Nicholas Mastronarde

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University at Buffalo
Department of Electrical Engineering
226 Davis Hall
Buffalo, NY 14260

RESEARCH INTERESTS:

Reinforcement learning; Markov decision processes; UAV networks; Multi-agent planning; Energy-efficient resource allocation and scheduling in wireless networks and systems; 4G/5G networks; Cross-layer design and optimization;

EMPLOYMENT HISTORY:

8/2017 - Present University at Buffalo, The State University of New York, Buffalo, NY
Associate Professor, Department of Electrical Engineering

8/2011 - 8/2017 University at Buffalo, The State University of New York, Buffalo, NY
Assistant Professor, Department of Electrical Engineering

EDUCATION:

2006-2011: University of California, Los Angeles (UCLA)
Ph.D. Electrical Engineering
Dissertation: Online learning for energy-efficient multimedia systems
Advisor: Prof. Mihaela van der Schaar

2005-06: University of California, Davis (UC Davis)
M.S. Electrical Engineering
Thesis: Video streaming over wireless multi-hop mesh networks
Advisor: Prof. Mihaela van der Schaar

2001-05: University of California, Davis (UC Davis)
B.S. Electrical Engineering

HONORS, AWARDS, AND FELLOWSHIPS:

- Dimitris N. Chorafas Foundation Award (2011)
- UCLA Graduate Division Dissertation Year Fellowship (2010-2011)
- IBM Research Watson Lab Graduate Intern Fellowship (2010)
- Intel Corporation Graduate Intern Fellowship (2007)
- UCLA EE First Year Department Fellowship (2006-2007)

- UC Davis ECE Department Fellowship (2005-2006)
- UC Davis ECE B.S. with Highest Honors and Department Citation (2005)

SPONSORED RESEARCH:

Total: **$1,041,601**; Own share: **$690,888**.

Note: The percentage value in each entry identifies formal effort and account credit.

[1] PI (effort: 33%), "Autonomous interference avoiding networking on the Mxxx GE platform," GE Aviation, Sept. 1, 2018 – July 31, 2019. **$170,000**.

[2] Co-PI (effort: 50%), "Integration of EMANE and the UB-ANC Emulator," US Air Force Research Laboratory, Mar. 1, 2019 – June 20, 2019. **$25,000**.

[3] Co-PI (effort: 40%), "Multi-drone sensor system for search and rescue," Buffalo Blue Sky, Feb. 8, 2019 – Aug. 31, 2020. **$10,000**.

[4] Co-PI (effort: 40%), "CCSS: Collaborative Research: Ubiquitous sensing for VR/AR immersive communication: A machine learning perspective," National Science Foundation, Award No. ECCS 1711335, July 1, 2017 – June 30, 2020. **$370,000**.

[5] PI/PD (effort: 100%), "Autonomous aerial swarms for continuous real-time intelligence, surveillance, and reconnaissance," US Air Force Research Laboratory. Amendment to existing grant, **$60,000**.

[6] PI/PD (effort: 100%), "Scheduling mission-critical flows in congested and contested airborne network environments," US Air Force Research Laboratory, Award No. 67228, Feb. 4, 2014 – Sept. 30, 2017, **$257,157**.

[7] PI/PD (effort: 100%), "Tactical environment emulation in UB's Airborne Networking and Communications Testbed (UB-ANC)," Griffis Institute, Award No. 72855, Sept. 4, 2015 – Oct. 31, 2015, **$5000**.

[8] PI/PD (effort: 100%), "Scheduling heterogeneous flows in a bottleneck airborne network node," US Air Force Rome Laboratory Griffis Air Force Base, Award No. 64040, Aug. 1, 2013 – Oct. 31, 2013, **$23,973**.

[9] PI/PD (effort: 100%), "Scheduling heterogeneous flows in a bottleneck airborne network node," Rome Research Corporation, Award No. 65728, Aug. 5, 2013 – Nov. 4, 2013, **$18,000**. Equipment grant for purchasing 6 USRP N210 software-defined radios, 6 SBX USRP Daughterboards (400 MHz – 4.4 GHz), 12 VERT2450 Antennas, and 5 Dell Latitude E6530 laptops.

[10] Air Force Research Laboratory Research Fellowship, **$56,471** (Summer 2018, Summer 2016, Summer 2015, Summer 2013).

UNIVERSITY AT BUFFALO SUPPORT

[1] SUNY Open Educational Resources (OER) Services, **$1687**.

[2] STEM Mentoring for Undergraduate Research Initiative (SMURI), Spring 2014, **$1000**.

[3] Startup: **$45,000**.

PUBLICATIONS:

Note: Dr. Mastronarde's supervised graduate students are underlined in the references below. Supervised undergraduate students are *underlined and italicized*.

PEER-REVIEWED JOURNAL PAPERS

[1] F. Ghanei, J. Modares, **N. Mastronarde**, and K. Dantu, "Minimum energy coverage path planning for UAVs," *International Journal of Robotics Research*, in review.

[2] Z. Hajibabaei, A. Vosoughi, and **N. Mastronarde**, "Optimal power allocation for M-ary distributed detection in the presence of channel uncertainty," *Signal Processing*, in review.

[3] N. Sharma, **N. Mastronarde**, and J. Chakareski, "Accelerate structure-aware reinforcement learning for delay-sensitive energy harvesting wireless sensors," *IEEE Trans. on Signal Processing*, in review.

[4] N. Sharma, **N. Mastronarde**, and J. Chakareski, "Delay-sensitive energy harvesting wireless sensors: optimal scheduling, structural properties, and approximation analysis," *IEEE Trans. on Communications*, in review.

[5] J. Modares, **N. Mastronarde**, and K. Dantu, "Simulating unmanned aerial vehicle swarms with the UB-ANC Emulator," *International Journal of Micro Air Vehicles*, April 2019.

[6] J. Chakareski, S. Naqvi, **N. Mastronarde**, J. Xu, F. Afghah, and A. Razi, "An energy efficient framework for UAV-assisted millimeter wave 5G heterogeneous cellular networks," *IEEE Trans. Green Communications and Networking*, vol. 3, no. 1, pp. 37-44, March 2019.

[7] S. Wu, R. Atat, **N. Mastronarde**, and L. Liu, "Improving the coverage and spectral efficiency of millimeter-wave cellular networks using device-to-device relays," *IEEE Trans. On Communications*, vol. 66, no. 5, pp. 2251-2265, May 2018. **Selected to be featured in IEEE COMSOC MMTC Communications R-Letter, ed. C. Chen, Nov. 2018.**

[8] R. Atat, L. Liu, **N. Mastronarde**, and Y. Yi, "Energy harvesting-based relay-assisted D2D cellular networks," *IEEE Trans. on Communications*, vol. 65, no. 3, pp. 1289-1302, March 2017.

[9] **N. Mastronarde**, V. Patel, J. Xu, L. Liu, and M. van der Schaar, "To relay or not to relay: learning device-to-device relaying strategies in cellular networks," *IEEE Trans. on Mobile Computing*, vol. 15, no. 6, pp. 1569-1585, June 2016.

