

D. Richard Brown III

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Education

January 1997 – May 2000, Cornell University, Ithaca, NY
PhD in Electrical Engineering with Minor in Mathematics.

September 1992 – January 1996, University of Connecticut, Storrs, CT
Master of Science in Electrical Engineering.
Degree completed while employed full-time at GE Industrial Systems.

September 1987 – May 1992, University of Connecticut, Storrs, CT
Bachelor of Science in Electrical Engineering.

Academic and Administrative Appointments

August 2000 – present, Worcester Polytechnic Institute, Worcester, MA
Department Head (2019 – present)
Associate Department Head (2018 – 2019)
Professor (2015 – present)
Associate Professor (2007 – 2015)
Assistant Professor (2000 – 2007)
Department of Electrical and Computer Engineering.

January 2016 – July 2018, National Science Foundation, Alexandria, VA
Program Director (Intergovernmental Personnel Act (IPA) assignment)
Division of Computing and Communications Foundations (CCF)
Directorate for Computer & Information Science & Engineering (CISE)

August 2007 – June 2008, Princeton University, Princeton, NJ
Visiting Associate Professor
Department of Electrical Engineering.

Other Work Experience

January 2019 – June 2019, Cole Schotz P.C., Dallas, TX
Expert Witness. Spark Connected, LLC v. Semtech Corporation. Expert witness retained by counsel for plaintiff Spark Connected, LLC. Civil Action No. 4:18-cv-00748.

August 2018 – January 2019, Shore Chan DePumpo LLP, Dallas, TX

Expert Witness. Cywee Group, Ltd. vs. Samsung Electronics Co., Ltd. and Samsung Electronics America, Inc. Expert witness retained by counsel for plaintiff Cywee Group, Ltd. Civil Action No. 2:17-cv-00140-RWS-RSP

January 2015 – January 2016, Coherent Engineering, LLC.

Principal. Engineering consulting services. Clients include Raytheon BBN Technologies and Johns Hopkins University Applied Physics Laboratory.

July 2015 – January 2016, Turner Boyd, Redwood City, CA

Expert Witness. Better Mouse Company, LLC vs. SteelSeries, *et al.* Expert witness retained by counsel for defendants SteelSeries ApS, SteelSeries North America Corporation, and Mad Catz, Inc. Civil Action No. 2:14-cv-00198

June 2014 – July 2014, Edwards Wildman Palmer LLP, Boston, MA

Expert Witness. Thermaltake Technology Co. Ltd., Petitioner, v. Better Mouse Company, LLC. Expert witness retained by counsel to write declaration for *Inter Partes* Review.

February 2014 – April 2014, Fish & Richardson, P.C., Washington, DC

Expert Witness. Lake Cherokee Hard Drive Technologies, LLC v. Marvell Semiconductor, Inc. *et al.* Expert witness retained by counsel for defendant Marvell Semiconductor, Inc. Civil Action No. 2:13-CV-00762.

October 2011 – February 2012, Quinn, Emanuel, Urquhart & Sullivan, LLP, San Francisco, CA

Expert Witness. Samsung Electronics Co. v. Apple, Inc. Expert witness retained by counsel for plaintiff Samsung Electronics Corporation. Patent-in-suit is US patent 7,069,055 B1. Civil Action No. 11-CV-01846-LHK.

August 2011 – June 2012, Erallo Technologies, Inc., Littleton, MA

Technical Consultant. Developed and implemented signal processing algorithms for Army-sponsored project entitled “Smart Sensors for Real-Time Bridge Monitoring”.

July 2009 to August 2010, Hamilton, Brook, Smith, and Reynolds LLP, Concord, MA

Expert Witness. AMBIT Corporation v. Delta Air Lines, Inc., and Aircell, LLC. Expert witness retained by counsel for plaintiff AMBIT Corporation. Patent-in-suit is US patent 7,400,858. Case before the US District Court, District of Massachusetts, Civil Action No. 1:09-CV-10217-WGY.

July 2005 to December 2008, Broadcast Signal Lab, Medford, MA

Technical Consultant. Developed signal integrity test equipment for digital broadcast radio.

September 2001 to April 2002, Litchfield Communications Inc., Watertown, CT

Technical Consultant. Investigated novel techniques for Stratum 3 clock and timing recovery in SONET networks. My work on this project led to a patent filing.

August 2001, Aware Inc., Bedford, MA

Technical Consultant. Investigated algorithms for crosstalk mitigation in digital subscriber loops with emphasis on ADSL.

January 1998 – May 2000, Cornell University, Ithaca, NY

Research Assistant. Worked in the Blind Equalization Research Group (BERG) under the supervision of Prof. C. Richard Johnson, Jr.

April 1999, Applied Signal Technology, Sunnyvale, CA

Research Internship. Applied multiuser detection techniques to eavesdropping problems in IS-95 CDMA cellular downlink transmissions.

May 1992 – December 1996, General Electric Industrial Systems, Plainville, CT

Design Engineer and Project Leader. Completed the two-year Edison Engineering Program and worked on several projects including embedded system design, communication system and network design, software development, and product commercialization.

Scholarship

Full List of Publications

This section provides a complete list of my publications. All of my publications can be downloaded from <http://spinlab.wpi.edu/publications.html>.

Journal Articles

- J30** S. Farazi, A.G. Klein, and D.R. Brown III. Average Age of Information in Update Systems with Active Sources and Packet Delivery Errors. Submitted to *IEEE Wireless Communication Letters*. In review.
- J29** S. Farazi, A.G. Klein, and D.R. Brown III. Fundamental Bounds on the Age of Information in Multi-Hop Global Status Update Networks. *Journal of Communications and Networks (JCN) Special Issue on Age of Information*. 21(3):268-79, July 2019.
- J28** S. Goguri, D. Ogbe, S. Dasgupta, R. Mudumbai, D.R. Brown III, D. Love and U. Madhow. Optimal Precoder Design for Distributed Transmit Beamforming over Frequency-Selective Channels. *IEEE Transactions on Wireless Communications*. 17(11), 7759-7773, November 2018.
- J27** A.G. Klein, S. Farazi, W. He, and D.R. Brown III. Staleness Bounds and Efficient Protocols for Estimation and Dissemination of Global Channel State Information. *IEEE Transactions on Wireless Communications*. 16:(09):5732 - 5746, September 2017.
- J26** R. Wang and D.R. Brown III. Optimal Wireless Power Transfer with Distributed Transmit Beamforming. *Journal of Communications and Networks*. 19:(02):13-146, April 2017.
- J25** A. Kumar, R. Mudumbai, S. Dasgupta, U. Madhow, and D.R. Brown III. Distributed MIMO multicast with protected receivers: A scalable algorithm for joint beamforming and nullforming. *IEEE Transactions on Wireless Communications* 16:(01):512-525, January 2017.
- J24** J. Choi, D.J. Love, D.R. Brown III, and M. Boutin. Quantized Distributed Reception for MIMO Wireless Systems Using Spatial Multiplexing. *IEEE IEEE Transactions on Wireless Communications*. 63(13):3537-3548, July 2015.
- J23** D.R. Brown III, R. Wang, and S. Dasgupta. Channel State Tracking for Large-Scale Distributed MIMO Communication Systems. *IEEE Transactions on Signal Processing*. 63(10):2559-2571, May 2015.

