

# PETER WILLETT

## Contact

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## Career

PhD Princeton University, 1986.  
MA Princeton University, 1984.  
ME Princeton University, 1983.  
BASc University of Toronto, 1982.  
Assistant Professor at the University of Connecticut 1986-1993.  
Associate Professor 1993-1999.  
Professor since 1999.  
Fellow of IEEE, effective 2003.  
ECE Department Annual Outstanding Researcher, October 2001.  
Associate Editor for IEEE Transactions on Aerospace and Electronic Systems.  
Associate Editor for IEEE AES Magazine.  
Associate Editor for IEEE Transactions on Systems, Man, and Cybernetics.  
Member of IEEE SP Society's "Sensor Array and Multi-Channel" (SAM) technical committee.  
Program Committee Co-Chair, FUSION99 Conference.  
Program Committee Co-Chair, IEEE Systems, Man & Cybernetics Conference, 2003.  
Co-chair for "Remote Sensing" Track at 2001 & 2002 IEEE Aerospace Conferences.  
Co-organizer of "Diagnostics, Prognosis, and System Health Management" Conferences at SPIE Aerosense 2001 & 2002, Orlando.

## Courses Taught

ECE241 – Communication Systems (Undergraduate)  
ECE242 – Digital Communications and Networks (Undergraduate)  
ECE262 – Electronics Laboratory B (Undergraduate)  
ECE267 – Systems/Signal Processing Laboratory (Undergraduate)  
ECE300 – Neural Networks (Graduate)  
ECE314 – Information Theory (Graduate)  
ECE316 – Digital Signal Processing (Graduate)  
ECE317 – Adaptive Signal Processing (Graduate)  
ECE361 – Communication Theory (Graduate)  
ECE365 – Detection Theory (Graduate)  
ECE368 – Wireless Communications (Graduate)

## Research Interests

Peter Willett received his BAsC (Engineering Science) from the University of Toronto in 1982, and his PhD degree from Princeton University in 1986. He has been a faculty member at the University of Connecticut ever since, and since 1998 has been a Professor. He has published 55 journal articles (11 more under review), 152 conference papers, and 6 book chapters. He was granted IEEE Fellow status effective 2003.

His primary areas of research have been statistical signal processing, detection, machine learning, data fusion and tracking; but he has other interests in and have published in the areas of change/abnormality detection, optical pattern recognition, communications and industrial/security condition monitoring. Here is a summary of some of these.

### Estimation and Tracking.

- Investigation of interaction between radar detection and tracking: localization of multiple unresolved targets; quantification of monopulse accuracy for tracker; setting detection threshold with tracking in mind; waveform selection.
- Exploration of probabilistic multi-hypothesis tracker (PMHT). Novel tracking architecture for multiple targets with measurement-origin uncertainty based on EM algorithm, results in Kalman smoother on “synthetic” measurements.
- Cramer-Rao bounds for estimation and tracking with measurement-origin uncertainty.

### Detection.

- Description of multivariate non-Gaussian densities, applications to detection.
- Distributed detection: theoretical characterization of some quantized detection strategies; first comprehensive results for correlated Gaussian noise; censoring sensor idea.
- Miscellaneous theoretical and practical detection work: new LI-CFAR approach, robust stochastic signal detection.

### Burst Detection and Related Sequential Procedures.

- Power-law processor for transient signals.
- Page test: characterization of performance; use for detection of transients with unknown strength.
- Use of Page-like procedures for detection of gravitational waves.

### Industrial Applications.

- Detection of burn and/or wheel/workpiece contact in grinding.
- IMM-based prognostic algorithm for machine health.
- Development of fast diagnostic algorithms for machine-health systems.

### Communications

- Development of fast “PDA” algorithm for CDMA demodulation, both synchronous and asynchronous.
- Development of fast optimal branch-and-bound algorithm for synchronous CDMA.
- Development of group detector, coordinate-descent algorithms for synchronous CDMA.
- Information theoretic bounds for multi-user channels.

## Learning from Data.

- Development of Bayesian data reduction algorithm based on Dirichlet prior.
- Application of BDRA to unlabeled training data and missing features situations.