[10] K. Kanoun, D. Atienza, **N. Mastronarde**, and M. van der Schaar. "Online energy-efficient task-graph scheduling for multicore platforms," *IEEE Trans. on Computer-Aided Design of Integrated Circuits and Systems*, vol. 33, no. 8, pp. 1194-1207, Aug. 2014.

[11] **N. Mastronarde** and M. van der Schaar, "Joint physical-layer and system-level power management for delay-sensitive wireless communication," *IEEE Trans. on Mobile Computing*, vol. 12, no. 4, pp. 694-709, April 2013.

[12] **N. Mastronarde**, K. Kanoun, D. Atienza, P. Frossard, and M. van der Schaar, "Markov decision process based energy-efficient on-line scheduling for slice-parallel video decoders on multicore systems," *IEEE Trans. on Multimedia*, vol. 15, no. 2, pp. 268-278, Feb. 2013.

[13] **N. Mastronarde**, F. Verde, D. Darsena, A. Scaglione, and M. van der Schaar, "Transmitting important bits and sailing high radio waves: a decentralized cross-layer approach to cooperative video transmission," *IEEE J. on Select. Areas in Communications Cooperative Networking – Challenges and Applications*, vol. 30, no. 9, pp. 1597-1604, Oct. 2012.

[14] **N. Mastronarde** and M. van der Schaar, "Fast reinforcement learning for energy-efficient wireless communication," *IEEE Trans. on Signal Processing*, vol. 59, no. 12, pp. 6262-6266, Dec. 2011.

[15] **N. Mastronarde** and M. van der Schaar, "Online reinforcement learning for dynamic multimedia systems," *IEEE Trans. on Image Processing*, vol. 19, no. 2, pp. 290-305, Feb. 2010.

[16] **N. Mastronarde** and M. van der Schaar, "Designing autonomous layered video coders," *Elsevier Journal Signal Processing: Image Communication – Special Issue on Scalable Coded Media Beyond Compression*, vol. 24, no. 6, pp. 417-436, July 2009.

[17] **N. Mastronarde** and M. van der Schaar, "Towards a general framework for cross-layer decision making in multimedia systems," *IEEE Trans. on Circuits and Systems for Video Technology*, vol. 19, no. 5, pp. 719-732, May 2009.

[18] **N. Mastronarde** and M. van der Schaar, "Automated bidding for media services at the edge of a content delivery network," *IEEE Trans. on Multimedia,* vol. 11, no. 3, pp. 543-555, Apr. 2009.

[19] **N. Mastronarde** and M. van der Schaar, "A bargaining theoretic approach to quality-fair system resource allocation for multiple decoding tasks," *IEEE Trans. Circuits and Systems for Video Technology*, vol. 18, no. 4, pp. 453-466, Mar. 2008.

[20] **N. Mastronarde** and M. van der Schaar, "A queuing-theoretic approach to task scheduling and processor selection for video decoding applications," *IEEE Trans. Multimedia*, vol. 8, no. 7, pp. 1493-1507, Nov. 2007.

[21] **N. Mastronarde**, D. S. Turaga, and M. van der Schaar. "Collaborative resource exchanges for peer-to-peer video streaming over wireless mesh networks," *IEEE J. on Select. Areas in Communications Peer-to-peer Communications and Applications*, vol. 25, no. 1, pp. 108-118, Jan. 2007.

[22] Y. Andreopoulos, **N. Mastronarde**, and M. van der Schaar, "Cross-layer optimized video streaming over wireless multi-hop mesh networks," *IEEE J. on Select. Areas in Communications Multi-Hop Wireless Mesh Networks*, vol. 24, no. 11, pp. 2104-2115, Nov. 2006.

PEER-REVIEWED CONFERENCE PROCEEDINGS

[1] *M. Rantanen*, **N. Mastronarde**, J. Hudack, and K. Dantu, "Decentralized task allocation in lossy networks: a simulation study," *IEEE International Conference on Sensing, Communication, and Networking (SECON)*, to appear. (Acceptance rate: 28.6%)

[2] C. Lee, **N. Mastronarde**, M. van der Schaar, "Estimation of individual treatment effect in latent confounder models via adversarial learning," *Neural Information Processing Systems Workshops – Machine Learning for Health*, Dec. 2018. **Among 6% of papers invited for spotlight talk.**

[3] O. Lahav, **N. Mastronarde**, M. van der Schaar, "What is interpretable? Using machine learning to design interpretable decision-support systems," *Neural Information Processing Systems Workshops – Machine Learning for Health*, Dec. 2018. **Among 6% of papers invited for spotlight talk.**

[4] *M. Rantanen*, J. Modares, **N. Mastronarde**, F. Ghanei, and K. Dantu, "Performance of the asynchronous consensus based bundle algorithm in lossy network environments," *IEEE Sensor Array and Multichannel Signal Processing Workshop (SAM)*, July 2018.

[5] N. Sharma, **N. Mastronarde**, and J. Chakareski, "Structural properties of optimal transmission policies for delay-sensitive energy harvesting wireless sensors," *IEEE International Conference on Communications (ICC)*, May 2018. (Acceptance rate: 40%)

[6] S. Wu and **N. Mastronarde**, "Coverage and spectral efficiency of device-to-device relay-assisted cellular networks," *IEEE International Conference on Communications (ICC)*, May 2018. (Acceptance rate: 40%)

[7] S. Naqvi, J. Chakareski, **N. Mastronarde**, J. Xie, F. Afghah, and A. Razi, "Energy efficiency analysis of UAV-assisted mmWave HetNets," *IEEE International Conference on Communications (ICC)*, May 2018. (Acceptance rate: 40%)

[8] J. Modares, **N. Mastronarde**, and K. Dantu, "Realistic network simulation in the UB-ANC aerial vehicle network emulator," *IEEE INFOCOM Workshop on Wireless Communications and Networking in Extreme Environments (WCNEE)*, pp. 1-6, May 2017.

[9] J. Modares, F. Ghanei, **N. Mastronarde**, and K. Dantu, "UB-ANC Planner: Minimum energy coverage path planning with multiple drones," *IEEE International Conference on Robotics and Automation (ICRA)*, pp. 1-8, May 2017. (Acceptance rate: 41%)

[10] A. H. Memar, **N. Mastronarde**, and E. T. Esfahani, "Design of a novel variable stiffness gripper using permanent magnets," *IEEE International Conference on Robotics and Automation (ICRA)*, pp. 1-6, May 2017. (Acceptance rate: 41%)

[11] S. Wu, R. Atat, **N. Mastronarde**, and L. Liu, "Coverage analysis of D2D relay-assisted millimeter-wave cellular networks," *IEEE Wireless Communications and Networking Conference,* pp. 1-6, Mar. 2017.