- J22** A. Kumar, R. Mudumbai, S. Dasgupta, M. Rahman, D.R. Brown III, U. Madhow, and P. Bidigare. A Scalable Feedback Mechanism for Distributed Nullforming with Phase-Only Adaptation. *IEEE Transactions on Signal and Information Processing over Networks*. 1(1):58-70, March 2015.
- J21** D.R. Brown III, A.G. Klein, and R. Wang. Monotonic Mean Squared Convergence Conditions for Random Pairwise Consensus Synchronization in Wireless Networks. *IEEE Transactions on Signal Processing*. 63(4):988-1000, February 2015.
- J20** D.R. Brown III, U. Madhow, M. Ni, M. Rebholz, and P. Bidigare. Distributed Reception with Hard Decision Exchanges. *IEEE Transactions on Wireless Communications*. 13(6):3406-3418, June 2014.
- J19** D.R. Brown III and D.J. Love. On the Performance of MIMO Nullforming with Random Vector Quantization Limited Feedback. *IEEE Transactions on Wireless Communications*. 13(5):2884-2893, May 2014.
- J18** Y. Wang, I. Hussein, D.R. Brown III, and R.S. Erwin. Cost-Aware Bayesian Sequential Decision-Making for Domain Search and Object Classification. *IEEE Transactions on Aerospace and Electronic Systems*. 48(3):2566-2581, July 2012.
- J17** R. Preuss and D.R. Brown III. Two-Way Synchronization for Coordinated Multi-Cell Retrodirective Downlink Beamforming. *IEEE Transactions on Signal Processing*. 59(11):5415-5427, November 2011.
- J16** F. Fazel and D.R. Brown III. A Game Theoretic Study of Energy Efficient Cooperative Wireless Networks. *Journal of Communications and Networks*, 13(3):266-276, June 2011.
- J15** J. Yang, A. Klein, and D.R. Brown III. Natural Cooperation in Wireless Networks. *IEEE Signal Processing Magazine* 26(5):98:106, September 2009.
- J14** Man-On Pun, D.R. Brown III, and H.V. Poor. Opportunistic Collaborative Beamforming with One-Bit Feedback. *IEEE Transactions on Wireless Communications*, 8(5):2629-2641, May 2009.
- J13** J.A. McNeill, M. Coln, D.R. Brown III, and B. Larivee. Digital Background Calibration Algorithm for “Split ADC” Architecture. *IEEE Transactions on Circuits and Systems*, 56(2):294-306, February 2009.
- J12** R. Mudumbai, D.R. Brown III, U. Madhow, and H.V. Poor. Distributed Transmit Beamforming: Challenges and Recent Progress. *IEEE Communications Magazine*, 47(2):102:110, February 2009.
- J11** D.R. Brown III and H.V. Poor. Time-Slotted Round-Trip Carrier Synchronization for Distributed Beamforming. *IEEE Transactions on Signal Processing*, 56(11):5630-5643, November 2008.
- J10** K. Zeng, W. Lou, J. Yang and D.R. Brown III. On Throughput Efficiency of Geographic Opportunistic Routing in Multihop Wireless Networks. *Mobile Networks and Applications*, 12(5):347-357, December 2007.

- J09** D.R. Brown III, K. Keenaghan and S. Desimini. Measuring glottal activity during voiced speech using a tuned electromagnetic resonating collar sensor. *Measurement Science and Technology*, 16(11):2381–2390, November 2005.
- J08** D.R. Brown III, J.A. Slater, and A.E. Emanuel. A wireless differential protection system for air-core inductors. *IEEE Transactions on Power Delivery*, 20(2):579–587, April 2005.
- J07** P. Prakash, C.A. Salini, J.A. Tranquilli, D.R. Brown III, and E.A. Clancy. Adaptive whitening in electromyogram amplitude estimation for epoch-based applications. *IEEE Transactions on Biomedical Engineering*, 52(2):331–334, February 2005.
- J06** D.R. Brown III. Multistage parallel interference cancellation: Convergence behavior and improved performance through limit cycle mitigation. *IEEE Transactions on Signal Processing*, 53(1):283–294, January 2005.
- J05** D.R. Brown III, R. Ludwig, A. Pelteku, G. Bogdanov, and K. Keenaghan. A novel non-acoustic voiced speech sensor. *Measurement Science and Technology*, 15(7):1291–1302, July 2004.
- J04** D.R. Brown III, H.V. Poor, S. Verdu, and C.R. Johnson Jr. Multiuser detection for out-of-cell cochannel interference mitigation in the IS-95 downlink. *Journal of VLSI: Signal Processing Systems for Signal, Image, and Video Technology*, 30(1-3):217–234, January-March 2002.
- J03** D.R. Brown III and C.R. Johnson Jr. SINR, power efficiency, and theoretical system capacity of parallel interference cancellation. *Journal of Communications and Networks*, 3(3):228–37, September 2001.
- J02** D.R. Brown III, M. Motani, V.V. Veeravalli, H.V. Poor, and C.R. Johnson Jr. On the performance of linear parallel interference cancellation. *IEEE Transactions on Information Theory*, 47(5):1957–70, July 2001.
- J01** C.R. Johnson, Jr., P. Schniter, T.J. Endres, J. Behm, D.R. Brown III, and R.A. Casas. Blind equalization using the constant modulus criterion: A review. *Proceedings of the IEEE, Special Issue on Blind System Identification and Estimation*, 86(10):1927–1950, October 1998.

Book Chapters

- B03** D.R. Brown III and A.G. Klein. Synchronization Concepts. P. Marsch and G.P. Fettweis, editors, *Coordinated Multi-Point in Mobile Communications: From Theory to Practice*, pages tbd. Cambridge University Press, 2011.
- B02** M. Bromberg and D.R. Brown III. The use of programmable DSPs in antenna array processing. In A. Gatherer and E. Auslander, editors, *The Application of Programmable DSPs in Mobile Communications*, pages 57–93. Wiley, 2002.
- B01** C.R. Johnson Jr., P. Schniter, I. Fijalkow, L. Tong, J.D. Behm, M.G. Larimore, D.R. Brown III, T.J. Endres R.A. Casas, S. Lambbothorian, H.H. Zeng, A. Touzni, M. Green, , and J.R. Treichler. The core of FSE-CMA behavior theory. In S. Haykin, editor, *Unsupervised Adaptive Filtering*, pages 13–112. Wiley, 1999.