Peter Willett has taught more than 10 undergraduate and specialized graduate courses. He has supervised 7 Ph.D. students (with four more about to finish), who are holding academic and research positions at US universities and government research labs. He has also carried a reasonably heavy professional service load. He is currently serving as an Associate Editor for three major IEEE publications (IEEE Trans. AES, IEEE Trans. SMC and IEEE AES Magazine). He has organized and chaired the Remote Sensing Track (with 10-12 sessions) at the 2001 and 2002 IEEE Aerospace Conferences. He co-founded and has been co-chairing the Annual SPIE Conference Series (Orlando) on Diagnostics, Prognosis, and Health Management since 2001. He will serve as the Program Chair for the 2003 IEEE SMC Conference. He has, additionally, served as the Program Co-Chair for the 1999 Information Fusion Conference and is on technical committees for numerous conferences. He is also in his second term as a member of the IEEE Signal Processing Society's "Sensor Array & Multi-Channel" technical committee, and is their webmaster.

## Publications

### Journal Articles (in print or accepted)

1. T. Luginbuhl and P. Willett, "Estimating The Parameters Of General Frequency Modulated Signals", to appear in IEEE Transactions on Signal Processing.
2. P. Willett, D. Blair and Y. Bar-Shalom, "On the Correlation Between Horizontal and Vertical Monopulse Measurements", to appear in IEEE Transactions on Aerospace and Electronic Systems.
3. R. Lynch and P. Willett. "Use of Bayesian Data Reduction for Fusion of Legacy Classifiers", to appear in Information Fusion, (Elsevier Science).
4. S. Marano, V. Matta and P. Willett, "Sequential Detection of Almost-Harmonic Signals", to appear in IEEE Transactions on Signal Processing, February 2003.
5. Z. Wang and P. Willett, "Two Algorithms to Segment White Gaussian Data with Piecewise Constant Variances", to appear in IEEE Transactions on Signal Processing, February 2003.
6. S. Marano, P. Willett and V. Matta, "Sequential Testing of Sorted and Transformed Data as an Efficient Way to Implement Long GLRTs", to appear in IEEE Transactions on Signal Processing, February 2003.
7. D. Pham, J. Luo, K. Pattipati, P. Willett, "A PDA-Kalman Approach to Multiuser Detection in Asynchronous CDMA", IEEE Communications Letters, pp. 475-477, November 2002.
8. R. Lynch and P. Willett, "Bayesian Classification and Automatic Feature Reduction Using Uniform Dirichlet Priors", to appear in IEEE Transactions on Systems, Man, and Cybernetics, 2002.
9. P. Willett, Y. Ruan and R. Streit, "The PMHT: Its Problems and Some Solutions", IEEE Transactions on Aerospace and Electronic Systems, pp. 738-754, July 2002.
10. J. Luo, K. Pattipati, P. Willett and G. Levchuk, "Optimal Grouping Algorithm for a Group Decision Feedback Detector in Synchronous Code-Division Multiple-Access Communications", to appear in IEEE Transactions on Communications, 2002.
11. R. Niu, P. Willett and Y. Bar-Shalom, "Tracking Considerations in Selection of Radar Waveform Given Range and Range-Rate Measurements", IEEE Transactions on Aerospace and Electronic Systems, Vol. 38, No. 2, pp. 467-487, April 2002.
12. Y. Sun and P. Willett, "The Hough Transform for Long Chirp Detection", IEEE Transactions on Aerospace and Electronic Systems, Vol. 38, No. 2, pp. 553-569, April 2002.
13. D. Abraham and P. Willett, "Active Signal Detection in Shallow Water Using Page's Test", IEEE Journal of Oceanic Engineering, Vol. 27, No. 1, pp. 35-46, January 2002.
14. Z. Wang, P. Willett and R. Streit, "Detection of Long-Duration Narrowband Processes", IEEE Transactions on Aerospace and Electronic Systems, Vol. 38, No. 1, pp. 211-227, January 2002.
15. Z. Wang and P. Willett, "All-Purpose and Plug-In Power-Law Detectors for Transient Signals", IEEE Transactions on Signal Processing, pp. 2454-2466, November 2001.

16. J. Luo, K. Pattipati, P. Willett and F. Hasegawa, "Near Optimal Multiuser Detection in Synchronous CDMA using Probabilistic Data Association", *IEEE Communications Letters*, Vol. 5, No. 9, pp. 361-364, September 2001.
17. R. Niu, P. Willett and Y. Bar-Shalom, "Matrix CRLB Scaling Due to Measurements of Uncertain Origin", *IEEE Transactions on Signal Processing*, pp. 1325-1335, July 2001.
18. B. Chen and P. Willett, "Superimposed HMM Transient Detection via Target Tracking Ideas", *IEEE Transactions on Aerospace and Electronic Systems*, pp. 946-956, July 2001.
19. P. Willett, R. Niu, and Y. Bar-Shalom, "Integration of Bayes Detection with Target Tracking", *IEEE Transactions on Signal Processing*, pp. 17-30, January 2001.
20. Z. Wang, P. Willett, P. DeAguiar and J. Webster, "Neural Network Detection of Grinding Burn from Acoustic Emission" *International Journal of Machine Tools and Manufacture*, Vol. 41, pp. 283-309, 2001.
21. P. Willett, P. Swaszek, and R. Blum, "The Good, Bad, and Ugly: Distributed Detection of a Known Signal in Dependent Gaussian Noise", *IEEE Transactions on Signal Processing*, pp. 3266-3280, December 2000.
22. B. Chen and P. Willett, "Detection of Hidden Markov Model Transient Signals", *IEEE Transactions on Aerospace and Electronic Systems*, Vol. 36-4, pp. 1253-1268, December 2000.
23. Z. Wang and P. Willett, "A Performance Study of Some Transient Detectors", *IEEE Transactions on Signal Processing*, Vol. 48-9, pp. 2682-2686, September 2000.
24. B. Chen and P. Willett, "The Theoretical Bandwidth Advantage of CDMA over FDMA in a Gaussian MAC", *IEEE Transactions on Information Theory*, Vol. 45-6, pp. 2046-2053, September 1999.
25. C. Han, P. Willett, and D. Abraham, "Some Methods to Evaluate the Performance of Page's Test as used to Detect Transient Signals", *IEEE Transactions on Signal Processing*, pp. 2112-2127, August 1999.
26. R. Lynch and P. Willett, "Bayesian Classification Using Mislabeled Training Data and a Noninformative Prior", *Journal of the Franklin Institute*, pp. 809-819, July 1999.
27. Z. Wang, P. Willett, J. Webster, and P. DeAguiar, "Improved Wheel/Workpiece Contact Detection During Grinding via AE", *Abrasives Magazine*, pp. 7-13, June/July, 1999.
28. R. Streit and P. Willett, "Detection of Short-Duration Signals via Hyperparameter Estimation", *IEEE Transactions on Signal Processing*, pp. 1823-1834, July 1999.
29. C. Rago, P. Willett, and M. Alford, "Pre-Detection Fusion: Resolution Cell Grid Effects", *IEEE Transactions on Aerospace and Electronic Systems*, Vol. 35, No. 3, pp. 778-789, July 1999.
30. R. Lynch and P. Willett, "Performance Considerations for a Combined Information Classification Test Using Dirichlet Priors", *IEEE Transactions on Signal Processing*, pp. 1711-1714, June 1999.
31. D. Warren and P. Willett, "Optimum Quantization for Detector Fusion: Some Proofs, Examples, and Pathology", *Journal of the Franklin Institute*, No. 336, pp. 323-359, 1999.

