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EDUCATION

Cornell University, Ithaca, New York, USA (1997 – 2001)
Ph.D. in Electrical Engineering with Minor in Computer Science, August 2001
Dissertation: *Reducing Terminal Location Uncertainty in Wireless Network Mobility Management*
Advisor: Zygmunt J. Haas

Polytechnic University, Brooklyn, New York, USA (1993 – 1997)
(now **New York University Tandon School of Engineering**)
Honors Simultaneous B.S. (*Valedictorian*) and M.S. in Electrical Engineering, May 1997
Thesis: *Blind Image Deconvolution and a Robust GCD Approach*
Thesis advisor: S. Unnikrishna Pillai
Undergraduate advisor: Donald F. Hunt

PROFESSIONAL EXPERIENCE

L. Lau Chair in Electrical and Computer Engineering (November 2019 – present)
Department of Electrical and Computer Engineering, University of Toronto, Toronto, Ontario, Canada

Professor (July 2012 – present)
Department of Electrical and Computer Engineering, University of Toronto, Toronto, Ontario, Canada

Associate Professor (July 2007 – June 2012)
Department of Electrical and Computer Engineering, University of Toronto, Toronto, Ontario, Canada

Assistant Professor (July 2002 – June 2007)
Department of Electrical and Computer Engineering, University of Toronto, Toronto, Ontario, Canada

Visiting Lecturer and Post-doctoral Associate (September 2001 – May 2002)
School of Electrical and Computer Engineering, Cornell University, Ithaca, New York, USA

Other Positions

- Graduate Research Fellow (September 1997 – August 2001)
  School of Electrical and Computer Engineering, Cornell University, Ithaca, New York, USA
- Teaching Assistant (part-time, September 1999 – December 1999)
  School of Electrical and Computer Engineering, Cornell University, Ithaca, New York, USA
- Graduate Research Fellow (September 1996 – May 1997)
  Department of Electrical Engineering, Polytechnic University, Brooklyn, New York, USA
- Undergraduate Honors Research (May 1996 – August 1996)
  Department of Electrical Engineering, Polytechnic University, Brooklyn, New York, USA
- Tutor (part-time, February 1995 – May 1996)
  Office of Special Services and Learning Center, Polytechnic University, Brooklyn, New York, USA
- Tutor (part-time, February 1995 – May 1996)

Higher Learning, New York, New York, USA

- Intern (part-time, December 1994 – September 1995)
  Bioengineering Laboratory, Hospital for Joint Diseases, New York, New York, USA

AWARDS AND HONORS:

- Best Student Paper Award in the IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP) (five awards out of ~3000 accepted papers and 6500+ submissions), 2025
- Finalist for Best Paper Award in the 53rd International Conference on Parallel Processing (three finalists out of 121 accepted papers and 411 submissions), 2024
- L. Lau Chair in Electrical and Computer Engineering, University of Toronto, 2019 and renewal 2024
- Distinguished Member of the IEEE INFOCOM Technical Program Committee, 2018 and 2019
- Best In-Session Presentation Award, IEEE INFOCOM 2019
- IEEE Fellow, for contributions to mobility modeling and resource management in wireless networks, 2018
- Best Paper Award in the ACM International Conference on Modeling, Analysis and Simulation of Wireless and Mobile Systems (MSWiM) (one award out of 42 accepted full papers and 160 submissions), 2013
- Finalist for Best Paper Award in the USENIX International Conference on Autonomic Computing (ICAC) (three finalists out of 18 accepted full papers and 73 submissions), 2013
- Finalist for Best Paper Award in the IEEE Conference on Computer Communications (INFOCOM) (three finalists out of 276 accepted full papers and 1575 submissions), 2010
- Early Researcher Award (ERA), Ontario Ministry of Research and Innovation, 2007
- Commendation for teaching excellent in ECE department, spring 2005 and fall 2007
- Runner-up Best Paper Award in the International Conference on Quality of Service in Heterogeneous Wired/Wireless Networks (QShine), 2006
- Best Paper Award in the IFIP Networking Conference (one award out of 106 accepted papers and 430 submissions), 2005
- Intel Foundation Graduate Fellowship, Cornell University, 2000
- Lockheed Martin Fellowship in Communication and Information Technologies, Cornell University, 1999
- Richard W. Block Award for the highest ranking graduate, Polytechnic University, 1997
- William L. Everitt Student Award of Excellence, Polytechnic University, 1997
- Weber Scholar, Polytechnic University, 1995 and 1996

PUBLICATIONS

Papers in Refereed Journals and Magazines

[J90] J. Wang, M. Dong, B. Liang, G. Boudreau, and A. Afana, "Exploring temporal similarity for joint computation and communication in online distributed optimization," in press, to appear in the *IEEE/ACM Transactions on Networking*.

