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Education		
	D.Sc. in Electrical Engineering, *Washington University, St Louis*	08/1987–05/1990
	M.Sc. in Electrical Engineering, *Washington University, St Louis*	08/1985–05/1986
	Ingénieur Civil Electricien, *Faculté Polytechnique de Mons, Belgium*	09/1979–07/1984

Professional Experience

	Professor of ECE and Statistics, *University of Illinois*, Urbana, IL	08/2003–present
	Associate Professor, *University of Illinois*, Urbana, IL	08/1999–08/2003
	Assistant Professor, *University of Illinois*, Urbana, IL	01/1996–08/1999
	Research Scientist, *Bell Communications Research*, Morristown, NJ	10/1990–12/1995
	Research Assistant, *Washington University*, St Louis, MO	10/1987–05/1990
	Research Engineer, *Faculté Polytechnique de Mons, Belgium*	10/1984–06/1985
	Summer Intern, *Standard Telecommunications Laboratories Ltd.*, U.K.	07/1983–08/1983

Other Professional Activities

Editorial Board member for *Proceedings of IEEE*, 2007-2012

Co-Founder and Editor in Chief for *IEEE Transactions on Information Forensics and Security*, 2005-2008

Area Editor for *IEEE Transactions on Image Processing*, 2002-2006.

Guest Editor for *IEEE Transactions on Signal Processing* supplements on secure media, 2004-2005.

Guest Associate Editor for *IEEE Transactions on Signal Processing*'s special issue on Data Hiding, Apr. 2003.

Guest Associate Editor for *IEEE Transactions on Information Theory*'s special issue on Information-theoretic imaging, Aug. 2000

Associate Editor for *IEEE Transactions on Image Processing*, 1999—2002

Associate Editor for *IEEE Transactions on Information Theory*, 1996—1998

Member, IEEE Image and Multidim. Signal Processing Technical Committee, 1998-2003

Member, Technical Program Committee of miscelleanous major IEEE conferences

Invited organizer, NSF Workshop on Signal Authentication, Orlando, FL, 2002.

Organizer, special sessions on watermarking at Allerton (10/01, 02, 03) and on information-theoretic imaging at Asilomar (11/02)

Invited lectures at MIT, Stanford, Berkeley, Carnegie-Mellon, Harvard, Illinois, Purdue, Michigan, UC San Diego, UC Santa Barbara, Maryland, National U. of Singapore, Nanyang Tech. U. (Singapore), Chinese U. Hong Kong, Hong Kong U. of Sci. and Tech., Academia Sinica, National Chiao Tung U. (Taiwan), Hong Kong Polytechnic, KAIST (Korea), INRIA Sophia-Antipolis (France), Delft (Netherlands), Louvain (Belgium), Tech. U. Munich (Germany), Bell Labs, IBM Research, Microsoft Research, KLA-Tencor, Qualcomm.

Keynote talks at Int. Workshop on Digital Watermarking (IWDW), Seoul, Korea, 2002; Int. Symp. on Image and Signal Processing and Analysis (ISPA), Rome, 2003; Wavila Challenge, Barcelona, Spain, 2005; IEEE Int. Conf. on Acoustics, Speech and Signal Processing (ICASSP), Toulouse, France, 2006; Workshop on Multimedia Content Representation, Classification and Security (MRCS), Istanbul, Turkey, 2006; 3rd Int. Conf. on

Intelligent Information Hiding and Multimedia Signal Processing (IIH-MSP), Kaohsiung, Taiwan, 2007; IEEE Int. Conf. on Image Processing (ICIP), Brussels, Belgium, 2011, EUROCON, Zagreb, Croatia, 2013; ICSIPA, Melaka, Malaysia, 2013.

Tutorial lecturer at ICIP'01, ICASSP'02, ICIP'04, and ISIT'06.

Co–Chair, IEEE Info Theory Workshop in Detection, Classif. & Imaging (Santa Fe, 2/99)

Member, *IEEE Int. Conf. on Image Processing* Organizing Committee (Chicago 1998; Technical Program Co-chair, Brussels 2011)

Reviewer and panelist for National Science Foundation, reviewer for IEEE Trans. on SP, IP, IT, COM, NN and JOSA, CVGIP, JVCIP, Addison–Wesley, IEEE Press, SIAM, and Annals of Statistics.

Consultant and expert witness

Founding Director of *Center for Information Forensics*, UIUC.

Honors and Awards

IEEE Signal Processing Society Distinguished Lecturer, 2012–2013
UIUC Sony Faculty Scholar, 2005—2007
IEEE Signal Processing Society Board of Governors, 2005—2007
IEEE Fellow, 2003
Beckman Associate in UIUC Center for Advanced Study, 2003
Co-author, IEEE Signal Processing Society 2002 Young Author Best Paper Award
IEEE Signal Processing Society 1997 Best Paper Award
NSF Career award, 1998-2001
UIUC Incomplete List of Teachers Rated as Excellent, 1996, 1999, 2000, 2005, 2007, 2009, 2011, 2012
Rotary International Scholar, 1985-1986
A. Dosin Award Recipient, 1984
Co-winner 1989 US Amateur Team Chess Championship

Journal Papers (in print or accepted)

H. Yu and P. Moulin, "Regularized Adaboost Learning for Identification of Time-Varying Content," to appear in *IEEE Trans. Information Forensics and Security*, 2014.

Y.-W. Huang and P. Moulin, "On the Fingerprinting Capacity Games for Arbitrary Alphabets and Their Asymptotics," to appear in *IEEE Trans. Information Forensics and Security*, 2014.

B. Ni, P. Moulin and S. Yan, "Pose Adaptive Motion Feature Pooling for Human Action Analysis," to appear in *International Journal on Computer Vision* (IJCV), July 2014.

J. Lu, G. Wang and P. Moulin, "Human Identity and Gender Recognition from Gait Sequences with Arbitrary Walking Directions," *IEEE Trans. on Information Forensics and Security*, Vol. 9, No. 1, pp. 41—51, 2014.

B. Ni, Y. Pei, S. Yan, and P. Moulin, "Multi-Level Depth and Image Fusion for Human Activity Detection," *IEEE Transactions on System, Man and Cybernetics*, Part B (T-SMC-B), Vol. 43, No. 5, pp.1383—1394, 2012.

Y.-W. Huang and P. Moulin, "On the Saddle-point Solution and the Large-Coalition Behavior of Fingerprinting Games," *IEEE Trans. on Information Forensics and Security*, Vol. 7, No. 1, pp. 160—175, 2012.

S. Sadasivam, P. Moulin and T. P. Coleman, "A Message Passing Approach to Combating Desynchronization Attacks," *IEEE Trans. on Information Forensics and Security*, Vol. 6, pp. 894–905, 2011.

J.-F. Jourdas and P. Moulin, "High-Rate Random-Like Fingerprinting Codes with Linear Decoding Complexity," *IEEE Transactions on Information Forensics and Security*, Vol. 4, No. 4, Dec. 2009.

N. Kiyavash, P. Moulin and T. Kalker, "Regular Simplex Fingerprints and Their Optimality Properties," *IEEE Transactions on Information Forensics and Security*, Vol. 4, No. 3, pp. 318—329, Sep. 2009.

N. Kiyavash and P. Moulin, "Performance of Orthogonal Fingerprints Under Worst-Case Noise Attacks," *IEEE Transactions on Information Forensics and Security*, Vol. 4, No. 3, pp. 293—301, Sep. 2009.

M. El Choubassi and P. Moulin, "On Reliability and Security of Randomized Detectors Against Sensitivity Analysis Attacks," *IEEE Trans. Information Forensics and Security*, Vol. 4, No. 3, pp. 273—283, Sep. 2009.

S. Sadasivam and P. Moulin, "On Estimation Accuracy of Desynchronization Attack Channel Parameters," *IEEE Transactions on Information Forensics and Security*, Vol. 4, No. 3, pp. 284—292, Sep. 2009.

P. Moulin, "A Neyman-Pearson Approach to Universal Erasure and List Decoding," *IEEE Trans. Information Theory*, Oct. 2009.