Conference Papers

- C83** K. Vedula, R. Paffenroth, and D.R. Brown III. Joint Coding and Modulation in the Ultra-Short Blocklength Regime for Bernoulli-Gaussian Impulsive Noise Channels Using Autoencoders. Submitted to the *45th International Conference on Acoustics, Speech, and Signal Processing (ICASSP 2020)*. Barcelona, Spain, May 4-8, 2020. In review.
- C82** K.P. Vedula, R.C. Paffenroth, and D.R. Brown III. Joint Coding and Modulation in the Ultra-Short Blocklength Regime Using Autoencoders. Accepted to appear in the *Proceedings of the 53rd Asilomar Conference on Signals, Systems, and Computers*. Pacific Grove, CA, November 6-9, 2016. In review.
- C81** S. Farazi, A.G. Klein, and D.R. Brown III. Age of Information with Unreliable Transmissions in Multi-Source Multi-Hop Status Update Systems. Accepted to appear in the *Proceedings of the 53rd Asilomar Conference on Signals, Systems, and Computers*. Pacific Grove, CA, November 6-9, 2016. In review.
- C80** S. Farazi, A.G. Klein, and D.R. Brown III. Average Age of Information in Multi-Source Self-Preemptive Status Update Systems with Packet Delivery Errors. Submitted to the *53rd Asilomar Conference on Signals, Systems, and Computers*. Pacific Grove, CA, November 6-9, 2016. In review.
- C79** S. Farazi, A.G. Klein, and D.R. Brown III. Fundamental Bounds on the Age of Information in General Multi-Hop Interference Networks. *Proceedings of the 2nd Age of Information Workshop (AoI'19) in conjunction with IEEE INFOCOM 2019*. Paris, France, Apr 29 - May 2, 2019.
- C78** S. Farazi, A.G. Klein, and D.R. Brown III. On the Age of Information in Multi-Source Multi-Hop Wireless Status Update Networks. *Proceedings of the 19th IEEE International Workshop on Signal Processing Advances in Wireless Communications (SPAWC 2018)*. Kalamata, Greece, June 25-28, 2018.
- C77** S. Farazi, A.G. Klein, and D.R. Brown III. Age of Information in Energy Harvesting Status Update Systems: When to Preempt in Service? *Proceedings of the 2018 IEEE International Symposium on Information Theory (ISIT 2018)*. Vail, Colorado, Jun 17-22, 2018.
- C76** S. Farazi, A.G. Klein, and D.R. Brown III. Average Age of Information for Status Update Systems with an Energy Harvesting Server. Presented in the First Annual Age of Information Workshop. *Proceedings of the 2018 IEEE International Conference on Computer Communications (INFOCOM 2018)*. Honolulu, Hawaii Apr 15-19, 2018.
- C75** D. Kowalski, T. Christman, A.G. Klein, and D.R. Brown III. Implementation and Characterization of a Low-overhead Network Synchronization Protocol. *Proceedings of the 2018 IEEE Aerospace Conference (AEROCNF 2018)*. Big Sky, Montana, Mar 3-10, 2018.
- C74** S. Farazi, A.G. Klein, and D.R. Brown III. Bounds on the Age of Information for Global Channel State Dissemination in Fully-Connected Networks. *Proceedings of the 26th International Conference on Computer Communications and Networks (ICCCN 2017)*. Vancouver Canada, Jul 31 - Aug 3, 2017.

- C73** J. McNeill, S. Razavi, K. Vedula, and D.R. Brown III. Experimental Characterization of Oscillator Stability for Carrier Phase Synchronization. *Proceedings of the 2017 IEEE International Instrumentation and Measurement Technology Conference (I2MTC)*. Torino, Italy, May 22-25, 2017.
- C72** M.W.S. Overdick, J.E. Canfield, A.G. Klein, and D.R. Brown III. A Software-Defined Radio Implementation of Timestamp-Free Network Synchronization. *Proceedings of the 42nd IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP2017)*. New Orleans, LA, March 5-9, 2017.
- C71** S. Farazi, K. Chinkidjakarn, and D.R. Brown III. Simultaneous Distributed Beamforming and Nullforming with Adaptive Positioning. *Proceedings of the 2016 IEEE Global Conference on Signal and Information Processing*. Washington, DC, December 7-9, 2016.
- C70** J. Nanzer, M. Sharp, and D.R. Brown III. Bandpass Signal Design for Passive Time Delay Estimation. *Proceedings of the 50th Asilomar Conference on Signals, Systems, and Computers*. Pacific Grove, CA, November 6-9, 2016.
- C69** S. Farazi, D.R. Brown III, and A.G. Klein. On Global Channel State Estimation and Dissemination in Ring Networks. *Proceedings of the 50th Asilomar Conference on Signals, Systems, and Computers*. Pacific Grove, CA, November 6-9, 2016.
- C68** S. Razavi and D.R. Brown III. Characterizing the Effect of Channel Estimation Error on Distributed Reception with Hard Decision Exchanges. *Proceedings of the 25th International Conference on Computer Communication and Networks (ICCCN 2016)*. Waikoloa, Hawaii, August 1-4, 2016.
- C67** S. Farazi, A.G. Klein, and D.R. Brown III. On the Average Staleness of Global Channel State Information in Wireless Networks with Random Transmit Node Selection. *Proceedings of the 41st International Conference on Acoustics, Speech, and Signal Processing (ICASSP2016)*. Shanghai, China, March 20-25, 2016.
- C66** S. Goguri, R. Mudumbai, D.R. Brown III, S. Dasgupta and U. Madhow. Capacity Maximization for Distributed Broadband Beamforming. *Proceedings of the 41st International Conference on Acoustics, Speech, and Signal Processing (ICASSP2016)*. Shanghai, China, March 20-25, 2016.
- C65** P. Bidigare, D.R. Brown III, U. Madhow, R. Mudumbai, A. Kumar, B. Peiffer, and S. Dasgupta. Wideband Distributed Transmit Beamforming using Reciprocity with Endogenous Relative Calibration. *Proceedings of the 49th Asilomar Conference on Signals, Systems, and Computers*. Pacific Grove, CA, November 8-11, 2015.
- C64** S. Gvozdenovic, A. Ryan, M. Li, D.R. Brown III, and A.G. Klein. A Real-Time Implementation of Precise Timestamp-Free Network Synchronization. *Proceedings of the 49th Asilomar Conference on Signals, Systems, and Computers*. Pacific Grove, CA, November 8-11, 2015.
- C63** S. Farazi and D.R. Brown III and A.G. Klein. Power Allocation for Three-Phase Two-Way Relay Networks with Simultaneous Wireless Information and Power Transfer. *Proceedings of the 49th Asilomar Conference on Signals, Systems, and Computers*. Pacific Grove, CA, November 8-11, 2015.