[J89] J. Wang, B. Liang, Z. Zhu, E. T. Fapi, and H. Dalal, "Communication-efficient network topology in decentralized learning: A joint design of consensus matrix and resource allocation," *IEEE/ACM*

Transactions on Networking, vol. 33, no. 2, pp. 761 – 776, April 2025, doi: 10.1109/TNET.2024.3511333.

[J88] W. Xu, B. Liang, G. Boudreau, and H. Sokun, "Clipper: Online joint client sampling and power allocation for wireless federated learning," *ACM Transactions on Modeling and Performance Evaluation of Computing Systems*, Special Issue on Performance Evaluation of Federated Learning Systems, vol. 10, no. 1, article no. 2, pp. 1 – 28, March 2025, doi: 10.1145/3703628.

[J87] J. Wang, B. Liang, M. Dong, G. Boudreau, and H. Abou-zeid, "Joint online optimization of model training and analog aggregation for wireless edge learning," *IEEE/ACM Transactions on Networking*, vol. 32, no. 2, pp. 1212 – 1228, April 2024.

[J86] J. Wang, M. Dong, B. Liang, G. Boudreau, and H. Abou-zeid, "Hierarchical semi-online optimization for cooperative MIMO networks with information parsing," *IEEE Transactions on Wireless Communications*, vol. 23, no. 3, pp. 1943 – 1958, March 2024.

[J85] F. Moradi Kalarde, M. Dong, B. Liang, Y. Ahmed, and H. T. Cheng, "Beamforming and device selection design in federated learning with over-the-air aggregation," *IEEE Open Journal of the Communications Society*, vol. 5, pp. 1710 – 1723, March 2024 (ranked by journal as top 10 "most popular federated learning papers from 2024-2025").

[J84] A. Ramezani-Kebrya, K. Antonakopoulos, V. Cevher, A. Khisti, and B. Liang, "On the generalization of stochastic gradient descent with momentum," *Journal of Machine Learning Research*, vol. 25, no. 22, pp. 1 – 56, January 2024.

[J83] T. Feng, X. Gu, and B. Liang, "Random caching design for multi-user multi-antenna HetNets with interference nulling," *IEEE Transactions on Wireless Communications*, vol. 22, no. 12, pp. 8965 – 8982, December 2023.

[J82] J. Wang, M. Dong, B. Liang, and G. Boudreau, "Periodic updates for constrained OCO with application to large-scale multi-antenna systems," *IEEE Transactions on Mobile Computing*, vol. 22, no. 11, pp. 6705 – 6722, November 2023.

[J81] C. Zhang, M. Dong, and B. Liang, "Ultra-low-complexity algorithms with structurally optimal multi-group multicast beamforming in large-scale systems," *IEEE Transactions on Signal Processing*, vol. 71, pp. 1626 – 1641, 2023.

[J80] E. Meskar and B. Liang, "Fair multi-resource allocation in heterogeneous servers with an external resource type," *IEEE/ACM Transactions on Networking*, vol. 31, no. 3, pp. 1244 – 1262, June 2023.

[J79] J. Wang, M. Dong, B. Liang, G. Boudreau, and H. Abou-zeid, "Delay-tolerant OCO with long-term constraints: algorithm and its application to network resource allocation," *IEEE/ACM Transactions on Networking*, vol. 31, no. 1, pp. 147 – 163, February 2023.

[J78] J. Wang, B. Liang, M. Dong, and G. Boudreau, "Online multi-cell coordinated MIMO wireless network virtualization with imperfect CSI," *IEEE Transactions on Wireless Communications*, vol. 21, no. 12, pp. 10455 – 10471, December 2022.

[J77] L. He, B. Liang, J. Li, and M. Sheng, "Joint observation and transmission scheduling in agile satellite networks," *IEEE Transactions on Mobile Computing*, vol. 21, no. 12, pp. 4381 – 4396, December 2022.

[J76] S. Sundar, J. P. Champati, and B. Liang, "Multi-user task offloading to heterogeneous processors with communication delay and budget constraints," *IEEE Transactions on Cloud Computing*, vol. 10, no. 3, pp. 1958 – 1974, July-September 2022.

[J75] C. Zhang, M. Dong, and B. Liang, "Fast first-order algorithm for large-scale Max-Min Fair multi-group multicast beamforming," *IEEE Wireless Communications Letters*, vol. 11, no. 8, pp. 1560 – 1564, August 2022.

[J74] E. Meskar and B. Liang, "MAGIKS: Fair multi-resource allocation game induced by Kalai-Smorodinsky bargaining solution," *IEEE Open Journal of the Communications Society*, Special Issue on Optimization and Economics of Fog/Edge Networks, vol. 3, pp. 797 – 810, 2022.

[J73] J. Wang, B. Liang, M. Dong, G. Boudreau, and H. Abou-zeid, "Online distributed coordinated precoding for virtualized MIMO networks with delayed CSI," *IEEE Wireless Communications Letters*, vol. 11, no. 5, pp 1012 – 1016, May 2022.

[J72] N. Eshraghi and B. Liang, "Dynamic regret of online mirror descent for relatively smooth convex cost functions," *IEEE Control Systems Letters*, vol. 6, pp. 2395 – 2400, February 2022.

[J71] A. Ramezani-Kebrya, B. Liang, M. Dong, and G. Boudreau, "Robust design of multi-cell D2D communication under partial CSI," *IEEE Internet of Things Journal*, vol. 9, no. 3, pp. 2404 – 2418, February 2022.

[J70] J. Wang, B. Liang, M. Dong, G. Boudreau, and H. Abou-zeid, "Distributed coordinated precoding for MIMO cellular network virtualization," *IEEE Transactions on Wireless Communications*, vol. 21, no. 1, pp. 106 – 120, January 2022.

[J69] J. P. Champati and B. Liang, "Delay and cost optimization in computational offloading systems with unknown task processing times," *IEEE Transactions on Cloud Computing*, vol. 9, no. 4, pp. 1422 – 1438, October – December 2021.

[J68] Y. Li, B. Liang, and A. Tizghadam, "Robust online learning against malicious manipulation and feedback delay with application to network flow classification," *IEEE Journal on Selected Areas in Communications*, Series on Machine Learning in Communications and Networks, vol. 39, no. 8, pp. 2648 - 2663, August 2021.

[J67] A. Al Helali, B. Liang, and N. Nasser, "Novel molecular signaling method and system for molecular communication in human body," *IEEE Access*, vol. 8, pp. 119361 – 119375, June 2020.

[J66] L. He, B. Liang, J. Li, and M. Sheng, "Balancing coverage and response time in area target scheduling for satellite networks," *IEEE Transactions on Vehicular Technology*, vol. 69, no. 6, pp. 6848 – 6853, June 2020.

[J65] T. Q. Dinh, B. Liang, T. Q.S. Quek, and H. Shin, "Online resource procurement and allocation in a hybrid edge-cloud computing system," *IEEE Transactions on Wireless Communications*, vol. 19, no. 3, pp. 2137 – 2149, March 2020.

[J64] J. P. Champati and B. Liang, "Single restart with time stamps for parallel task processing with known and unknown processors," *IEEE Transactions on Parallel and Distributed Systems*, vol. 31, no. 1, pp. 187 – 220, January 2020.

[J63] Y. Xu, B. Liang, G. Boudreau, and S. H. Seyedmehdi, "Maximizing spatial alpha-fairness in multi-tier multi-rate spatial Aloha networks," *IEEE Transactions on Communications*, vol. 67, no. 3, pp. 2036 – 2051, March 2019.

[J62] M.-H. Chen, B. Liang, and M. Dong, "Multi-user multi-task offloading and resource allocation in mobile cloud systems," *IEEE Transactions on Wireless Communications*, vol. 17, no. 10, pp. 6790 – 6805, October 2018.

[J61] M.-H. Chen, M. Dong, and B. Liang, "Resource sharing of a computing access point for multi-user mobile cloud offloading with delay constraints," *IEEE Transactions on Mobile Computing*, vol 17, no. 12, pp. 2868 – 2881, December 2018.

[J60] Y. Azar, J. P. Champati, and B. Liang, "2-Approximation algorithm for a generalization of scheduling on unrelated parallel machines," *Information Processing Letters*, vol. 139, pp. 39 – 43, November 2018.

[J59] R. AliHemmati, B. Liang, M. Dong, G. Boudreau, and S. H. Seyedmehdi, "Power allocation for underlay device-to-device communication over multiple channels," *IEEE Transactions on Signal and Information Processing over Networks*, vol. 4, no. 3, pp. 467 – 480, September 2018.

[J58] R. AliHemmati, M. Dong, B. Liang, G. Boudreau, and S. H. Seyedmehdi, "Multi-channel resource allocation towards ergodic rate maximization for underlay device-to-device communication," *IEEE Transactions on Wireless Communications*, vol. 17, no. 2, pp. 1011 - 1025, February 2018.

[J57] W. Bao and B. Liang, "Optimizing cluster size through handoff analysis in user-centric cooperative wireless networks," *IEEE Transactions on Wireless Communications*, vol. 17, no. 2, pp. 766 – 778, February 2018.

[J56] M. Sheng, J. