

**JAMES W. PITTON**  
**Senior Principal Engineer, Applied Physics Laboratory, University of Washington**  
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## **EDUCATION**

**Ph.D., Electrical Engineering**, University of Washington, March 1994.

- Dissertation title: *Computational and Biological Processing of Nonstationary Signals*.

**M.S.E., Electrical Engineering (Systems)**, University of Michigan, 1986.

**B.S.E., Electrical Engineering**, University of Michigan, 1985.

## **EXPERIENCE**

**Office of Naval Research Global, London, UK, 2007 – 2010.**

- Associate Director, Ocean and Undersea Science, primarily responsible for liaison with ONR Code 32 (Ocean Battlespace Sensing). Temporary position under Intergovernmental Personnel Act; returned to University of Washington after completion.
- Technical areas of responsibility include signal processing, acoustic communications, ocean acoustics, applied oceanography, autonomous undersea vehicles, sensors (acoustic, magnetic & optical), acoustic imagers, synthetic aperture sonar, and marine mammals.
- Foster exchange, establish and maintain collaborative research efforts between international researchers, US scientists and government representatives, especially ONR program officers.
- Organized “Workshop on Machine Intelligence for Autonomous Operations” jointly with UK Defence Science and Technology Laboratory (DSTL) and NATO Undersea Research Centre (NURC). See <http://geos2.nurc.nato.int/miw09/> for details.

**Applied Physics Laboratory, University of Washington, 1999 – present**

- Department Head of Environmental and Information Systems (2002-07), managing approximately 45 staff.
- Principal investigator for contracts investigating intelligent navigation of autonomous vehicles, signal processing for active and passive sonar, human perception and machine classification of active sonar echoes, automatic identification and blind demodulation of communications signals, and anti-jamming algorithms for GPS receivers.
- Affiliate faculty member with UW Department of Electrical Engineering.
- Member of Ph.D. and Master’s student advisory committees in Electrical Engineering; co-chaired Ph.D. committee of Scott Philips (Ph.D. awarded 2007).

**MathSoft, Research Department, Seattle, WA, 1996 –1999.**

- Principal Investigator on funded grants and contracts; responsibilities included identifying promising business prospects and directions, obtaining funding, conducting research and developing innovative algorithms, system design and software engineering, and overall project management.
- Project lead and chief engineer for signal processing and digital communications toolboxes in S+, and signal processing and wavelets extension packs in Mathcad.

**AT&T Bell Laboratories, Information Principles Lab., Speech Research Dept., Murray Hill, NJ, 1994-95.**

- Developed and implemented new front end methods of signal processing for automatic speech recognition systems that make use of recent advances in time-frequency analysis.

**Boeing Commercial Airplane Group, Manufacturing Research and Development, Advanced Sensors Lab, Auburn, WA, June - Sept. 1991.**

- Conducted experiments in manufacturing sensor signal processing, developed a method of automatically assessing tool state, and transferred university-developed signal processing technology to Boeing.

**The Analytic Sciences Corp., Signal Processing Division, Reston, VA, 1986 - 1989.**

- Modeled communications channel characteristics and noise statistics, evaluated the performance of various error-correction codes in the presence of noise, and implemented a voice-band modem using DSP processors.

**Cadillac Motor Car Co., Manufacturing Engineering Dept., Livonia, MI, 1983 - 1985.**

- Developed and implemented an electronics repair and tracking program, improving turnaround time and reducing expenditures by \$100,000; awarded 1983 Cadillac Manufacturing Cost Savings Award.

## PROFESSIONAL ACTIVITIES

- Organized 2009 Workshop on Machine Intelligence for Autonomous.
- Technical Program Committee, FUSION 2006: 9th International Conference on Information Fusion.
- Member, Multistatic Tracking Working Group, Society of Information Fusion.
- Organized and hosted 2006 ONR Joint Passive and Active Sonar Peer Review, 2005 ONR Passive Sonar Peer Review, and 2003 ONR Active Sonar Peer Review at APL-UW.
- Session Chair, 38th Asilomar Conference on Signals, Systems and Computers, 2004.
- Registration Chair for IEEE ICASSP'98, the flagship conference of the Signal Processing Society.
- Session Chair, IEEE International Symposium on Time-Frequency and Time-Scale Analysis, 1998.
- Reviewer for various archival journals and conferences.

## SELECTED PUBLICATIONS

- S. Wisdom, L. Atlas, and J. Pitton, "Extending coherence time for analysis of modulated random processes", *IEEE Proc. Int. Conf. Acoust., Speech and Sig. Proc.'14*, Florence, Italy, 2014.
- S. Wisdom, T. Powers, L. Atlas, and J. Pitton, "Enhancement of Noisy and Reverberant Speech for the 2014 Reverb Challenge", *Reverb Workshop*, Florence, Italy, 2014.
- Pitton, J., "Adaptive Multi-Taper Array Processing In Range-Bearing Space", *Proceedings of Meetings on Acoustics*, vol. 17, *11<sup>th</sup> European Conference on Underwater Acoustics*, 2-6 July 2012, Edinburgh, UK.
- Dadouchi, F., J. Pitton, C. Ioana and C. Gervaise, "Time-Frequency Tracking Using Multi-Window Local Phase Analysis," *IEEE Proc. Int. Conf. Acoust., Speech and Sig. Proc.'12*, Kyoto, Japan.
- Philips, S. and J. Pitton, "Similarity-Based Perceptual Feature Identification for Active Sonar Signal Classification", *Acoustics 2008*, Paris, France.
- Pitton, J. and W. Fox, "Incorporating Target Strength Into Environmentally-Adaptive Sonar Tracking", *IEEE Oceans '07 - Europe*, Aberdeen, 18-21 June 2007.
- Krout, D., J. Pitton and W. Fox, "Multi-static sonar tracking incorporating environmentally-adaptive SNR estimates", *IEEE Oceans '06*, Boston, 18-21 Sep. 2006.
- Pitton, J., A. Ganse, G. Anderson and D. Krout, "Distributed Environmental Inversion for Multi-Static Sonar Tracking," *9th Int. Conf. Information Fusion*, Florence (Italy), 10-13 July, 2006.
- Sukittanon, S., L. Atlas, and J. Pitton, "Modulation Scale Analysis for Content Identification," *IEEE Transactions on Signal Processing*, v. 52, n 10, pt.2, pp. 3023-35, Oct. 2004.
- Pitton, J., "The Statistics of Time-Frequency Analysis," *J. Franklin Institute*, v. 337, 379-388, 2000 (invited).
- Pitton, J., "Adapting Multitaper Spectrograms to Local Frequency Modulation," *Proceedings of the 10th IEEE Workshop on Statistical Signal and Array Processing*, pp. 108-112, 2000.
- Pitton J., "A Spectral Generating Theorem for Nonstationary Stochastic Signals," *SPIE Proceedings Advanced Signal Processing Algorithms, Architectures, and Implementation X*, v. 4116, 25-32, 2000.
- Pitton, J., "Positive time-frequency distributions via quadratic programming," *Multidimensional Systems and Signal Processing* (invited paper), vol. 9, no. 4, pp. 439-445, 1998.
- Pitton J., "Time-Frequency Spectrum Estimation: an Adaptive Multitaper Method," *Proc. IEEE-SP Int. Symp. on Time-Frequency and Time-Scale Analysis*, pp. 665-668, 1998.
- Pitton, J., "Nonstationary Spectrum Estimation and Time-Frequency Concentration," *ICASSP'98*, 2425-28.
- Pitton, J., "Linear and Quadratic Methods for Positive Time-Frequency Distributions," *IEEE Proc. Int. Conf. Acoust., Speech and Sig. Proc.'97*, vol. V, pp. 3649-3652.
- Pitton, J., K. Wang, and B. Juang, "Time-frequency analysis for auditory modeling for automatic recognition of speech," *Proc. IEEE*, v. 84, no. 9, pp. 1199-1215, 1996 (invited paper).
- Pitton J., L. Atlas, and P. Loughlin, "Applications of positive time-frequency distributions to speech processing," *IEEE Trans. Speech and Audio Processing*, vol. 2, no. 4, pp. 554-566, 1994.
- Loughlin P., J. Pitton and L. Atlas, "Construction of positive time-frequency distributions," *IEEE Trans. Sig. Proc.*, vol. 42, no. 10, pp. 2697-2705, 1994.