[12] J. Modares, **N. Mastronarde**, K. Dantu, "UB-ANC Emulator: An emulation framework for multi-agent drone networks," *IEEE International Conference on Simulation, Modeling, and Programming for Autonomous Robots (SIMPAR)*, pp. 252-258, Dec. 2016.

[13] **N. Mastronarde**, J. Modares, C. Wu, and J. Chakareski, "Reinforcement learning for energy-efficient delay-sensitive CSMA/CA scheduling," *IEEE Global Communications Conference (GLOBECOM)*, pp. 1-7, Dec. 2016.

[14] H. Chen, L. Liu, **N. Mastronarde**, L. Ma, and Y. Yi, "Cooperative retransmission for massive MTC under spatiotemporal correlated interference," *IEEE Global Communications Conference (GLOBECOM)*, pp. 1-6, Dec. 2016.

[15] J. Modares and **N. Mastronarde**, "Poster: UB-ANC: A flexible airborne networking and communications testbed," *ACM International Workshop on Wireless Network Testbeds, Experimental Evaluation & Characterization (WiNTECH)*, pp. 95-96, Oct. 2016.

[16] J. Modares, **N. Mastronarde**, and K. Dantu, "Demo: UB-ANC Emulator: An emulation framework for multi-agent drone networks," *ACM International Workshop on Wireless Network Testbeds, Experimental Evaluation & Characterization (WiNTECH)*, pp. 93-94, Oct. 2016.

[17] P. Shome, J. Modares, **N. Mastronarde**, and A. Sprintson, "Enabling dynamic reconfigurability of SDRs using SDN principles," *Ad Hoc Networks*, pp. 369-381, Sept. 2016.

[18] N. Toorchi, J. Chakareski, and **N. Mastronarde**, "Fast and low-complexity reinforcement learning for delay-sensitive energy harvesting wireless visual sensing systems," *IEEE International Conference on Image Processing (ICIP)*, pp. 1804-1808, Sept. 2016. (Acceptance rate: 45%)

[19] P. Shome, M. Yan, J. Modares, **N. Mastronarde**, and A. Sprintson, "CrossFlow: A cross-layer architecture for SDR using SDN principles," *IEEE Conference on Network Function Virtualization and Software Defined Networks (NFV-SDN)*, pp. 37-39, Nov. 2015.

[20] C. Wu, **N. Mastronarde**, and M. Gerla, "Incentive driven LTE content distribution in VANETs," *The 14th IFIP Annual Mediterranean Ad Hoc Networking Workshop (Med-Hoc-Net)*, pp. 1-8, June 2015. (Acceptance rate: 54.5%)

[21] **N. Mastronarde**, V. Patel, and L. Liu, "Device-to-device relay assisted cellular networks with token-based incentives," *IEEE International Conference on Communications (ICC)*, pp. 698-704, June 2015. (Acceptance rate: 38.6%)

[22] V. Patel, **N. Mastronarde**, M. J. Medley, and J. D. Matyjas, "Towards optimal priority and deadline driven scheduling in dynamic wireless environments," *IEEE International Symposium on a World of Wireless and Mobile Multimedia Networks (WoWMoM)*, pp. 1-10, June 2015. (Acceptance rate: 21%)

[23] C. Ababei and **N. Mastronarde**, "Benefits and costs of prediction based DVFS for NoCs at Router Level," *IEEE International System-on-Chip Conference (SOCC)*, pp. 255-260, Sept. 2014.

[24] K. Kanoun, D. Atienza, **N. Mastronarde**, and M. van der Schaar, "A unified online directed acyclic graph flow manager for multicore schedulers," *19th Asia and South Pacific Design Automation Conference (ASP-DAC 2014)*, pp. 714-719, Jan. 2014. (Acceptance rate: 31.5%)

[25] **N. Mastronarde**, V. Patel, J. Xu, and M. van der Schaar, "Learning relaying strategies in cellular D2D networks with token-based incentives," *International Workshop on Emerging Technologies for LTE-Advanced and Beyond-4G*, *IEEE Global Communications Conference (GLOBECOM)*, pp. 163-169, Dec. 2013. (Acceptance rate: 41%)

[26] **N. Mastronarde**, K. Kanoun, D. Atienza, and M. van der Schaar, "Markov decision process based energy-efficient scheduling for slice-parallel video decoding," *1st IEEE Workshop of GREEN Multimedia: Energy-efficient Multimedia Computing, Communication and Presentation (In conjunction with ICME 2013)*, pp. 1-6, July 15-19, 2013.

[27] O. Habachi, **N. Mastronarde**, H.-P. Shiang, M. van der Schaar, Y. Hayel, "A learning based congestion control for multimedia transmission in wireless networks," *IEEE International Conference on Multimedia & Expo (ICME)*, pp. 1-6, July 15-19, 2013. (Acceptance rate: 30%)

[28] E. Jung, D. Gupta, **N. Mastronarde**, and X. Liu, "Network-congestion-aware video streaming: a rest-and-download approach," *IEEE International Conference on Sensing, Communication, and Networking (SECON)*, pp. 668-676, June 2012. (Acceptance rate: 31%)

[29] **N. Mastronarde**, F. Verde, D. Darsena, A. Scaglione, and M. van der Schaar, "A decentralized cross-layer approach to cooperative video transmission," *IEEE Global Communications Conference (GLOBECOM)*, pp. 1-6, Dec. 5-9, 2011. (Acceptance rate: 36.6%)

[30] **N. Mastronarde** and M. van der Schaar, "Reinforcement learning for power management in wireless multimedia communications," *IEEE International Conference on Multimedia & Expo (ICME)*, pp. 1-6, July 11-15, 2011. **Designated "Top 15%" paper; Best paper candidate**; **Selected to be featured in IEEE COMSOC MMTC R-Letter, ed. C. J. Debono, Dec. 2011.** (Acceptance rate: 30%)

[31] **N. Mastronarde** and M. van der Schaar, "Reinforcement learning for energy-efficient wireless transmission," *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, pp. 3452-3455, May 22-27, 2011. (Acceptance rate: 49%)

[32] N. Changuel, **N. Mastronarde**, M. van der Schaar, B. Sayadi, and M. Kieffer, "Adaptive scalable layer filtering process for video scheduling over wireless networks based on MAC buffer management," *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, pp. 2352-2355, May 22-27, 2011. (Acceptance rate: 49%)

[33] N. Changuel, **N. Mastronarde**, M. van der Schaar, B. Sayadi, and M. Kieffer, "End-to-end stochastic scheduling of scalable video over time varying channels," *Proc. ACM Multimedia*, pp. 731-734, Oct. 25-29, 2010. (Acceptance rate: 32%)

[34] **N. Mastronarde**, M. van der Schaar, A. Scaglione, F. Verde, and D. Darsena, "Sailing good radio waves and transmitting important bits: relay cooperation in wireless video transmission," *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, pp. 5566-5569, Mar. 14-19, 2010. (Acceptance rate: 48.8%)

[35] **N. Mastronarde** and M. van der Schaar, "A new approach to cross-layer optimization of multimedia systems," *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, pp. 2310-2313, Mar. 14-19, 2010. (Acceptance rate: 48.8%)

[36] **N. Mastronarde** and M. van der Schaar, "Online reinforcement learning for multimedia buffer control," *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, pp. 1958-1961, Mar. 14-19, 2010. (Acceptance rate: 48.8%)

[37] **N. Mastronarde** and M. van der Schaar, "Online layered learning for cross-layer optimization of dynamic multimedia systems," *ACM Multimedia Systems*, pp. 47-58, Feb. 22-23, 2010. (Acceptance rate: 42%)

[38] **N. Mastronarde** and M. van der Schaar, "Autonomous decision making in layered and reconfigurable video coders," *Asilomar Conference on Signals, Systems, and Computers*, pp. 553-557, Nov. 1-4, 2009.