- C62** R. Wang and D.R. Brown III. Optimal Feedback Rate Selection for Energy Harvesting with Distributed Transmit Beamforming. *Proceedings of the 49th Asilomar Conference on Signals, Systems, and Computers*. Pacific Grove, CA, November 8-11, 2015.
- C61** D.R. Brown III, R. David, and P. Bidigare. Improving Coherence in Distributed MISO Communication Systems with Local Accelerometer Measurements. *Proceedings of the 49th Annual Conference on Information Sciences and Systems (CISS 2015)*. Baltimore, MD, Mar 18 - 20, 2015.
- C60** R. Wang, R. David, and D.R. Brown III. Feedback Rate Optimization in Receiver-coordinated Distributed Transmit Beamforming with Kinematic Tracking. *Proceedings of the 49th Annual Conference on Information Sciences and Systems (CISS 2015)*. Baltimore, MD, Mar 18 - 20, 2015.
- C59** R. Wang and D.R. Brown III. Random Symmetric Gossip Consensus with Overhearing Nodes in Wireless Networks. *Proceedings of the 49th Annual Conference on Information Sciences and Systems (CISS 2015)*. Baltimore, MD, Mar 18 - 20, 2015.
- C58** R. David and D.R. Brown III. Modeling and Tracking Phase and Frequency Offsets in Low-Precision Clocks. *Proceedings of the 2015 IEEE Aerospace Conference*, Big Sky, Montana, March 7-14, 2015.
- C57** D.R. Brown III and Y. Bar-Shalom. Reconstructing Estimates from Noisy Transmissions with Serially-Connected Kalman Filters. *Proceedings of the 2015 IEEE Aerospace Conference*, Big Sky, Montana, March 7-14, 2015.
- C56** J. Choi, D.J. Love, and D.R. Brown III. Channel Estimation Techniques for Quantized Distributed Reception in MIMO Systems. *Proceedings of the 48th Asilomar Conference on Signals, Systems, and Computers*, Pacific Grove, CA, November 2-5, 2014.
- C55** D.R. Brown III and D.J. Love. MIMO Nullforming with RVQ Limited Feedback and Channel Estimation Errors. *Proceedings of the 48th Asilomar Conference on Signals, Systems, and Computers*, Pacific Grove, CA, November 2-5, 2014.
- C54** A.G. Klein and D.R. Brown III. Efficient Consensus Synchronization via Implicit Acknowledgment. *Proceedings of the 48th Asilomar Conference on Signals, Systems, and Computers*, Pacific Grove, CA, November 2-5, 2014.
- C53** R. Wang and D.R. Brown III. Throughput Maximization in Wireless Powered Communication Networks with Energy Saving. *Proceedings of the 48th Asilomar Conference on Signals, Systems, and Computers*, Pacific Grove, CA, November 2-5, 2014.
- C52** S. Dasgupta, D.R. Brown III, R. Wang. Steady State Kalman Filter Behavior for Unstabilizable Systems. Accepted to appear in the *Proceedings of the 2014 Conference on Decision and Control (CDC2014)*, Los Angeles, CA, December 15-17, 2014.
- C51** D.R. Brown III and A.G. Klein. Timestamp-Free Network Synchronization with Random Pairwise Message Exchanges. *Proceedings of the 39th International Conference on Acoustics, Speech, and Signal Processing (ICASSP2014)*, Florence, Italy, May 4-9, 2014.

- C50** D.R. Brown III and R. David. Receiver-Coordinated Distributed Transmit Nullforming with Local and Unified Tracking. *39th Proceedings of the International Conference on Acoustics, Speech, and Signal Processing (ICASSP2014)*, Florence, Italy, May 4-9, 2014.
- C49** P. Liu, F. Martel, D. Rancourt, E.A. Clancy, and D.R. Brown III. Fingertip Force Estimation From Forearm Muscle Electrical Activity. *Proceedings of the 39th International Conference on Acoustics, Speech, and Signal Processing (ICASSP2014)*, Florence, Italy, May 4-9, 2014.
- C48** D.R. Brown III, R. Wang, and S. Dasgupta. Asymptotic Oscillator Tracking Performance Analysis for Distributed Massive MIMO Systems. *Proceedings of the 48th Annual Conference on Information Sciences and Systems (CISS 2014)*, Princeton, NJ, March 19 - 21, 2014.
- C47** U. Madhow, D.R. Brown III, S. Dasgupta, R. Mudumbai. Distributed massive MIMO: algorithms, architectures and concept systems (invited). *Proceedings of the 2014 Information Theory and Applications Workshop (ITA 2014)*, San Diego, CA. Feb 9 - 14, 2014.
- C46** P. Liu, F. Martel, D. Rancourt, E.A. Clancy, and D.R. Brown III. EMG-Force Estimation for Multiple Fingers. *Proceedings of the IEEE Signal Processing in Medicine and Biology Symposium (SPMB13)*. Polytechnic Institute of New York University. December 7, 2013.
- C45** D. Scherber, R. O'Donnell, M. Rebholz, M. Oyarzun, C. Obranovich, W. Kulp, P. Bidigare, and D.R. Brown III. Coherent Distributed Techniques for Tactical Radio Networks: Enabling Long Range Communications with Reduced Size, Weight, Power and Cost. *Proceedings of MILCOM 2013*. San Deigo, CA, November 18-20, 2013.
- C44** P. Bidigare, D.R. Brown III, S. Kraut, and U. Madhow. MIMO Channel Prediction Results on Outdoor Collected Data. *Proceedings of the 47th Asilomar Conference on Signals, Systems, and Computers*, Pacific Grove, CA, November 4-7, 2013.
- C43** R. Wang, D.R. Brown III, M. Ni, U. Madhow, and P. Bidigare. Outage Probability Analysis of Distributed Reception with Hard Decision Exchanges. *Proceedings of the 47th Asilomar Conference on Signals, Systems, and Computers*, Pacific Grove, CA, November 4-7, 2013.
- C42** M. Ni and D.R. Brown III. A Performance Comparison of Interference Alignment and Opportunistic Transmission with Channel Estimation Errors. *Proceedings of the 47th Annual Conference on Information Sciences and Systems (CISS 2013)*, Baltimore, MD, Mar 20 - 22, 2013.
- C41** D.R. Brown III and A.G. Klein. Precise Timestamp-Free Network Synchronization. *Proceedings of the 47th Annual Conference on Information Sciences and Systems (CISS 2013)*, Baltimore, MD, Mar 20 - 22, 2013.
- C40** M. Ni, D.R. Brown III, and U. Madhow. Distributed Reception with Coarsely-Quantized Observation Exchanges. *Proceedings of the 47th Annual Conference on Information Sciences and Systems (CISS 2013)*, Baltimore, MD, Mar 20 - 22, 2013.
- C39** P. Bidigare, M. Oyarzun, D. Raeman, D. Cousins, D. Chang, R. O'Donnell, D.R. Brown III. Implementation and demonstration of receiver-coordinated distributed transmit beamforming across an ad-hoc radio network. *Proceedings of the 46th Asilomar Conference on Signals, Systems, and Computers*, Pacific Grove, CA, November 4-7, 2012.