Y. Wang and P. Moulin, "Perfectly Secure Steganography: Capacity, Error Exponents, and Code Constructions," *IEEE Transactions on Information Theory*, Special Issue on Security, Vol. 54, No. 6, pp. 2706—2722, June 2008.

M. El Choubassi and P. Moulin, "Noniterative Algorithms for Sensitivity Analysis Attacks," *IEEE Trans. Information Forensics and Security*, Vol. 2, No.3, pp. 113—126, June

2007.

P. Moulin and Y. Wang, "Capacity and Random-Coding Exponents for Channel Coding with Side Information," *IEEE Trans. on Information Theory*, Vol. 53, No. 4, pp. 1326—1347, Apr. 2007.

Y. Wang and P. Moulin, "Optimized Feature Extraction for Learning-Based Image Steganalysis," *IEEE Trans. Information Forensics and Security*, Vol. 2, No. 1, pp. 31—45, March 2007.

P. Moulin, "Signal Transmission with Known-Interference Cancellation," *IEEE Signal Processing Magazine*, Lecture Notes, Vol. 24, No. 1, pp. 134—136, Jan. 2007.

J. C. Ye, P. Moulin and Y. Bresler, "Asymptotic Global Confidence Regions for Parametric 3-D Shape Estimation," *IEEE Trans. Image Processing*, Vol. 15, No. 10, pp. 2904—2919, Oct. 2006.

P. Moulin and A. K. Goteti, "Block QIM Watermarking Games," *IEEE Trans. Information Forensics and Security*, Vol. 1, No. 3, pp. 293–310, Sep. 2006.

S. Jana and P. Moulin, "Optimality of KLT for Encoding Gaussian Vector-Scale Mixtures: Application to Reconstruction, Estimation and Classification," *IEEE Trans. on Information Theory*, Vol. 52, No. 9, pp. 4049—4067, Sep. 2006.

T. Liu, P. Moulin and R. Koetter, "On Error Exponents of Modulo Lattice Additive Noise Channels," *IEEE Trans. on Information Theory*, Vol. 52, No. 2, pp. 454-471, Feb. 2006.

P. Moulin and R. Koetter, "Data-Hiding Codes," invited tutorial paper, *Proc. IEEE*, Vol. 93, No. 12, pp. 2083–2127, Dec. 2005.

P. Ishwar and P. Moulin, "On the Existence and Characterization of the Maxent Distribution Under General Moment Inequality Constraints," *IEEE Trans. on Information Theory*, Vol. 51, No. 9, pp. 3322–3333, Sep. 2005.

J. L. Cannons and P. Moulin, "Design and Statistical Analysis of a Hash-Aided Image Watermarking System," *IEEE Trans. on Image Processing*, Vol. 13, No. 10, pp. 1393—1408, Oct. 2004.

P. Moulin and M. K. Mıhçak, "The Parallel-Gaussian Watermarking Game," *IEEE Trans. on Information Theory*, Vol. 50, No. 2, pp. 272-289, Feb. 2004.

P. Moulin, "Comments on "Why Watermarking is Nonsense," IEEE Signal Processing Magazine, Vol. 20, No. 6, pp. 57-59, Nov. 2003.

P. Moulin and A. Ivanović, "The Zero-Rate Spread-Spectrum Watermarking Game," *IEEE Transactions on Signal Processing*, Vol. 51, No. 4, pp. 1098-1117, Apr. 2003.

P. Moulin and J. A. O'Sullivan, "Information-Theoretic Analysis of Information Hiding," *IEEE Trans. on Information Theory*, Vol. 49, No. 3, pp. 563-593, March 2003.

P. Ishwar and P. Moulin, "On the Equivalence Between Set-Theoretic and Maxent MAP Estimation," *IEEE Trans. on Signal Processing*, Vol. 51, No. 3, pp. 698-713, March 2003.

J. C. Ye, Y. Bresler and P. Moulin, "Cramer-Rao Bounds for Parametric Shape Estimation in Inverse Problems," *IEEE Trans. on Image Processing*, Vol. 12, No. 1, pp. 71-84, Jan. 2003.