[39] **N. Mastronarde** and M. van der Schaar, "A scalable complexity specification for video applications," *IEEE International Conference on Image Processing* (*ICIP*), pp. 2576-2579, Oct. 12-15, 2008. (Acceptance rate: 45%)

[40] **N. Mastronarde**, D. S. Turaga, and M. van der Schaar, "Collaborative resource management for video over wireless multi-hop mesh networks," *IEEE International Conference on Image Processing* (*ICIP*), pp. 1297-1300, Oct. 8-11, 2006. (Acceptance rate: 40.8%)

[41] **N. Mastronarde**, Y. Andreopoulos, M. van der Schaar, D. Krishnaswamy and J. Vicente, "Cross-layer video streaming over 802.11e-enabled wireless mesh networks," *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP),* vol. 5, pp. V-433- V-436, May 14-19, 2006. (Acceptance rate: 48.1%)

INVITED PAPER

[1] **N. Mastronarde** and M. van der Schaar, "Energy-efficient delay-critical communication in unknown wireless environments," *IEEE COMSOC MMTC E-Letter*, vol. 7, no. 8, pp. 8-11, Nov. 2012.

BOOK CHAPTER

[1] Y. Andreopoulos, **N. Mastronarde**, and M. van der Schaar, "Cross-layer Optimized Video Streaming over Wireless Multi-hop Mesh Networks," Cambridge University Press 2007, ed. Benny Bing (Georgia Tech).

TECHNICAL REPORTS

[1] N. Sharma, **N. Mastronarde**, J. Chakareski, "Accelerated structure-aware reinforcement learning for delay-sensitive energy harvesting wireless sensors," arXiv:1807.08315

[2] J. Modares, **N. Mastronarde**, M. J. Medley, and J. D. Matyjas, "UB-ANC: An open platform testbed for software-defined airborne networking and communications," arXiv:1509.08346.

[3] **N. Mastronarde**, V. Patel, J. Xu, and M. van der Schaar, "To relay or not to relay: learning relaying strategies in cellular device-to-device networks," arXiv:1308.3185.

[4] **N. Mastronarde**, K. Kanoun, D. Atienza, P. Frossard, and M. van der Schaar, "Markov decision process based energy-efficient on-line scheduling for slice-parallel video decoders on multicore systems," arXiv:1112.4084.

[5] **N. Mastronarde**, F. Verde, D. Darsena, A. Scaglione, and M. van der Schaar, "Transmitting important bits and sailing high radio waves: a decentralized cross-layer approach to cooperative video transmission," arXiv:1102.5437.

[6] **N. Mastronarde** and M. van der Schaar, "Fast Reinforcement Learning for Energy Efficient Wireless Communications," arXiv:1009.5773.

PATENTS

[1] Alina Beygelzimer, **Nicholas Mastronarde**, Srinivasan Parthasarathy, Anton V. Riabov, Deepak Turaga, and Octavian Udrea, "Automated Data Exploration," U.S. Patent 20140040279, Feb. 2014.

[2] **N. Mastronarde** and H. Jiang, "Enabling Selective Use of Fractional and Bidirectional Video Motion Estimation," U.S. Patent 20090323807, Dec. 2009.

SCHOLARLY PRESENTATIONS:

INVITED TALKS (Note: Conference presentations not included.)

[1] *An open-source framework for evaluating UAS mission effectiveness in extreme environments*, Air Force Visiting Faculty Fellowship Program Out-Briefing, Air Force Research Laboratory, Rome, NY, August 2018.

[2] *Designing multi-agent drone networks and applications with the University at Buffalo's Airborne Networking and Communications Testbed*, SUNY Polytechnic Visiting Scholar Seminar Series, Utica, NY, March 2018.

[3] *University at Buffalo's Airborne Networking and Communications (UB-ANC) Ecosystem*, Modeling, Simulation and Emulation Technical Interchange Meeting, Air Force Research Laboratory, Rome, NY, August 2017.

[4] *Designing multi-agent drone networks and applications with the University at Buffalo's airborne networking and communications testbed,* Complex Networks Seminar, University at Buffalo, May 4, 2017.

[5] *Undergraduate research and training with the University at Buffalo's airborne networking and communications testbed*, EE Advisory Board Meeting, University at Buffalo, April 27, 2017.

[6] *Distributed command and control in drone networks: from simulation to experimentation*, Technical Interchange Meeting with the Air Force Research Laboratory, University at Buffalo, April 14, 2017.

[7] *UB-ANC: A flexible airborne networking and communications testbed,* AFRL/MathWorks Interchange Meeting, Air Force Research Laboratory, Rome, NY, July 14, 2016.

[8] *UB-ANC: A flexible airborne networking and communications Testbed,* Technical Interchange Meeting, Air Force Research Laboratory, Rome, NY, July 13, 2016.

[9] *UB-ANC Emulator: A cyber-physical emulation framework for UAV networking*, Information Institute Networking Interchange and Poster Session, Air Force Research Laboratory, Rome, NY, July 12, 2016.

[10] *UB-ANC: An emulation framework for multi-agent UAV networks*, AFCEA 2016 C4I & Cyber Conference, Erie Canal Chapter, Poster Session, June 14, 2016.

[11] *Enabling dynamic reconfigurability of SDRs Using SDN Principles*, AFCEA 2016 C4I & Cyber Conference, Erie Canal Chapter, Software Defined Networking for Airborne Networks Workshop, June 14, 2016.

[12] *UB-ANC: A software-defined airborne networking and communications research platform*, Air Force Summer Faculty Fellowship Program (AF SFFP) Exit Talk, Air Force Research Laboratory, Rome, NY, Aug. 7, 2015.

[13] *UB-ANC: A software-defined airborne networking and communications research platform*, Cognitive RF Workshop 2015 Poster Session, Air Force Research Laboratory, Rome, NY, Aug. 6, 2015.

[14] *Towards optimal priority and deadline driven scheduling in dynamic wireless environments*, Information Institute Networking Interchange and Poster Session, Air Force Research Laboratory, Rome, NY, July 14, 2015.