- C38** D.R. Brown III, U. Madhow, S. Dasgupta, P. Bidigare. Receiver-Coordinated Zero-Forcing Distributed Transmit Nullforming. *Proceedings of the 2012 IEEE Statistical Signal Processing Workshop*, Ann Arbor, MI, August 5 - 8, 2012.
- C37** D.R. Brown III, U. Madhow, S. Dasgupta, P. Bidigare. Receiver-Coordinated Distributed Transmit Nullforming with Channel State Uncertainty. *Proceedings of the 46th Annual Conference on Information Sciences and Systems (CISS 2012)*, Princeton, NJ, March 2012
- C36** D.R. Brown III, P. Bidigare, U. Madhow. Receiver-Coordinated Distributed Transmit Beamforming with Kinematic Tracking. *Proceedings of the 37th International Conference on Acoustics, Speech, and Signal Processing (ICASSP2012)*, Kyoto, Japan, March 25 - 30, 2012.
- C35** D.R. Brown III, R. Mudumbai, S. Dasgupta. Fundamental Limits on Phase and Frequency Tracking and Estimation in Drifting Oscillators. *Proceedings of the 37th International Conference on Acoustics, Speech, and Signal Processing (ICASSP2012)*, Kyoto, Japan, March 25 - 30, 2012.
- C34** U. Madhow, R. Mudumbai, D.R. Brown III, P. Bidigare. DSP-Centric Algorithms for Distributed Transmit Beamforming. *Proceedings of the 45th Asilomar Conference on Signals, Systems, and Computers*, Pacific Grove, CA, November 6-9, 2011.
- C33** P. Liu, D.R. Brown III, F. Martel, D. Rancourt, and E.A. Clancy. EMG-to-Force Modeling for Multiple Fingers. *Proceedings of the IEEE 37th Annual Northeast Bioengineering Conference*. pages 1-2, Troy, NY, April 1-3, 2011.
- C32** Y. Wang, I. Hussein, D.R. Brown III, and R.S. Erwin. Cost-Aware Bayesian Sequential Decision-Making for Domain Search and Object Classification. *Proceedings of the 49th IEEE Conference on Decision and Control*, pages 7196-7201 December 15-17, 2010.
- C31** D.R. Brown III, Y. Liao, and N. Fox. Low-Complexity Real-Time Single-Tone Phase and Frequency Estimation *Proceedings of MILCOM 2010*, October 31 - November 3, 2010.
- C30** D.R. Brown III, B. Zhang, B. Svirchuk, and M. Ni. An Experimental Study of Acoustic Distributed Beamforming Using Round-Trip Carrier Synchronization *Proceedings of the 2010 IEEE International Symposium on Phased Array Systems and Technology*, October 12-15, 2010.
- C29** Y. Wang, I. Hussein, D.R. Brown III, and R.S. Erwin. Cost-Aware Sequential Bayesian Tasking and Decision-Making for Search and Classification. *Proceedings of the American Control Conference (ACC2010)*, June 30 - July 2, 2010.
- C28** A.M. Wyglinski, R.F. Vaz, J.A. McNeill, D.R. Brown III, and F.J. Looft III. Conducting Electrical and Computer Engineering Capstone Design Projects Abroad: The Limerick Experience. *Proceedings of the 2010 Capstone Design Conference*, June 7-9, 2010.
- C27** R. Preuss and D.R. Brown III. Retrodirective Distributed Transmit Beamforming with Two-Way Source Synchronization. *Proceedings of the Conference of Information Sciences and Systems (CISS 2010)*, pages 1-6, Princeton, NJ, March 17-19, 2010.
- C26** F. Fazel and D.R. Brown III. On the Endogenous Formation of Energy Efficient Cooperative Wireless Networks. *Proceedings of the 47th Annual Allerton Conference on Communications, Control and Computing*, pages 879-886, Monticello, IL, September 30 - October 2, 2009.

- C25** D. Gunduz, D.R. Brown III, and H.V. Poor. Secret Communication With Feedback. *Proceedings of the 2008 International Symposium on Information Theory and its Applications (ISITA2008)*, pages 1-6, Auckland, New Zealand, Dec 7-10, 2008.
- C24** Man-On Pun, D.R. Brown III, and H.V. Poor. Opportunistic Collaborative Beamforming with One-Bit Feedback. *Proceedings of the 9th IEEE Signal Processing Advances in Wireless Communications*, pages 246-250, Recife, Brazil, July 6-9 2008.
- C23** J. Yang, D. Gunduz, D.R. Brown III, and E. Erkip. Resource Allocation for Cooperative Relaying. *Proceedings of the Conference of Information Sciences and Systems (CISS 2008)*, pages 848-853, Princeton, NJ, March 19-21, 2008.
- C22** I. Ozil and D.R. Brown III. Time-Slotted Round-Trip Carrier Synchronization. *Proceedings of the 41st Asilomar Conference on Signals, Systems, and Computers*, pages 1781-1785, Pacific Grove, CA, November 4-7, 2007.
- C21** J. Yang and D.R. Brown III. Energy Efficient Relaying Games in Cooperative Wireless Transmission Systems. *Proceedings of the 41st Asilomar Conference on Signals, Systems, and Computers*, pages 835-839, Pacific Grove, CA, November 4-7, 2007.
- C20** K. Zeng, W. Lou, J. Yang and D.R. Brown III. On Throughput Efficiency of Geographic Opportunistic Routing in Multihop Wireless Networks. *Proceedings of the International Conference on Heterogeneous Networking for Quality, Reliability, Security and Robustness (QShine)*, August 14-17, 2007. **Best paper runner-up award.**
- C19** K. Zeng, W. Lou, J. Yang and D.R. Brown III. On Geographic Collaborative Forwarding in Wireless Ad Hoc and Sensor Networks. *Proceedings of the International Conference on Wireless Algorithms, Systems and Applications (WASA 2007)*, pages 11-18, Chicago, IL, August 2007.
- C18** J. Yang and D.R. Brown III. The effect of receiver diversity combining on optimum energy allocation and energy efficiency of cooperative wireless transmission systems. *Proceedings of ICASSP 2007*, Volume III, pages III-493 — III-496, Honolulu, HI, April 15-20, 2007.
- C17** J. Yang and D.R. Brown III. The Effect of Channel State Information on Optimum Energy Allocation and Energy Efficiency of Cooperative Wireless Transmission Systems In *Proceedings of the Conference of Information Sciences and Systems (CISS 2006)*, pages 1044-1049, Princeton, NJ, March 22-24, 2006.
- C16** D.R. Brown III. Resource Allocation for Fixed Outage Probability in Orthogonal Cooperative Transmission Systems, *WICAT Workshop on Cooperative Communications*, Brooklyn, NY, October 21, 2005.
- C15** D.R. Brown III, G. Prince, and J. McNeill. A method for carrier frequency and phase synchronization of two autonomous cooperative transmitters. *Proceedings of the 5th IEEE Signal Processing Advances in Wireless Communications*, page 260-264, New York, NY, June 5-8 2005.
- C14** S. Lavery and D.R. Brown III. Improved voice activity detection in the presence of passing vehicle noise. In *Proceedings of the Joint Workshop on Hands-Free Speech Communication*

and *Microphone Arrays (HSCMA2005)*, pages A5–A6, Rutgers University, Piscataway, NY, March 17-18 2005.

- C13** D.R. Brown III. Resource allocation for cooperative transmission in wireless networks with orthogonal users. In *Proceedings of the 38th Asilomar Conference on Signals, Systems, and Computers*, pages 1473–1477, Pacific Grove, CA, November 7-10 2004.
- C12** J.A. Tranquilli, C.A. Salini, P. Prakash, D.R. Brown III, and E.A. Clancy. Optimal electromyogram amplitude estimation algorithm for epoch-based applications. In *Proceedings of the 15th Congress of the International Society of Electrophysiology and Kinesiology (ISEK)*, page 69, Boston, MA, June 18-21 2004.
- C11** A.G. Klein, D.R. Brown III, and C.R. Johnson Jr. MMSE decision feedback equalization of orthogonal multipulse modulated signals. In *Proceedings of the Conference of Information Sciences and Systems (CISS 2004)*, pages 632–637, Princeton, NJ, March 17-19 2004.
- C10** A.G. Klein, D.R. Brown III, D.L. Goeckel, and C.R. Johnson Jr. Rake reception for UWB communication systems with intersymbol interference. In *Proceedings of the 4th IEEE Signal Processing Advances in Wireless Communications*, pages 244–248, Rome, Italy, June 15-18 2003.
- C09** J. Faneuff and D.R. Brown III. Noise reduction and increased VAD accuracy using spectral subtraction. In *Proceedings of the 2003 International Signal Processing Conference*, Dallas, TX, March 31-April 3 2003.
- C08** D.R. Brown III. Improved multistage parallel interference cancellation using limit cycle mitigation. In *CISS2002: Conference on Information Sciences and Systems*, pages 978–983, Princeton, NJ, March 20-22, 2002.
- C07** M. Motani and D.R. Brown III. On the convergence of linear parallel interference cancellation. In *Proceedings of the 2001 IEEE International Symposium on Information Theory*, page 35, Washington, DC, June 24-29, 2001.
- C06** M. Motani, D.R. Brown III, C.R. Johnson Jr., and H.V. Poor. On linear parallel interference cancellation. In *Proceedings of the 2000 IEEE International Symposium on Information Theory*, page 334, Sorrento, Italy, June 25-30, 2000.
- C05** D.R. Brown III and C.R. Johnson Jr. SINR, power efficiency, and theoretical system capacity of parallel interference cancellation. In *CISS2000: Conference on Information Sciences and Systems*, pages TA2.1–TA2–6, Princeton, NJ, March 15-17, 2000.
- C04** D.R. Brown III, C.R. Johnson Jr., and H.V. Poor. Eavesdropping on the IS-95 downlink: Reduced complexity optimum and suboptimum multiuser detectors. In *Proceedings of the IEEE Wireless Communications and Networking Conference*, volume 2, pages 819–23, New Orleans, LA, September 21-24, 1999.
- C03** D.R. Brown III, D.L. Anair, and C.R. Johnson Jr. Linear detector length conditions for DS-CDMA perfect symbol recovery. In *Proceedings of the 2nd IEEE Workshop on Signal Processing Advances in Wireless Communications*, pages 178–181, Annapolis, MD, May 1999.

- C02** D.R. Brown III, D.L. Anair, and C.R. Johnson Jr. Fractionally sampled linear detectors for DS-CDMA. In *Proceedings of the 33rd Asilomar Conference on Signals, Systems, and Computers*, pages 1873–1877, Pacific Grove, CA, November 1998.
- C01** D.R. Brown III, P. Schniter, and C.R. Johnson Jr. Computationally efficient blind equalization. In *Proceedings of the 35th Annual Allerton Conference on Communications, Control and Computing*, pages 54–63, Monticello, IL, October 1997.

Fellowships and Grants Awarded

Grants Awarded

- G28** October 2018 – October 2020. \$177,776, **co-PI**, “EAGER: Collaborative Research: Fundamental limits on information freshness”. **National Science Foundation**.
- G27** April 2016 – April 2018. \$230,834, **PI**, “A System and Experimental Plan for New Research in Distributed Multi-Input Multi-Output (DMIMO) Communication Systems”. **Army Research Office (DURIP Award)**.
- G26** August 2015 – July 2016. \$61,214, **PI**, “2015 Implementation of a WPI Project Center at MIT Lincoln Laboratory”. **MIT Lincoln Laboratory**.
- G25** August 2015 – May 2016. \$16,000, **PI**, REU supplement to “An Efficient Framework for Channel State Dissemination and Network Synchronization”. **National Science Foundation**.
- G24** January 2015 – June 2016. \$252,000 **PI**, “Distributed Beamforming Techniques Development (Phase 1)”. DARPA Arrays at Commercial Timescales program. **DARPA program subcontract through BBN**.
- G23** July 2014 – January 2015. \$120,000, **PI**, “Distributed Beamforming Techniques Development (Phase 0)”. DARPA Arrays at Commercial Timescales program. **DARPA program subcontract through BBN**.
- G22** August 2014 – May 2015. \$20,250, **PI**, REU supplement to “An Efficient Framework for Channel State Dissemination and Network Synchronization”. **National Science Foundation**.
- G21** August 2013 – August 2016. \$499,616, **PI**, “An Efficient Framework for Channel State Dissemination and Network Synchronization”. **National Science Foundation**.
- G20** July 2013 – July 2016. \$331,939, **co-PI**, “Distributed coherence: fundamental building blocks, system concepts, and experimental demonstration”. Collaborative grant of total value \$1,200,000 with University of Iowa and University of California Santa Barbara. **National Science Foundation**.
- G19** August 2011 – March 2013. \$202,547, **PI**, “Distributed MIMO Techniques”. DARPA Computational Leverage Against Surveillance Systems (CLASS) program. **DARPA program subcontract through BBN**.

- G18** June 2010–March 2012. \$325,018, **PI**, “Surgically Precise Attack on Navigation and Communications”. DARPA Precision Electronic Warfare (PREW) program. **DARPA program subcontract through BBN.**
- G17** October 2008 – December 2008. \$10,328, **PI**, “Localized Control of Coherent Energy” seedling project. **DARPA program subcontract through BBN.**
- G16** May 2008 – May 2009. \$11,980, **PI**, REU supplement to “CAREER: Cooperative Communication Systems: Resource Allocation, Self-Organization, and Synchronization”. **National Science Foundation.**
- G15** May 2005 – May 2006. \$6,000, **PI**, REU supplement to “CAREER: Cooperative Communication Systems: Resource Allocation, Self-Organization, and Synchronization”. **National Science Foundation.**
- G14** April 2005. \$4,740, **co-PI**, “Simulation of Novel Spatial Filter Concepts for High-Resolution Electromyogram Array”. **WPI Research Development Council.**
- G13** September 2005 – May 2006. \$10,000, **PI**, “MQP: Wireless Test Equipment”. **Bose, Inc.**
- G12** September 2005 – May 2006. \$10,000, **PI**, “MQP: Testing of MP3 Jukebox with Multimodal Interface”. **Bose, Inc.**
- G11** January 2005 – December 2010. \$400,000, **PI**, “CAREER: Cooperative Communication Systems: Resource Allocation, Self-Organization, and Synchronization”. **National Science Foundation.**
- G10** September 2004 – May 2005. \$10,000, **PI**, “MQP: Multichannel Measurement and Analysis of Noise in Automobiles”. **Bose, Inc.**
- G09** September 2004 – May 2005 \$10,000, **PI**, “MQP: MP3 Jukebox with Speech Recognition Control”. **Bose, Inc.**
- G08** September 2003 – May 2004. \$70,931, **PI**, “Removing passing car noise from an automotive hands-free phone” from **Bose, Inc.**
- G07** September 2003 – May 2004. \$7,000, **PI**, “MQP: Analysis of Car Noise Received by Hands-Free Microphones”. **Bose, Inc.**
- G06** September 2003 – May 2004. \$7,000, **PI**, “MQP: Automotive Speech Recognition Evaluation Tools and Process”. **Bose, Inc.**
- G05** February 2003 – December 2003. \$5,000, **PI**, “Real-time Acoustic Communication System for In-Class Demonstrations and Interactive Learning”. **WPI CEDTA.**
- G04** September 2002 – March 2004. \$122,991, **PI**, “Robust Measurement of the Glottal Waveform Using a Coupled Microstrip Line Transverse Electromagnetic Resonator”. **DARPA/NAVSEA Advanced Speech Encoding (ASE) program.**
- G03** August 2002 – January 2004. \$99,976, **co-PI**, “ASA: Using Assessment Information to Enhance Students’ Academic Progress”. **National Science Foundation.**

G02 March 2002 – May 2002. \$1,850, **PI**, “Magnetic Field Crosstalk Characterization and Remediation for Improved Accuracy in Non-Intrusive Current Metering”. **General Electric Industrial Systems**.