32. A. Barthelemy and P. Willett, "Kronecker Autoregressive and Spherical Harmonic Ambient Noise Models", *Journal of the Acoustical Society of America*, Vol. 105, No. 3, pp. 1618-1629, March, 1999.
33. P. Willett and B. Chen "Robust Detection of Small Stochastic Signals", *IEEE Transactions on Aerospace and Electronic Systems*, pp. 15-30, January 1999.
34. C. Rago, P. Willett, and Y. Bar-Shalom, "Detection-Tracking Performance with Combined FM-CW Waveforms", *IEEE Transactions on Aerospace and Electronic Systems*, pp. 612-624, April 1998.
35. P. Willett, B. Javidi, and M. Lops, "Analysis of Image Detection Based on Fourier-Plane Nonlinear Filters", *Applied Optics*, pp. 1329-1341, vol 37, March 10, 1998.
36. C. Han, P. Willett, B. Chen, and D. Abraham, "A Detection Optimal Min-Max Test for Transient Signals", *IEEE Transactions on Information Theory*, pp. 866-869, March 1998.
37. A. Barthelemy and P. Willett, "Volumetric Array Prewhitening", *IEEE Transactions on Signal Processing*, pp. 281-293, February 1998.
38. A. Mathur and P. Willett, "Local SNR Considerations in Decentralized CFAR Detection", *IEEE Transactions on Aerospace and Electronic Systems*, Vol. 34-1, pp. 13-22, January 1998.
39. R. Stahl and P. Willett, "Quickest Detection of a Tonal Burst", *IEEE Transactions on Signal Processing*, pp. 2037-2047, August 1997.
40. P. Willett and P. Swaszek, "A Fact About the Logistic Density", *IEEE Transactions on Information Theory*, pp. 1280-1281, July 1997.
41. A. Fazlollahi, B. Javidi, and P. Willett, "A Minimum-Error-Probability Receiver for Detecting a Noisy Target in Colored Background Noise", *Journal of the Optical Society of America*, April 1997.
42. Z. Du, P. Willett, and M. Mashikian, "Performance Limits of Partial Discharge Location Estimation Based on Time-Domain Reflectometry", *IEEE Transaction on Dielectrics and Electrical Insulation*, April 1997, pp. 182-188.
43. C. Rago, P. Willett, and Y. Bar-Shalom, "Censoring Sensors: A Low Communication Rate Scheme for Distributed Detection", *IEEE Transactions on Aerospace and Electronic Systems*, Vol. 32-2, pp. 554-568, April 1996.
44. P. Willett and P. Swaszek, "The Performance Degradation from One-Bit Quantized Detection", *IEEE Transactions on Information Theory*, pp. 1997-2002, November 1995.
45. P. Willett and B. Javidi, "Approximate Performance of the Nonlinear Joint Transform Correlator in Signal-Like Noise", *Applied Optics*, August 1995.
46. B. Javidi, A. Fazlollahi, P. Willett, and P. Refrigier, "Performance of an Optimum Receiver Designed for Pattern Recognition with Non-Overlapping Target and Scene Noise", *Applied Optics*, July 1995.
47. P. Swaszek and P. Willett, "Parley as an Approach to Distributed Detection", *IEEE Transactions on Aerospace and Electronic Systems*, pp. 447-457, January 1995.

48. P. Willett, M. Alford, and V. Vannicola, "The Case for Like-Sensor Pre-Detection Fusion", IEEE Transactions on Aerospace and Electronic Systems, pp. 986-1000, October 1994.
49. Wei-Ping Wang and Peter Willett, "Constrained Selective Communication in Real-Time Information Systems", Journal of Information and Decision Technologies, March 1994.
50. M. Lops and P. Willett, "LI-CFAR: A Robust and Flexible Alternative", IEEE Transactions on Aerospace and Electronic Systems, January 1994.
51. B. Javidi, P. Refrigier, and P. Willett, "Design of an Optimum Receiver for Pattern Recognition with Disjoint Signal and Scene Noise", Optics Letters, October 1993.
52. P. Willett and D. Warren, "The Suboptimality of Randomized Tests in Quantized Detection Systems", IEEE Transactions on Information Theory, March 1992.
53. P. Willett and J. Thomas, "Robust Signal Selection for the Matched Filter", IEEE Transactions on Signal Processing, pp. 2559-2563, November 1991.
54. P. Willett and J. Thomas, "On Gaussian-Like Densities of Order Greater Than Two", Journal of the Franklin Institute, October 1987.
55. P. Willett and J. Thomas, "Mixture Models for Underwater Burst Noise and their Relationship to a Simple Bivariate Density Representation", IEEE Journal of Oceanic Engineering (Invited Paper), January 1987.