[15] *Congestion-aware HTTP adaptive streaming in mobile broadband cellular networks*, Adaptive Media Transport Workshop, Cisco Systems, Paris, May 18-19, 2015.

[16] *Scheduling mission-critical flows in congested and contested airborne network environments*, Technical Interchange Meeting, Air Force Research Laboratory, Rome, NY, July 17, 2014.

[17] *Introduction to game theory with applications to resource allocation*, Invited Speaker, USTC, Hefei China, Oct. 30, 2013.

[18] *UB Multimedia Communications and Systems Lab: Some present and past research*, Invited Speaker, USTC, Hefei China, Oct. 28, 2013.

[19] *Joint physical-layer and system-level power management for delay-sensitive wireless communication*, Invited Speaker, IEEE SPS Rochester Chapter, Aug. 8, 2013.

[20] *Scheduling heterogeneous flows over a bottleneck airborne network node*, Exit Seminar, Air Force Summer Faculty Fellowship Program (AF SFFP) Air Force Research Lab, Rome, NY, Aug. 1, 2013.

[21] *Energy-efficient communications using Markov decision processes and reinforcement learning*, Invited Speaker, SUNY Buffalo Electrical Engineering Graduate Seminar, Nov. 4, 2011.

[22] *Reinforcement learning for power management in wireless multimedia communications*, Invited Speaker, Visual and Image Processing (VIP) Seminar, University of Waterloo, Sept. 30, 2011.

CONFERENCE PRESENTATIONS

[1] *Performance of the asynchronous consensus based bundle algorithm in lossy network environments*, IEEE Sensor Array and Multichannel Signal Processing Workshop (SAM), Sheffield, UK, July 2018.

[2] *Structural properties of optimal transmission policies for delay-sensitive energy harvesting wireless sensors*, IEEE International Conference on Communications (ICC), Kansas City, MO, May 2018.

[3] *On the photo-thermal effect of intra-body nano-optical communications on red blood cells*, 2nd IEEE International Workshop on Wireless Communications and Networking in Extreme Environments (INFOCOM Workshops), Waikiki, HI, April 2018. (**Best presentation award.)**

[4] *UB-ANC Planner: Energy efficient coverage path planning with multiple drones*, IEEE International Conference on Robotics and Automation (ICRA)*, June 1, 2017.*

[5] *Design of a novel variable stiffness gripper using permanent magnets*, IEEE International Conference on Robotics and Automation (ICRA)*, May 31, 2017.*

[6] *Realistic network simulation in the UB-ANC aerial vehicle network emulator*, 1st IEEE Workshop on Wireless Communications and Networking in Extreme Environments (WCNEE), May 1, 2017.

[7] *Reinforcement learning for energy-efficient delay-sensitive CSMA/CA scheduling,* IEEE Global Communications Conference (GLOBECOM), Dec. 6, 2016.

[8] *Poster: UB-ANC: A flexible airborne networking and communications testbed*, ACM International Workshop on Wireless Network Testbeds, Experimental Evaluation & Characterization (WiNTECH), Oct. 3, 2016.

[9] *Demo: UB-ANC Emulator: An emulation framework for multi-agent drone networks*, ACM International Workshop on Wireless Network Testbeds, Experimental Evaluation & Characterization (WiNTECH), Oct. 3, 2016.

[10] *Enabling dynamic reconfigurability of SDRs using SDN principles*, ADHOCNETS, Sept. 27, 2016.

[11] *Fast and low-complexity reinforcement learning for delay-sensitive energy harvesting wireless visual sensing systems*, IEEE International Conference on Image Processing (ICIP), Sept. 26, 2016.

[12] *Towards optimal priority and deadline driven scheduling in dynamic wireless environments*, IEEE International Symposium on a World of Wireless and Mobile Multimedia Networks (WoWMoM), June 15, 2015.

[13] *Device-to-device relay assisted cellular networks with token-based incentives*, IEEE International Conference on Communications (ICC), June 8, 2015.

[14] *Learning relaying strategies in cellular D2D networks with token-based incentives*, International Workshop on Emerging Technologies for LTE-Advanced and Beyond-4G, IEEE Global Communications Conference (GLOBECOM), Dec. 13, 2013.

[15] *Markov decision process based energy-efficient scheduling for slice-parallel video decoding*, 1st IEEE Workshop of GREEN Multimedia: Energy-efficient Multimedia Computing, Communication and Presentation (In conjunction with ICME 2013), July 19, 2013.

[16] *A decentralized cross-layer approach to cooperative video transmission*, IEEE Global Communications Conference (GLOBECOM), Dec. 5-9, 2011.

[17] *Reinforcement learning for power management in wireless multimedia communications*, IEEE Conference on Multimedia and Expo (ICME), July 11-15, 2011.

[18] *A new approach to cross-layer optimization of multimedia systems*, IEEE Conference on Acoustics, Speech and Signal Processing (ICASSP), Mar. 14-19, 2010.

[19] *Online reinforcement learning for multimedia buffer control*, IEEE Conference on Acoustics, Speech and Signal Processing (ICASSP), Mar. 14-19, 2010.

[20] *Online layered learning for cross-layer optimization of dynamic multimedia systems*, ACM Multimedia Systems, Feb. 22-23, 2010.

[21] *Autonomous decision making in layered and reconfigurable video coders*, Asilomar Conference on Signals, Systems, and Computers, Nov. 2009.

[22] *A scalable complexity specification for video applications*, IEEE International Conference on Image Processing (ICIP), Oct. 2008.

COURSES TAUGHT, DEVELOPED, AND REVISED:

- **EAS 305: Applied Probability and Statistical Inference**

  - *Developed:* Spring 2012. Created all new course material. Class open to all engineering students.
  - *Taught:* Spring 2012 and Spring 2013
  - *Average number of students:* 85

- **EE 305: Applied Probability**
  - *Revised:* Fall 2013. In order to differentiate from EAS 305 and better serve EE students, I introduced EE specific material in the areas of networks, communications, and signal processing, and increased emphasis on random processes.
  - *Taught:* Fall 2013, Fall 2014, Fall 2015, Fall 2016, Fall 2017, Fall 2018
  - *Average number of students:* 100

- **EAS 240: Introduction to Programming for Engineers**
  - *Developed:* Spring 2017. Created all new course material.
  - *Taught:* Spring 2017
  - *Number of students:* 81

- **EE 565: Video Communications**
  - *Developed:* Fall 2011. Created new course material. Developed course to emphasize resource allocation and scheduling, cross-layer design, and dynamic optimization for video communications.
  - *Taught:* Fall 2011, Fall 2012, Spring 2014, Spring 2015, Spring 2016
  - *Average number of students:* 44

- **EE 498: Undergraduate Research and Creative Activity**
  - Supervised undergraduate student research over 4 semesters on different facets of my U.S. Air Force Research Laboratory (AFRL) funded airborne networking and communications testbed (called UB-ANC), which I have been developing since Feb. 2014. Undergraduate research activities include software-defined communication link development, power distribution system design, flight stability enhancement, modular drone design, obstacle detection via infrared sensors, drone network experimentation, and flight test plan development.
  - *Taught:* Fall 2014, Fall 2015, Summer 2016, Fall 2016
  - *Total number of students:* 7
  - *Placement:* 100% employed after graduation; 1 in graduate school; 1 in law school (patent law); 2 planning to attend graduate school in Fall 2017.

RESEARCH SUPERVISION:

Summary: 2 Ph.D. students graduated, 2 Ph.D. students in progress, 7 M.S. students graduated, 3 M.S. students in progress, 19 undergraduates mentored.

- **Ph.D. Students (graduated)**
  - Shuanshuan Wu, graduation date, Spring 2018
    - *Dissertation title:* Stochastic geometry-based analysis of emerging network technologies: from mmWave cellular to nano-optimcal wireless networks
    - *Awards:* Dean's Fellowship
  - Jalil Modares Najafabadi, graduation date, Spring 2017

        - *Dissertation title:* Designing multi-drone networks and applications
        - *Awards:* Best graduate student GPA and best score on Ph.D. qualifying exam

- **Ph.D. Students (in progress)**
    - Nikhilesh Sharma, expected graduation date, Spring 2020
        - *Awards:* Moog Scholarship
    - Zahra Hajibabaei, expected graduation date, Fall 2019
        - *Awards:* Henry Stone Fellowship
- **M.S. Students with Thesis (graduated)**
    - Venkata Praneeth Behara, graduation date, Fall 2018
        - *Thesis title:* Wi-Coverage: An autonomous exploration coverage strategy using commodity Wi-Fi
        - *Note:* Jointly advised with Prof. Karthik Dantu in CSE
    - Nikhilesh Sharma, graduation date, Fall 2017
        - *Thesis title:* Structural properties of optimal transmission policies for delay-sensitive energy-harvesting wireless sensors
    - Anjali Omer, graduation date, Spring 2017
        - *Thesis title:* Performance analysis of an adaptive-rate buffer-aware CSMA/CA-based MAC protocol
    - Rajarshi Basak, graduation date, Fall 2016
        - *Thesis title:* On the convergence rate of fast reinforcement learning algorithms with application to energy-efficient delay-sensitive wireless communications
    - Changcan Wu, graduation date, Summer 2014
        - *Project title:* Energy-efficient delay-sensitive multi-user uplink scheduling using a CSMA/CA-based MAC
    - Sweta Sundaram, graduation date, Spring 2014
        - *Thesis title:* Matroska video streaming on USRP software-defined radios
        - *Employment:* Modem System Test Engineer, Qualcomm Inc.
    - Praveen Janarthanan, graduation date, Spring 2013
        - *Thesis title:* Cross-layer framework for wireless video over USRP
        - *Employment:* LTE System Validation Engineer, Intel Corporation
- **M.S. Students with Thesis (in progress)**
    - Britton Medley, expected graduation date, Spring 2019
    - Someshwar Venkata, expected graduation date, Spring 2019
    - Sen Zhang, expected graduation date, Fall 2018
- **M.S. Students (graduated)**
    - Viral Patel, graduation date, Spring 2015
        - *Employment:* Applications Engineer, ICONICS Inc.
        - *Note:* Originally admitted as a Ph.D. student in Fall 2012 but had to seek a terminal M.S. degree and secure a job due to family obligations.
    - Khoi Nguyen, graduation date, Spring 2014
        - *Employment:* Automation Engineer, Hyatt Hotels Corporation
        - *Note:* Originally admitted as a Ph.D. student in Fall 2012 but had to seek a terminal M.S. degree and secure a job due to family obligations.

- **Undergraduate Student Research Projects**
  - Sambhavi Bellary, EE, Fall 2016
    - *Project title:* A Literature Review on the Application of Markov Decision Processes in Electrical Engineering
  - Wei Shao, EE, Summer 2016 – Fall 2016
    - *Project title:* RC Transmitter Calibration, Specification, Calibration, and Troubleshooting Guidelines for 2nd Generation UB-ANC Drones
  - Alvin Alba, EE, Summer 2016
    - *Project title:* Size, Weight, and Power Optimized Software-Defined Radio Integration on 2nd Generation UB-ANC Drones
    - *Employment:* Electronics Engineer, Tinker Air Force Base
  - Jean Santiuste, EE, Summer 2016
    - *Project title:* Enhancing the Power Distribution System, Flight Stability, and Modularity of 2nd Generation UB-ANC Drones
    - *Employment:* Electronics Engineer, Bolling Air Force Base
  - Alexander Rosenbaum, EE, Summer 2016
    - *Project title:* Implementation of 2nd Generation UB-ANC Drone Enhancements
  - Ismail Atkas, EE, Fall 2015 – Spring 2016
    - *Project title:* Drone Collision Detection and Autonomous Navigation
    - *Employment:* Systems Engineer, Alstom
  - Prince Joseph, MAE, Fall 2014 – Summer 2015
    - *Project title:* Design, Construction, and Testing of the 2nd Generation UB-ANC Drone
    - *Employment:* Mechanical Engineer, Phononic
  - Dylan Elliott, EE, Spring 2014 – Spring 2015
    - *Project title:* Quadcopter Based Airborne Networking and Communications Testbed: Software-Defined Physical Layer Design and Implementation
    - *Employment:* Air Force Research Laboratory
    - *Postgrad:* M.S. Student, Rensselaer Polytechnic Institute
  - Ryan Thorne, EE, Fall 2014 – Spring 2015
    - *Project title:* Quadcopter Based Airborne Networking and Communications Testbed: Software-Defined Physical Layer Implementation
    - *Postgrad:* Law Student, Patent Law, Yeshiva University
  - Matthew Benjamin, EE, Fall 2014 – Spring 2015
    - *Project title:* Quadcopter Based Airborne Networking and Communications Testbed: Packet Format Design
    - *Employment:* Software Engineer, theEMPLOYEEapp
  - Andrew Tennenbaum, EE, Spring 2015
    - *Project title:* Quadcopter Based Airborne Networking and Communications Testbed: USB Interface Implementation
    - *Postgrad:* M.S. Electrical Engineering, University at Buffalo; Ph.D. Student, Aerospace Engineering, University at Buffalo
  - Nathan Jacobson, EE, Spring 2015
    - *Project title:* Quadcopter Based Airborne Networking and Communications Testbed: MAC Layer Protocol Design