G01 August 2001 – March 2002. \$5,000, **PI**, “MQP: Low Cost Current Meter”. **General Electric Industrial Systems**.

Equipment Donations

D07 September 2013. National Instruments Labview software donation and MyRIO hardware donation. Donated by the **National Instruments**.

D06 January 2013. NVidia Tesla K20 GPU donation for GPU accelerated simulations. Donated by the **NVidia Corporation**.

D05 August 2009. Texas Instruments TMS320C6713 DSKs and Code Composer Studio software licenses for ECE4703. Donated by the **Texas Instruments**.

D04 August 2008. Texas Instruments TMS320C6713 DSKs and Code Composer Studio software licenses for ECE4703. Donated by the **Texas Instruments**.

D03 August 2007. Texas Instruments TMS320C6713 DSKs and Code Composer Studio software licenses for ECE4703. Donated by the **Texas Instruments**.

D02 August 2006. Texas Instruments TMS320C6713 DSKs and Code Composer Studio software licenses for ECE4703. Donated by the **Texas Instruments**.

D01 May 2005. Texas Instruments TMS320C6713 DSKs and Code Composer Studio software licenses for ECE4703. Donated by the **Texas Instruments**.

Patents Issued and Pending

P04 Co-Inventor on US Patent no. 9,042,367 “System and Method for Synchronizing Phases and Frequencies of Devices in Multi-User Wireless Communication Systems”, issued May 26, 2015.

P03 Co-Inventor on US Patent no. 8,634,405B2 “System and Method for Synchronizing Phases and Frequencies of Devices in Multi-User Wireless Communication Systems”, issued January 2014.

P02 Co-inventor on US Patent no. 5,867,669, “Apparatus and Method for Upgrading Communication Functions”, filed July 1995, issued February 1999.

P01 Co-inventor on US Patent no. 5,862,391, “Power Management Control System”, filed April 1996, issued January 1999.

Service and Awards

Honors, Awards, and Recognitions

- Elected member of Board of Governors for the Asilomar Conference on Signals, Systems, and Computers, October 2018 – present.
- Invited panelist speaker at ICCCN, August 2017.
- Invited panelist speaker at ICASSP, March 2017.
- Invited keynote speaker at the IEEE Globecom First International Workshop on the Internet of Everything, December 2016.
- Invited keynote speaker at the IEEE Globecom NetCod 2016 Workshop, December 2016.
- Our paper [C20] “On throughput efficiency of geographic opportunistic routing in multihop wireless networks”, by K. Zeng, W. Lou, J. Yang, and D.R. Brown III, received the best paper runner-up award in QShine 2007, Vancouver, British Columbia, Canada, August 14-17, 2007.
- Invited panelist and presenter at the Presidential Award for Excellence in Science, Mathematics, and Engineering (PAESMEM) workshop at Stanford University. Palo Alto, CA. June 2004.
- In D-term 2004, the MQP “Optimal Electromyogram Amplitude Estimation Algorithm Implementation for Functional Electrical Stimulation” that I co-advised with Ted Clancy won a Sigma Xi research award. The students were Christian A. Salini, John A. Tranquilli and Punit Prakash.
- Honorable Mention, President’s IQP Awards, 2003. Awarded by a panel of faculty judges to two projects that I advised in London in D-term 2003: “Development of NurseLife Online Community” (Zachary Lewko, Houg Ly, and Kevin Menard) and “North Circular Road Environmental Improvement Initiative” (Jonathan Casey, Ramzi Kataya, and Matthew Mara).
- WPI ECE Department Joseph Samuel Satin Distinguished Fellow Award, 2002. The fellowship is awarded to a member of the ECE Department in recognition of the importance of encouraging excellence and supporting the exploration of new ideas and teaching approaches. It includes a substantial stipend to support these initiatives.
- Sigma Phi Epsilon’s Faculty Appreciation Award, 2002. This award was presented by Chris Busso, a student in my Microprocessor System Design course, at the Sigma Phi Epsilon’s Faculty Appreciation Dinner on April 24, 2002.

- IEEE Teaching Assistant of the Year Award, Cornell Chapter, 1997. Awarded by the undergraduate students in the ECE department at Cornell University for my assistance in two signal processing courses.
- GE Elfun Partners in Education Award, 1993. Awarded by the General Electric Elfun Society for math tutoring and mentoring.

Memberships and Offices held in Professional Societies

Member of IEEE since 1997. Senior Member of IEEE since 2009.

Editorial, Conference Organization, and Referee Services

I am currently serving as an Associate Editor for *IEEE Transactions on Wireless Communications* (appointment starting May 1, 2015). I have also served various organizational roles for several conferences in my field including:

- Technical Program Committee member of 2019 Age of Information workshop at the IEEE International Conference on Computer Communications (INFOCOM 2019).
- Special Sessions Chair for the Signal Processing and Wireless Communications conference (SPAWC 2018).
- Technical Program Committee member of 2017 International Conference on Distributed Computing in Sensor Systems (DCOSS 2017)
- Technical Program Committee member of 2015 IEEE International Conference on Ubiquitous Wireless Broadband (IEEE ICUWB 2015)
- Technical Program Committee member of 2015 International Conference on Computer and Communications (ICCC 2015)
- Technical Program Committee member of 2015 International Conference on Distributed Computing in Sensor Systems (DCOSS 2015)
- Technical Program Committee member of IEEE Globecom 2015, Signal Processing for Communications (SPC) Symposium.
- Technical Program Committee member of IEEE DCOSS 2014, Signal Processing and Information Theory track.
- Technical Program Committee member of IEEE Globecom 2014, Signal Processing for Communications Symposium.
- Publicity co-chair for 2013 IEEE GlobalSIP conference (December 2013).
- Student Paper Contest Chair for the IEEE Asilomar Conference on Signals, Systems, and Computers (November 2013). Also served as session chair for two sessions at this conference.
- Technical Program Committee member of IEEE Globecom 2013, Wireless Communication Symposium.

- Technical Program Committee member of IEEE Globecom 2012, Cognitive Radio and Networks Symposium.
- Session chair at CISS 2012.
- Technical Program Committee member of IEEE Vehicular Technology Conference 2010, Cognitive Radio and Cooperative Communications
- Technical Program Committee member of IEEE Globecom 2008, Wireless Communications.
- Session chair at ISITA 2008.
- Session chair at CISS 2008.
- Co-organizer for WPI Wireless LAN conference, September 2001

In addition to these conference organization activities, my service to the profession includes serving on several NSF proposal review panels. I am also an active reviewer, reviewing typically 5-10 manuscripts per year. My reviews have been for a wide range of journals and conferences including *IEEE Transactions on Signal Processing*, *IEEE Transactions on Communications*, *IEEE Transactions on Information Theory*, *IEEE Journal on Selected Areas in Communications*, Globecom, ICASSP, CISS, and the Asilomar Conference on Signals, Systems, and Computers. I have also reviewed several books and book proposals.

Committee and Administrative Assignments

Department Committees

- August 2018 – present. Member of the ECE Department Visibility Committee.
- August 2018 – May 2019. Chair of ECE Department Faculty Hiring Committee.
- January 2017 – August 2018. No committee work due to NSF IPA assignment.
- August 2011 – January 2016. Member of ECE Department Faculty Hiring Committee.
- September 2013 – January 2016. Member of ECE Department Graduate Program Committee.
- April 2013 – April 2015. Member of ECE Department Tenure Committee.
- September 2012 – May 2013. Member of ECE Department Graduate Program Committee.
- January 2012 – May 2012. ECE Department Graduate Seminar chair.
- September 2011 – May 2012. Member of ECE Department Graduate Program Committee.
- September 2010 – May 2011. Chair of ECE Department Graduate Program Committee.
- September 2009 – May 2010. Member of ECE Department Graduate Program Committee.
- March 2009 – March 2011. Member of ECE Department Tenure Committee.
- September 2008 – May 2009. Member of ECE Department Graduate Program Committee.

- September 2008 – December 2008. ECE Department Graduate Seminar chair.
- September 2007 – May 2008. Member of ECE Department Graduate Program Committee.
- September 2006 – May 2007. Chair of ECE Department Graduate Program Committee. While serving as chair, I led the initiative to implement several improvements to the admissions process including the early development of an electronic application folder system that ended up being rolled out to all departments at WPI.
- September 2006 – December 2006. ECE Department Graduate Seminar chair.
- September 2004 – May 2006. Member of ECE Department Advisory Committee.
- September 2004 – May 2006. Chair of ECE Department Undergraduate Program Committee.
- September 2003 – May 2004. Member of ECE Department Undergraduate Program Committee.
- September 2001 – May 2003. Member of ECE Department Graduate Program Committee.
- September 2000 – May 2001. Member of ECE Department Undergraduate Projects Committee.
- Served several times as best MQP judge, graduate poster judge.
- Department-wide PhD diagnostic exam coordinator.

University Committees and Other University Service

- September 2015 – October 2015. Member of the Committee on Graduate Studies and Research (terminated appointment due to NSF IPA leave).
- September 2011 – May 2012. Chair of the Committee on Graduate Studies and Research.
- September 2010 – May 2011. Member of the Faculty Review Committee.
- April 2010. Office of Research Administration CAREER panel.
- September 2009 – May 2010. New faculty mentor.
- September 2009 – May 2012. Member of the Committee on Graduate Studies and Research.
- September 2006 – May 2007. Chair of Committee on Advising and Student Life.
- April 2007. Office of Research Administration CAREER panel.
- September 2004 – May 2007. Member of Committee on Advising and Student Life.
- September 2006 – May 2007. New faculty mentor.
- May 2005. Office of Research Administration CAREER panel.

Teaching

Teaching Experience

I have taught courses at the undergraduate and graduate levels and have received consistently excellent course evaluations easily in the top quartile of all faculty at WPI. The topics I have taught include embedded systems, signals and systems, signal processing, communication systems, networking, and detection and estimation. I have also advised dozens of junior-level Interactive Qualifying Projects (IQPs), senior-level Major Qualifying Projects (MQPs), independent studies, and directed research projects. While on sabbatical leave in 2007–2008, I taught a graduate course “ELE530: Theory of Detection and Estimation” at Princeton University. Syllabi, assignment, slides, and other materials for all of my courses since 2006 can be found at <http://spinlab.wpi.edu/teaching.html>.

Table 1 summarizes the undergraduate courses that I have taught at WPI. Table 2 summarizes the graduate courses that I have taught at WPI and at Princeton University while on sabbatical leave in 2007-2008. Additionally, I taught the “Real-Time DSP Workshop”, a two-day short course, sponsored by IEEE and Texas Instruments in August 2005, October 2006, October 2007, October 2008, and October 2009.

Other Educational Activities

From 2011 – 2013, I served as a co-organizer and coach of the Spring Street Lego Robotics club at the Spring Street Elementary School in Shrewsbury, MA. I worked with other parents in the community as well as the staff at the Spring Street Elementary School to develop and organize a Lego Robotics program for K–4th grade students. I also participated as a coach through two seasons, coaching a team of 6-8 students to develop and use Legos to realize an invention with positive benefits to society. Each season ended with each team presenting their invention to the other teams as well as parents, teachers, and administrators of the Spring Street Elementary School.

Term	Number	Course Title	Enrollment	Lab
C16 — D18	—	<i>NSF IPA Program Director leave</i>	—	—
B term 2015	ECE4703	Real-Time DSP	24	Y
D term 2014	ECE2305	Intro to Communications and Networks	78	N
B term 2013	ECE4703	Real-Time DSP	24	Y
B term 2012	ECE4703	Real-Time DSP	16	Y
B term 2011	ECE4703	Real-Time DSP	16	Y
B term 2010	ECE4703	Real-Time DSP	14	Y
D term 2010	ECE2311	Continuous-Time Signal and System Analysis	48	N
B term 2009	ECE4703	Real-Time DSP	24	Y
B term 2008	ECE4703	Real-Time DSP	24	Y
A07 — D08	—	<i>Sabbatical leave (Princeton University)</i>	—	—
D term 2007	ECE230X	Intro to Communications and Networks	29	N
C term 2007	ECE4304	Communication Systems Engineering	14	N
B term 2006	ECE4703	Real-Time DSP	20	Y
C term 2006	ECE4304	Communication Systems Engineering	10	N
B term 2005	ECE3703	Real-Time DSP	21	Y
C term 2005	ECE4304	Communication Systems Engineering	12	N
B term 2004	ECE3703	Real-Time DSP	19	Y
C term 2004	ECE4304	Communication Systems Engineering	22	N
A term 2003	ECE4801	Advanced Computer System Design	14	Y
C term 2003	ECE4801	Advanced Computer System Design	26	Y
A term 2002	ECE4801	Advanced Computer System Design	18	Y
D term 2002	ECE3803	Microprocessor System Design	24	Y
B term 2001	ECE3803	Microprocessor System Design	35	Y
D term 2001	ECE3803	Microprocessor System Design	43	Y
B term 2000	ECE3803	Microprocessor System Design	21	Y

Table 1: Summary of undergraduate courses taught at WPI.

Term	Number	Course Title	Enrollment
Spring 2019	ECE531	Principles of Detection and Estimation	18
Spring 2014	ECE503	Digital Signal Processing	35
Spring 2013	ECE531	Principles of Detection and Estimation	23
Spring 2012	ECE503	Digital Signal Processing	65
Spring 2011	ECE531	Principles of Detection and Estimation	32
Fall 2009	ECE504	Deterministic Signals and Systems	32
Spring 2009	ECE531	Principles of Detection and Estimation	19
Fall 2008	ECE504	Deterministic Signals and Systems	18
Spring 2008	ELE530	Theory of Detection and Estimation (Princeton)	12
Spring 2004	ECE533	Advances in Digital Communications	4
Fall 2001	ECE533	Advances in Digital Communications	4
Fall 2000	ECE504	Deterministic Signals and Systems	7

Table 2: Summary of graduate courses taught at WPI and Princeton.