## Journal Articles (submitted)

1. Z. Wang and P. Willett, "Joint Segmentation And Classification of Time Series Using Class-Specific Features", submitted to IEEE Transactions on Systems, Man & Cybernetics, Part B, November 2002.
2. J. Luo, K. Pattipati, P. Willett, "A PDA Multiuser Detector for Synchronous Overloaded CDMA Systems", submitted to IEEE Communications Letters, July 2002.
3. X. Zhang, P. Willett and Y. Bar-Shalom, "Uniform Versus Nonuniform Sampling When Tracking in Clutter", submitted to IEEE Transactions on Aerospace and Electronic Systems, June 2002.
4. Y. Ruan and P. Willett, "The Turbo PMHT", submitted to IEEE Transactions on Aerospace and Electronic Systems, June 2002.
5. J. Luo, K. Pattipati and P. Willett, "A Sliding Window PDA for Asynchronous CDMA, and a Proposal for Deliberate Asynchronicity", submitted to IEEE Transactions on Communications, June 2002.
6. Y. Ruan and P. Willett, "The Multiple Model PMHT and its Application to the Second Benchmark Radar Tracking Problem", submitted to IEEE Transactions on Aerospace and Electronic Systems, March 2002.
7. F. Hasegawa, J. Luo, K. Pattipati and P. Willett, "Speed and Accuracy Comparison of Techniques for Multi-user Detection in Synchronous CDMA", submitted to IEEE Transactions on Communications, March 2002.
8. Z. Wang and P. Willett, "An Variable Threshold Page Procedure for Detection of Transient Signals", submitted to IEEE Transactions on Signal Processing, February 2002.
9. X. Zhang, P. Willett and Y. Bar-Shalom, "A Dynamic Cramer-Rao Lower Bound for Target Tracking in Clutter", submitted to IEEE Transactions on Aerospace and Electronic Systems, February 2002.
10. J. Luo, K. Pattipati, P. Willett and F. Hasegawa, "Optimal User Ordering and Time Labeling for Decision Feedback Detection in Asynchronous CDMA", submitted to IEEE Transactions on Communications, December 2001.
11. J. Luo, K. Pattipati, P. Willett and G. Levchuk, "Fast Optimal and Sub-Optimal Any-Time Algorithms for CWMA Multiuser Detection Based on Branch and Bound", submitted to IEEE Transactions on Communications, August 2000.

## Conference Proceedings

1. X. Zhang, Y. Bar-Shalom and P. Willett, "Target Intervisibility", submitted to the 2003 SPIE Aerosense Conference on Signal and Data Processing of Small Targets, July 2003.
2. P. Willett and J. Bishop, "Tracking Targets Using Matched Field Observations", submitted to the 2003 SPIE Aerosense Conference on Signal and Data Processing of Small Targets, July 2003.
3. X. Zhang, P. Willett and Y. Bar-Shalom, "Monopulse Radar Detection and Localization of Multiple Targets via Joint Multiple-Bin Processing", to appear in the Proceedings of the IEEE Radar Conference, May 2003.
4. Z. Wang and P. Willett, "The VTP Test for Transients of Equal Detectability", submitted to ICASSP 2003, October 2003.
5. R. Lynch and P. Willett, "Adaptive Classification by Maximizing Class Separability with Respect to the Unlabeled Data", to appear in the Proceedings of the 2003 SPIE Aerosense Conference on System Diagnosis and Prognosis: Security and Condition Monitoring Issues, April 2003.
6. C. Raghavendra, T. Kirubarajan and P. Willett, "Real-Time System Diagnosis with Sensors of Uncertain Quality", to appear in the Proceedings of the 2003 SPIE Aerosense Conference on System Diagnosis and Prognosis: Security and Condition Monitoring Issues, April 2003.
7. J. Luo, L. Qiao, F. Tu, K. Pattipati and P. Willett, "Intelligent Model-based Diagnostics for Vehicle Health Management", to appear in the Proceedings of the 2003 SPIE Aerosense Conference on System Diagnosis and Prognosis: Security and Condition Monitoring Issues, April 2003.
8. R. Lynch and P. Willett, "Bayesian Classification Results Using Data Containing Missing Class Labels", to appear in the Proceedings of the IEEE Aerospace Conference, Big Sky MT, March 2003.
9. Y. Ruan, P. Willett and A. Marrs, "Fusion of Quantized Measurements via Particle Filtering", to appear in the Proceedings of the IEEE Aerospace Conference, Big Sky MT, March 2003.
10. Z. Wang, P. Willett and P. Baggenstoss, "Class-Specific Segmentation of Time Series", to appear in the Proceedings of the IEEE Aerospace Conference, Big Sky MT, March 2003.
11. J. Luo, K. Pattipati, P. Willett and L. Brunel, "Branch-and-Bound-Based Fast Optimal Algorithm for Multiser Detection in Synchronous CDMA", to appear in the Proceedings of the IEEE International Communications Conference, Anchorage AK, May 2003.
12. X. Zhang, P. Willett and Y. Bar-Shalom, "The Cramer-Rao Bound for Dynamic Target Tracking With Measurement Origin Uncertainty", to appear in the Proceedings of the Conference on Decision and Control, Las Vegas NV, December, 2002.
13. R. Lynch, T. Tran, J. Fay and P. Willett, "Improved Target Detection Performance Using Multiple Waveform Fusion", Proceedings of the 2002 Undersea Defense Technology European Conference, La Spezia, Italy, June 2002.