        - *Employment:* Radar Signal Processing Engineer, Raytheon
        - *Postgrad:* M.S. Student, The Johns Hopkins University
    - Vu Le, EE, Spring 2015
        - *Project title:* Quadcopter Based Airborne Networking and Communications Testbed: Network Protocol Design
        - *Postgrad:* M.S. Student, Electrical Engineering, University at Buffalo
    - Conor Hixon, EE, Fall 2014 – Spring 2015
        - *Project title:* Construction and Testing of the 1st Generation UB-ANC Drone
    - Jordan Hoeber, CSE, Fall 2014
        - *Project title:* Enabling Communication Between An Embedded Computer and an Autopilot Controller via USB
    - Rakshit Viswanatham, EE, Fall 2014
        - *Project title:* Flight Test Plan for UB's Airborne Networking and Communications Testbed (UB-ANC): Autopilot Failsafes
        - *Employment:* Software Engineer, Dunn Tire
    - Zujia Xu, EE, Fall 2014
        - *Project title:* Flight Test Plan for UB's Airborne Networking and Communications Testbed (UB-ANC): Test Platform Description
    - Xiangyang Chen, EE, Summer 2014 – Fall 2014
        - *Project title:* Evaluating the Distortion Impact of Video Packet Losses in Streaming Video
        - *Employment:* Electronics Engineer, Department of Army
    - Devin Toth, CSE, Spring 2012
        - *Project title:* Shortest-Path Routing using a Markov Decision Process

PH.D. DISSERTATION COMMITTEE MEMBER:

- Song-Wen Huang, Multicarrier Chirp-Division Multiplexing for RF and Underwater Acoustic Communications: *Defense date:* Dec. 15, 2017. *Ph.D. advisor:* Dimitris Pados.
- Pedram Johari, Fundamentals of Nanoscale Intra-body Electromagnetic Communications at Terahertz and Optimal Frequencies. *Defense date:* Dec. 14, 2017. *Ph.D. advisor:* Josep Jornet.
- Colleen Bailey, New Techniques for Blind Modulation Detection and Multimedia Data Hiding. *Defense data:* Aug. 6, 2017. *Ph.D. advisor:* Dimitris Pados
- Christopher Fritz, Efficient Architectures for High Speed Binary Multipliers. *Defense date:* May 5, 2017. *Ph.D. advisor:* Adly Fam.
- Hongzhi Guo, Enabling Wireless Communications in Complex Environments: From Underground and Underwater to Intra-body. *Proposal date:* Nov. 29, 2016. *Defense date:* Apr. 24, 2017. *Ph.D. advisor:* Zhi Sun.
- Marcia Torrico, Joint Channel Estimation and Data Detection with Minimized Energy and Secure Transmission on the Underwater Channel. *Proposal date:* Sept. 29, 2016. *Defense date:* Dec. 9, 2016. *Ph.D. advisor:* Dimitris Pados.

- Bo Zhang, Optimal Receivers and Performance Analysis for Underwater Acoustic Wireless Communications with Rapidly Varying Fading Channels. *Defense date:* Aug. 8, 2016. *Ph.D. advisor:* Weifeng Su.
- Yihang Zhou, Application of Compressed Sensing in Quantitative Magnetic Resonance Imaging. *Defense date:* Dec. 11, 2015. *Ph.D. advisor:* Leslie Ying.
- Zijian Mo, Multi-Antenna Transceivers and Cooperative Relaying Protocol Designs for Wireless Networks. *Defense date:* March 20, 2015. *Ph.D. advisor:* Weifeng Su.
- Peiran Song, Distributed Optimization of Nonconvex Multiagent Systems: Theory and Applications. *Defense date:* Dec. 15, 2014. *Ph.D. advisor:* Gesualdo Scutari.
- Scott Pudlewski, Compressed-sensing-based video streaming in wireless sensor networks. *Defense date:* April 20, 2012. *Ph.D. advisor:* Tommaso Melodia.

M.S. THESIS COMMITTEE MEMBER:

- Hyosung Kim, Maximum Capacity and Relay Designs for Airborne MIMO Relay Communication Systems. *Defense date:* July 21, 2017. *M.S. advisor:* Weifeng Su
- Mahasweta Bhattacharya, Study and Analysis of Thermal Behavior of Human Blood Cells Due to In-Vivo Optimal Communication. *Defense data:* May 15, 2017. *M.S. advisor:* Josep Jornet
- Amit, Design, Implementation and Validation of a Low-Power Wide Area Network Flat Module for the Internet of Things. *Defense date:* April 28, 2017. *M.S. advisor:* Josep Jornet
- Chang Ren, Image Reconstruction Using Partial K-Space With Compressed Sensing-Sense and Sparse Blip. *Defense date:* April 12, 2017. *M.S. advisor:* Leslie Ying.
- Ke Li, Analysis of Expected Route Surviving-Time and Power Optimization for Linear Multi-Hop Networks. *Defense date:* Nov. 11, 2015. *M.S. advisor:* Weifeng Su.
- Ning Zhao, Quantifying causality. *Defense date:* Aug. 14, 2015. *M.S. advisor:* Michael Langberg.
- Vishrut Vaibhav, Optimal L1-Principal Component Analysis on Reconfigurable Hardware. *Defense date:* June 24, 2015. *M.S. advisor:* Dimitris Pados.
- Prateek Kumar Singh, Graphene-Based Plasmonic Phase Modulator for Terahertz-Band Communication. *Defense date:* May 14, 2015. *M.S. advisor:* Josep Jornet.
- Sreya Harshad Vedant, Multi-User Interference in Pulse-Based Terahertz-Band Communication: Analytical Model and Multi-Physics Simulation. *Defense date:* May 12, 2015. *M.S. advisor:* Josep Jornet.
- Wan Kim, Study of Parallel MR Imaging Techniques. *Defense date:* May 8, 2015. *M.S. advisor:* Leslie Ying.
- Ren He, Highly Accelerated 3D Parallel Imaging with Transitional Auto-Calibration (3D-PITA). *Defense date:* April 14, 2015. *M.S. advisor:* Leslie Ying.
- Vishesh Seshadri, Design and Implementation of Magnetic Induction-Based Underground Sensor for Vehicle Detection Using USRP. *Defense date:* Jan. 6, 2015. *M.S. advisor:* Zhi Sun.
- Chen Song, ASDTab: A Computer-Vision Based In-Home ASD Assessment Tool on Unmodified Tablet Computers. *Defense date:* May 18, 2014. *M.S. advisors:* Leslie Ying and Wenyao Xu.

- Meghna Vaidya, Predicting Stock Market Index Trends Through Various Attributes of Twitter Data. *Defense date:* Apr. 18, 2014. *M.S. advisor:* Tommaso Melodia.
- Cedric Lolliot, Small Sample Support Adaptive MVDR/MMSE Filtering for MIMO OFDM Systems. *Defense date:* Dec. 16, 2013. *M.S. advisor:* Dimitris Pados.
- Xilin Bai, Implementation of Decode-and-Forward Cooperative Communication Protocol Based on USRPs and GNU Radio. *Defense date:* Nov. 7, 2013. *M.S. advisor:* Weifeng Su.
- Vignesh Kumar. *Defense date:* Aug. 16, 2013. *M.S. advisor:* Zhi Sun.
- Yifan Sun. *Defense date:* May 10, 2013. *M.S. advisor:* Tommaso Melodia.
- Anu Saji. *Defense date:* May 3, 2013. *M.S. advisor:* Tommaso Melodia.
- Jithin Jagannath. *Defense date:* May 3, 2013. *M.S. advisor:* Tommaso Melodia.
- Sivakumar Kandappan Singaravadivelu, The iPad as a Tool for Simulation and Sensing. *Defense date:* Dec. 5th, 2011. *M.S. advisor:* Albert Titus.