J. C. Ye, Y. Bresler and P. Moulin, "A Self-Referencing Level-Set Method for Image Reconstruction from Sparse Fourier Samples," invited paper, *Int. J. of Computer Vision*,

special issue on level-set methods, Dec. 2002.

P. Moulin and M. K. Mıhçak, "A Framework for Evaluating the Data-Hiding Capacity of Image Sources," *IEEE Trans. on Image Processing*, Vol. 11, No. 9, pp. 1029–1042, Sep. 2002.

A. Jain, P. Moulin, M. I. Miller and K. Ramchandran, "Information-Theoretic Bounds on Target Recognition Performance Based on Degraded Image Data," *IEEE Trans. on Pattern Analysis and Machine Intelligence*, Vol. 24, No. 9, pp. 1153—1166, Sep. 2002.

J. Liu and P. Moulin, "Information-Theoretic Analysis of Interscale and Intrascale Dependencies Between Image Wavelet Coefficients," *IEEE Trans. on Image Processing*, Vol. 10, No. 10, pp. 1647—1658, Nov. 2001.

P. Moulin, invited discussion of "Regularization of Wavelet Approximations," by A. Antoniadis and J. Fan, *Journal of the American Statistical Association*, Vol. 96, No. 455, pp. 959—960, Sep. 2001.

P. Moulin, "The Role of Information Theory in Watermarking and Its Application to Image Watermarking," invited paper, *Signal Processing*, Vol. 81, No. 6, pp. 1121—1139, June 2001.

J. Liu and P. Moulin, "Complexity-Regularized Image Denoising," *IEEE Trans. on Image Processing*, Vol. 10, No. 6, pp. 841—851, June 2001.

J. C. Ye, Y. Bresler and P. Moulin, "Cramer-Rao Bounds for Parametric Boundaries of Targets in Inverse Scattering Problems," *IEEE Trans. on Antennas and Propagation*, May 2001.

M. K. Mıhçak, P. Moulin, M. Anitescu, and K. Ramchandran, "Rate–Distortion–Optimal Subband Coding Without Perfect Reconstruction Constraints," *IEEE Trans. on Signal Processing*, Vol. 49, No. 3, pp. 542—557, Mar. 2001.

P. Ishwar and P. Moulin, "On Spatial Adaptation of Motion Field Smoothness in Video Coding," *IEEE Trans. Circ. Syst. Video Tech.*, Vol. 10, No. 6, pp. 980–989, Sep. 2000.

P. Moulin and J. Liu, "Statistical Imaging and Complexity Regularization," *IEEE Trans. on Information Theory*, Special issue on information-theoretic imaging, Vol. 46, No. 5, pp. 1762—1777, Aug. 2000.

J. C. Ye, Y. Bresler and P. Moulin, "Asymptotic Global Confidence Regions in Parametric Shape Estimation Problems," *IEEE Trans. on Information Theory*, Special issue on information-theoretic imaging, Vol. 46, No. 5, pp. 1881–1895, Aug. 2000.

P. Moulin, M. Anitescu, and K. Ramchandran, "Theory of Rate–Distortion–Optimal, Constrained Filter Banks — Application to FIR and IIR Biorthogonal Designs," *IEEE Trans. on Signal Processing*, Vol. 48, No. 4, pp. 1120–1132, April 2000.

M. K. Mıhçak, I. Kozintsev, K. Ramchandran and P. Moulin, "Low-Complexity Image Denoising Based on Statistical Modeling of Wavelet Coefficients," *IEEE Signal Processing Letters*, Vol. 6, No. 12, pp. 300—303, Dec. 1999.

R. Krishnamurthy, J. W. Woods and P. Moulin, "Frame Interpolation and Bidirectional Prediction of Video Using Compactly-Encoded Optical Flow Fields and Label Fields," *IEEE Trans. Circ. Syst. Video Tech.*, Vol. 9, No. 5, pp. 713—726, Aug. 1999.

P. Moulin and J. Liu, "Analysis of Multiresolution Image Denoising Schemes Using Generalized–Gaussian and Complexity Priors," *IEEE Trans. on Info. Theory*, Special Issue on Multi-

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