14. M. Efe, Y. Ruan and P. Willett, "The Pedestrian PMHT", Proceedings of the 2002 International Conference on Information Fusion, Annapolis MD, July 2002.
15. Y. Sun, P. Willett and R. Lynch, "Waveform Fusion for Sonar Detection and Estimation", Proceedings of ICASSP 2002, Orlando FL, May 2002.
16. J. Luo, K. Pattipati, P. Willett and F. Hasegawa, "Optimal User Ordering and Time Labeling for Decision Feedback Detection in Asynchronous CDMA", Proceedings of ICASSP 2002, Orlando FL, May 2002.
17. Z. Wang and P. Willett, "Fast and Accurate Variance-Segmentation of White Gaussian Data", Proceedings of ICASSP 2002, Orlando FL, May 2002.
18. Z. Wang, P. Willett, W.D. Blair and Y. Bar-Shalom, "High-Resolution Radar Ranging for Multiple Targets", Proceedings of the 2002 SPIE Aerosense Conference on Signal and Data Processing of Small Targets, April 2002.
19. R. Lynch and P. Willett, "Classification Performance Results of Various Medical Diagnostic Data Sets", Proceedings of the 2002 SPIE Aerosense Conference on Sensor Fusion, April 2002.
20. E. Phelps, T. Kirubarajan and P. Willett, "Useful-Lifetime Tracking via the IMM", 2002 SPIE Aerosense Conference on Component and Systems Diagnostics, Prognostics, and Health Management, April 2002.
21. R. Lynch and P. Willett, "Adaptive Sequential Bayesian Classification Using Pages Test", 2002 SPIE Aerosense Conference on Component and Systems Diagnostics, Prognostics, and Health Management, April 2002.
22. J. Luo, K. Pattipati, P. Willett and F. Hasegawa, "Multiuser Detection in Asynchronous CDMA using PDA", Proceedings of the Conference on Information Sciences and Systems, March 2002.
23. X. Zhang, P. Willett and Y. Bar-Shalom, "Aspects of Measurement Scheduling for Tracking", Proceedings of the 2002 Aerospace Conference, Big Sky MT, March 2002.
24. F. Hasegawa, J. Luo, K. Pattipati and P. Willett, "Speed and Accuracy Comparison of Techniques to Solve a Binary Quadratic Programming Problem with Applications to Synchronous CDMA", Proceedings of the Conference on Decision and Control, Orlando FL, December 2001.
25. Y. Sun and P. Willett, "The Hough Transform for Long Chirp Detection", Proceedings of the Conference on Decision and Control, Orlando FL, December 2001.
26. J. Luo, K. Pattipati and P. Willett, "Optimal Grouping and User Ordering for Sequential Group Detection in Synchronous CDMA", Proceedings of Globecom, November 2001.
27. J. Luo, K. Pattipati and P. Willett, "A PDA Approach to CDMA Multi-User Detection", Proceedings of Globecom, November 2001.
28. E. Jordan, M. Gell, W. Xie, F. Tu, K. Pattipati and P. Willett, "Prediction of Remaining Life Time Based on Measurements of Stress for Thermal Barrier Coating", Proceedings of the ASME International Mechanical Engineering Conference and Exposition, New York City NY, November 2001.

