavelets*, pages 77–101. Springer-Verlag, Singapore, 1999.

[52] Aurelija Trgo and Mladen Victor Wickerhauser. A relation between Shannon–Weaver entropy and "theoretical dimension" for classes of smooth functions. Preprint, Washington University, Saint Louis, Missouri, 1995.

[53] Ronald R. Coifman and Mladen Victor Wickerhauser. Experiments with adapted wavelet de-noising for medical signals and images. In Metin Akay, editor, *Time-Frequency and Wavelets in Biomedical Signal Processing*, pages 323–346. IEEE Press, Piscataway, New Jersey, 1998.

[54] Mladen Victor Wickerhauser, Marie Farge, and Eric Goirand. Theoretical dimension and the complexity of simulated turbulence. In Wolfgang Dahmen, Peter Oswald, and Andrew J. Kurdila, editors, *Multiscale Wavelet Methods for Partial Differential Equations*, volume 6 of *Wavelet Analysis and Applications*, pages 473–492. Academic Press, Boston, 1996.

[55] Mladen Victor Wickerhauser. *Adaptive Wavelet-Analysis, theorie und software.* Vieweg Verlag, Braunschweig/Wiesbaden, 12 December 1995. German translation of [40].

[56] Mladen Victor Wickerhauser. Custom wavelet packet image compression design. In Todor Cooklev, editor, *Proceedings of the 3rd International Workshop on Image and Signal Processing, Manchester, UK, 4-7 November 1996*, page 6, Manchester, UK, 1996. UMIST, UMIST.

[57] Ronald R. Coifman and Mladen Victor Wickerhauser. Wavelets, adapted waveforms, and de-noising. In Richard M. Dashieff and Diana J. Vincent, editors, *Continuous Wave-Form Analysis*, Electroencephalography and Clinical Neurophysiology, Supplement 45, pages 57–78. Elsevier, New York, 1 September 1996.

[58] Gregory Beylkin and Mladen Victor Wickerhauser. Multi-scale cross-correlation in wavelet coordinates. Preprint, Washington University, Saint Louis, Missouri, 21 January 1996.

[59] Hrvoje Šikić and Mladen Victor Wickerhauser. Information cost functions. *Applied and Computational Harmonic Analysis*, 11(2):147–166, September 2001.

[60] Mladen Victor Wickerhauser. Expected power spectra. Preprint, Isaac Newton Institute, Cambridge, England, November 1996.

[61] Mladen Victor Wickerhauser. Custom wavelet packet image compression for multimedia. In Mladen Kos, editor, *Tutorials of the Broadband and Multimedia Workshop, Zagreb, Croatia*, page 7, Zagreb, Croatia, 11–12 November 1996. FER, University of Zagreb.

[62] Anthony Vassiliou and Mladen Victor Wickerhauser. Comparison of wavelet image coding schemes for seismic data compression. In Akram Aldroubi, Andrew F. Laine, and Michael A. Unser, editors, *Wavelet Applications in Signal and Image Processing V*, volume 3169, page 9. SPIE, SPIE, 27 February 1997.

[63] Mladen Victor Wickerhauser. Wavelet transforms. In P. v. R. Schleyer, N. L. Allinger, T. Clark, J. Gasteiger, P. A.

Kollman, Henry F. Schaeffer III, and P. R. Schreiner, editors, *Encyclopedia of Computational Chemistry*, volume 5, pages 3214–3222. John Wiley & Sons, Limited, Chichester, England, 1998.

[64] Mladen Victor Wickerhauser. Designing a custom wavelet packet image compression scheme, with applications to fingerprints and seismic data. In Matthias Holschneider and Ginette Saracco, editors, *Perspectives in Mathematical Physics: Conference in honor of Alex Grossmann*, pages 152–156, Marseille-Luminy, France, July 1997. CFML, CRC Press.

[65] Mingqi Kong, Jean-Pierre Leduc, Bijoy K. Ghosh, Jonathan R. Corbett, and Mladen Victor Wickerhauser. Wavelet based analysis of rotational motion in digital image sequences. In *Proceedings of ICASSP-98, Seattle* [119], pages 2777–2780.

[66] Jean-Pierre Leduc, Jonathan R. Corbett, Mingqi Kong, Mladen Victor Wickerhauser, and Bijoy K. Ghosh. Accelerated spatio-temporal wavelet transforms: An iterative trajectory estimation. In *Proceedings of ICASSP-98, Seattle* [119], pages 2781–2784.

[67] Jean-Pierre Leduc, Jonathan R. Corbett, and Mladen Victor Wickerhauser. Rotational wavelet transforms for motion analysis estimation and tracking. In *Proceedings of the 1998 IEEE International Conference on Image Processing (ICIP-98), Chicago, Illinois, October 4-7, 1998* [120], pages 195–199.

[68] Mingqi Kong, Jean-Pierre Leduc, Bijoy K. Ghosh, and Mladen Victor Wickerhauser. Spatio-temporal continuous wavelet transforms for motion-based segmentation in real image sequences. In *Proceedings of the 1998 IEEE International Conference on Image Processing (ICIP-98), Chicago, Illinois, October 4-7, 1998* [120], pages 662–666.

[69] Eva Wesfreid, Mladen Victor Wickerhauser, and R. Bouguerra. Well adapted non dyadic local spectrum for some acoustic signals. In Bonami et al. [121], pages 223–225.