STUDENT SUPPORT:

GRADUATE STUDENTS FUNDED (Research Assistantships)

- Khoi Nguyen, 5 months (May – Aug. 2012; July – Aug. 2013), $8400
- Viral Patel, 14 months (July – Oct. 2013; Feb. 2014 – Jan. 2015), $29,265
- Jalil Modares, 23 months (Feb. 2015 – Dec. 2016), $30,806
- Shuanshuan Wu, (June 2016 – May 2017), $11,600

GRADUATE STUDENT TRAVEL SUPPORT

- Jalil Modares, ACM WiNTECH 2016, $250

UNDERGRADUATE STUDENTS FUNDED

- Conor Hixon, 1 month (Aug. 2014 – Sept. 2014), $2,000
- Jordan Hoeber, 1 month (Aug. 2014 – Sept. 2014), $2,000
- Dylan Elliott, 1 month (Aug. 2014 – Sept. 2014), $2,000

PROFESSIONAL MEMBERSHIPS:

- Senior Member, IEEE
- Member, IEEE Communications Society
- Member, IEEE Signal Processing Society
- Member, ACM

SERVICE:

PROFESSIONAL ACTIVITIES AND SERVICE TO SCIENTIFIC COMMUNITY

- **Review Panels**
  - NSF CPS Panel 2018
- **Editor/Guest Editor**
  - Area Editor KSII Transactions on Internet and Information Systems (TIIS)
  - Editor KSII Transactions on Internet and Information Systems (TIIS)
  - Special Issue series on Internet of Things (IoT) Optimization for KSII Transactions on Internet and Information Systems (TIIS)
- **Editorial Board Member**
  - IEEE Communications Surveys and Tutorials (COMST)
- **Track Chair/Co-Chair/Session Chair**
  - Session Chair: 2018 Workshop on Signal Processing and Communications for Resilient Autonomous Swarms (IEEE SAM)
  - Co-Chair: 2014 International Conference on Wireless Communications and Signal Processing – Media and Signal Processing for Communications Symposium (WCSP 2014)
- **Technical Program Committee Member**
  - Multi-Robot and Multi-Agent Systems (MRS 2019)
  - Packet Video Workshop 2019 (Packet Video 2019)
  - IEEE INFOCOM 2019 Workshop – Wireless Communications and Networking in Extreme Environments (INFOCOM 2019 WS – WCNEE)
  - IEEE GLOBECOM 2018 Mobile and Wireless Networks (Globecom2018 MWN)
  - EAI ADHOCNETS 2018 (ADHOCNETS)
  - Packet Video Workshop 2018 (Packet Video 2018)
  - IEEE INFOCOM 2018 Workshop – Wireless Communications and Networking in Extreme Environments (INFOCOM 2018 WS – WCNEE)
  - IEEE GLOBECOM 2017 Mobile and Wireless Networks (Globecom2017 MWN)
  - IEEE INFOCOM 2017 Workshop – 5G & Beyond – Enabling Technologies and Applications (INFOCOM 2017 WS – 5G)
  - IEEE INFOCOM 2017 Workshop – Wireless Communications and Networking in Extreme Environments (INFOCOM 2017 WS – WCNEE)
  - IEEE GLOBECOM 2016 Workshop – Emerging Technologies for 5G Wireless Cellular Networks (GC16 WS – ET5G)
  - EAI ADHOCNETS 2016 Workshop – Convergence of Wireless Directional Network Systems and Software Defined Networking (ADHOCNETS)
  - International Conference on Computer Communication and Networks – Wireless LAN, Ad Hoc, and Mesh Networks (WAM) Track (ICCCN 2016)
  - IEEE GLOBECOM 2015 Workshop – Emerging Technologies for 5G Wireless Cellular Networks (GC15 WS – ET5G)
  - IEEE GLOBECOM 2014 Workshop – Emerging Technologies for 5G Wireless Cellular Networks (GC14 WS - Wi5G)

- 2014 International Conference on Wireless Communications and Signal Processing – Emerging Areas in Wireless Communications Symposium (WCSP 2014)
- GLOBECOM 2013 Workshop - Emerging Technologies for LTE-Advanced and Beyond-4G (GC13 WS – B4G)
- Fifth International Workshop on Quality of Multimedia Experience (QoMEX 2013)

- **Reviewer**
  - **IEEE:** IEEE Trans. on Circuits and Systems for Video Technology, IEEE Trans. on Communications, IEEE Communications Letters, IEEE Trans. on Computers, IEEE Trans. on Image Processing, IEEE Trans. on Mobile Computing, IEEE Trans. on Multimedia, IEEE Journal on Selected Areas in Communications, IEEE Trans. on Signal Processing, IEEE Trans. on VLSI, IEEE Trans. on Wireless, IEEE International Conference on Acoustics, Speech, and Image Processing (ICASSP), IEEE Global Conference on Signal and Information Processing (GlobalSIP), IEEE International Conference on Communications (ICC), and IEEE International Conference on Computer Communications (INFOCOM).
  - **EURASIP:** EURASIP Journal on Wireless Communications and Networking.
  - **Elsevier:** Elsevier Ad-hoc Networks, Elsevier Computer Networks, and Elsevier Image Communication.
  - **Other:** Journal of Combinatorial Optimization, International Conference on Distributed Computing in Sensor Systems, International Workshop on Image Analysis for Multimedia Interactive Services, and Military Communications Conference (MILCOM).

UNIVERSITY SERVICE

- **Faculty Senate** (2017 – present)
- **Search Committees and Faculty Hiring**
  - EE search committee for Signals, Communications, and Networking faculty position (Spring 2018; Spring 2016; Spring 2015)
  - EE search committee for Digital Electronics and Microcontrollers, Embedded/Reconfigurable Circuits and Systems faculty position (Spring 2014)
  - EE Research Administrator search committee (Fall 2013)
- **Graduate and Undergraduate Student Activities**
  - EE department scholarship review committee (Fall 2018)
  - Faculty representative, graduate student orientation (2011-2018)
  - EE senior student advisor (2014-2015)
  - Judge, graduate poster competition (Spring 2015)
  - EE undergraduate grievance committee (2015-2016)
  - SEAS grievance committee (Summer 2016)
  - Faculty representative, Open House (2011-2015)
- **Curriculum**
  - New course creation, EAS 240: Introduction to Programming for Engineers (Fall 2014)
  - New course creation, EE 305: Applied Probability (Spring 2013)
  - New course creation, EE 565: Video Communications (Fall 2011)

- **Accreditation**
  - Pilot evaluation of a new ABET data collection system (Fall 2016)