29. F. Hasegawa, J. Luo, K. Pattipati and P. Willett, "Performance of Various Methods for the Solution of Binary Quadratic Programming Problems", Proceedings of the IEEE Conference on Systems, Man and Cybernetics, Tucson AZ, October 2001.
30. J. Luo, K. Pattipati and P. Willett, "A Sub-Optimal Soft Decision PDA Method for Binary Quadratic Programming", Proceedings of the IEEE Conference on Systems, Man and Cybernetics, Tucson AZ, October 2001.
31. R. Lynch and P. Willett, "Classification Performance Results of Various Real-Life Data Sets when the Features are Discretized", Proceedings of the IEEE Conference on Systems, Man and Cybernetics, Tucson AZ, October 2001.
32. T. Luginbuhl, Y. Sun and P. Willett, "A Track Management System for the PMHT", Proceedings of the 2001 Conference on Data Fusion, Montreal Canada, August 2001.
33. X. Zhang, P. Willett and Y. Bar-Shalom, "Waveform Effects on Tracking with Conventional Processing", Proceedings of the 2001 SPIE Annual Conference on Signal and Data Processing of Small Targets, Vol. 4473, pp. 130-141, August 2001.
34. Y. Ruan and P. Willett, "Maneuvering PMHTs", Proceedings of the 2001 SPIE Annual Conference on Signal and Data Processing of Small Targets, Vol. 4473, pp. 186-197, August 2001.
35. J. Luo, K. Pattipati, P. Willett and J. Luo, "Fast Optimal and Suboptimal Any-Time Algorithms for CWMA Multiuser Detection Based on Branch and Bound", Proceedings of the International Symposium on Information Theory, Washington DC, June 2001.
36. Z. Wang and P. Willett, "Improved Power Law Detection of Transients", Proceedings of ICASSP 2001, Salt Lake City UT, May 2001.
37. Z. Wang, P. Willett and R. Streit, "Wavelets in the Frequency Domain for Narrowband Process Detection", Proceedings of ICASSP 2001, Salt Lake City UT, May 2001.
38. R. Niu, P. Willett, and Y. Bar-Shalom, "Selection of the Radar Waveform from Tracking Considerations", Proceedings of the 2001 IEEE Radar Conference, Atlanta GA, May 2001.
39. F. Wen, P. Willett and S. Deb, "Analysis of the Westland Dataset", Proceedings of the 2001 SPIE Aerosense Conference on Component and Systems Diagnostics, Prognostics, and Health Management, Orlando FL, April 2001.
40. F. Tu, F. Wen, P. Willett and K. Pattipati, "Signal Processing and Neural Network Toolbox and Its Application to Fault Detection and Isolation", Proceedings of the 2001 on Component and Systems Diagnostics, Prognostics, and Health Management Aerosense Conference, Orlando FL, April 2001.
41. R. Lynch and P. Willett, "Utilizing a Class Labeling Feature in an Adaptive Bayesian Classification", Proceedings of the 2001 SPIE Aerosense Conference on Signal Processing, Sensor Fusion and Target Recognition, Orlando FL, April 2001.
42. E. Phelps, T. Kirubarajan and P. Willett, "Statistical Approaches to Prognostics", Proceedings of the 2001 SPIE Aerosense Conference on Component and Systems Diagnostics, Prognostics, and Health Management, Orlando FL, April 2001.

43. A. Mathur, K. Cavanaugh, P. Willett, T. Galie and K. Pattipati, "Reasoning and Modeling Systems in Diagnosis and Prognosis", Proceedings of the 2001 SPIE Aerosense Conference on Component and Systems Diagnostics, Prognostics, and Health Management, Orlando FL, April 2001.
44. B. Chen and P. Willett, "Large Sample Analysis of the MVD Statistic for Testing an Exponential Null Against a Gamma Alternative" Proceedings of the Conference on Information Sciences and Systems, Baltimore MD, March 2001.
45. F. Palmieri, S. Marano and P. Willett, "Measurement Fusion Under Bandwidth Constraints" Proceedings of the 2001 Aerospace Conference, Big Sky MT, March 2001.
46. Y. Ruan and P. Willett, "An Improved PMHT Using An Idea from Coding" Proceedings of the 2001 Aerospace Conference, Big Sky MT, March 2001.
47. E. Jordan, Y. Sohn, W. Xie, M. Gell, L. Xie, F. Tu, K. Pattipati and P. Willett, "Residual Stress Measurement of Thermal Barrier Coatings using Laser Fluorescence Technique and their Life Prediction", Proceedings of AutoTestCon, February 2001.
48. F. Wen and P. Willett, "Condition Monitoring for Helicopter Data", Proceedings of the 2000 Conference on Systems, Man, and Cybernetics, pp. 224-229, Nashville TN, October 2000.
49. R. Lynch and P. Willett, "Adaptive Bayesian Classification Using Noninformative Dirichlet Priors", Proceedings of the 2000 Conference on Systems, Man, and Cybernetics, pp. 2812-2815, Nashville TN, October 2000.
50. R. Lynch and P. Willett, "Classification and Feature Selection with Fused Conditionally Dependent Binary Valued Features", Proceedings of the 2000 Conference on Data Fusion, Paris, France, July 2000.
51. P. Willett, P. Swaszek, and R. Blum, "Detection Fusion Under Dependence", Proceedings of the 2000 Conference on Data Fusion, Paris, France, July 2000.
52. R. Niu and P. Willett, "A Modified PDAF Based on a Bayesian Detector", Proceedings of the 2000 American Control Conference, Chicago IL, June 2000.
53. R. Lynch and P. Willett, "Target Classification Using Features Selected from Independent Sonar Echoes", Proceedings of the Undersea Defense Technology European Conference, Edinburgh, Scotland, June 2000.
54. J. Luo, G. Levchuk, K. Pattipati and P. Willett, "A Class of Coordinate Descent Methods for Multiuser Detection", Proceedings of ICASSP 2000, Istanbul, Turkey, May 2000.
55. P. Willett and Y. Bar-Shalom, "Track Testing for Single Targets in Clutter", Proceedings of the 2000 Aerosense Conference on Signal and Data Processing of Small Targets, (ed.: O. Drummond) Orlando FL, April 2000.
56. R. Lynch and P. Willett, "Class-Specific Feature Selection Based on Uniform Dirichlet Priors", Proceedings of the 2000 Aerosense Conference, Orlando FL, April 2000.
57. R. Niu, P. Willett, and Y. Bar-Shalom, "Analysis of Waveform Effects on Tracking Performance" Proceedings of the 2000 Aerospace Conference, Big Sky MT, March 2000.

58. F. Wen, P. Willett, and S. Deb, "Signal Processing and Fault Detection with Application to CH46 Helicopter Data", Proceedings of the 2000 Aerospace Conference, Big Sky MT, March 2000.
59. Y. Sun and P. Willett, "Improvements and Comparisons of Multi-Chirp Signal Detection Methods", Proceedings of the 2000 CISS, Princeton NJ, March 2000.
60. Z. Wang and P. Willett, "Improved Power-Law Detectors for Transient Signals", Proceedings of the 2000 CISS, Princeton NJ, March 2000.
61. J. Luo, G. Levchuk, K. Pattipati, and P. Willett, "A Fast Algorithm for CWMA Multiuser Detection", Proceedings of the 2000 CISS, Princeton NJ, March 2000.
62. R. Lynch and P. Willett, "A Bayesian Approach to the Missing Features Problem in Classification", Proceedings of the Conference on Decision and Control, Phoenix AZ, December 1999.
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## PhD Students Graduated

1. Constantino Rago, 1995, co-advised with Yaakov Bar-Shalom. Presently with Alphatech, Inc., Burlington MA.
2. Chunming Han, 1996. Presently with Intel, Morganville NJ.
3. Alain Barthelemy, 1996. Presently with TSC, Fairfield CT.
4. Tod Luginbuhl, 1999. Presently with the Naval Undersea Warfare Center, Newport RI.
5. Robert Lynch, 1999. Presently with the Naval Undersea Warfare Center, Newport RI.
6. Biao Chen, 1999. Presently Assistant Professor at Syracuse University, Syracuse NY.
7. Ruixin Niu, 2001, co-advised with Yaakov Bar-Shalom. Presently Post-Doctoral Assistant at Syracuse University, Syracuse NY.
8. Zhen Wang, 2002. Presently Post-Doctoral Assistant at University of Maryland, College Park, MD.
9. Jie Luo, 2002, co-advised with Krishna Pattipati. Presently Post-Doctoral Assistant at University of Maryland, College Park, MD.