[70] Mladen Victor Wickerhauser. A primer on wavelet theory and its applications. In Bonami et al. [121], pages 53–66.

[71] Mladen Victor Wickerhauser. *Mathematics for Multimedia*. Birkhäuser/Springer, Boston, Massachusetts, November 2009.

[72] Eva Wesfreid and Mladen Victor Wickerhauser. Vocal command signal segmentation and phoneme classification. In Alberto A. Ochoa., editor, *Proceedings of the II Artificial Intelligence Symposium at CIMAF 99*. Institute of Cybernetics, Mathematics and Physics (ICIMAF), Habana, Cuba, 1999.

[73] Eva Wesfreid and Mladen Victor Wickerhauser. Frequency change function and acoustic signals. Preprint, Ibn Zohr University, Agadir, Morocco, May 2001. Proceedings of the First International Conference on Image and Signal Processing (ICISP 2001).

[74] Mladen Victor Wickerhauser. Basis and convergence properties of wavelet packets. In Donggao Deng, Daren Huang, Rong-Qing Jia, Wei Lin, and Jianzhong Wang, editors, *Proceedings of the International Conference on Wavelet Analysis and Applications, Guangzhou, China, November, 1999*, volume 25 of *AMS/IP Studies in Advanced Mathematics*, pages 279–287, Providence, Rhode Island, 2002. American Mathematical Society, International Press.

[75] Wojciech Kladiusz Czaja and Mladen Victor Wickerhauser. Singularity detection in images using dual local autocovariance. *Applied and Computational Harmonic Analysis*, 13(1):77–88, July 2002.

[76] Joseph O. Deasy, M. Victor Wickerhauser, and Mathieu Picard. Accelerating Monte Carlo simulations of radiation therapy dose distributions using wavelet threshold de-noising. *Medical Physics*, 29(10):2366–2373, 2002.

[77] Yuan Y. Tang, Mladen Victor Wickerhauser, Pong C. Yuen, and Chun Hung Li, editors. *Wavelet Analysis and Its Applications*, volume

2251 of *Lecture Notes in Computer Science*. Springer-Verlag, Berlin, 2001. Proceedings of the Second International Conference, WAA 2001, Hong Kong, China, December, 2001.

[78] Mladen Victor Wickerhauser. Progress in wavelet algorithms and applications. In Harold H. Szu, editor, *Wavelet and Independent Component Analysis Applications IX*, volume 4738 of *SPIE Proceedings*, pages 157–168, Orlando, Florida, 3–5 April 2002. SPIE.

[79] Mladen Victor Wickerhauser. Survey of wavelet algorithms and applications. SPIE Short Course Notes SC475, AeroSense 2002, Orlando, Florida, April 4 2002.

[80] Mladen Victor Wickerhauser. **Wavelets: Tools for Science & Technology**, by Stéphane Jaffard, Yves Meyer, and Robert D. Ryan. *SIAM Review*, 44(2):302–305, 2002. Book review.

[81] Mladen Victor Wickerhauser. Two introductions to wavelets. *American Mathematical Monthly*, 110(2):163–167, February 2003. Book review.

[82] Mladen Victor Wickerhauser. Advances in wavelet algorithms and applications. In Ding-Xuan Zhou, editor, *Wavelet Analysis: Twenty Years' Developments*, pages 289–310, Singapore, 2002. World Scientific Publishing. Proceedings of the International Conference on Computational Harmonic Analysis, City University of Hong Kong, 4–8 June, 2001.

[83] Mladen Victor Wickerhauser. Some problems related to wavelet packet bases and convergence. *Arabian Journal of Science and Engineering*, 28(1C):45–58, June 2003.

[84] Anthony J. Bell, Mladen V. Wickerhauser, and Harold H. Szu, editors. *Independent Component Analyses, Wavelets and Neural Networks*, volume 5102 of *SPIE Proceedings*, Orlando, Florida, 22–25 April 2003. SPIE.

[85] Peter Fogh Odgaard and Mladen Victor Wickerhauser. Time localisation of surface defects on optical discs. In *Proceedings of the IEEE Joint CCA, ISIC and CACSD*, volume 1, pages 111–116, Taipei, Taiwan, 2–4 September 2004.

[86] Peter Fogh Odgaard and Mladen Victor Wickerhauser. Discrimination between different kinds of surface defects on compact discs. In *Proceedings of IECON 2004, 30th Annual Conference*, pages 1951–1956, Busan, Korea, 2004.

[87] Mladen Victor Wickerhauser. Introduction to Section IX: Selected applications. In Christopher Heil and David Walnut, editors, *Fundamental Papers in Wavelet Theory*, pages 733–740. Princeton University Press, Princeton, New Jersey, July 2006.

[88] Harold H. Szu, Mladen V. Wickerhauser, Barak A. Pearlmutter, and Wim Sweldens, editors. *Independent Component Analyses, Wavelets, Smart Sensors, and Neural Networks II*, volume 5439 of *SPIE Proceedings*, Orlando, Florida, 14–15 April 2004. SPIE.

[89] Mladen Victor Wickerhauser and Wojciech Czaja. A simple nonlinear filter for edge detection in images. In Szu et al. [88], pages 24–31.

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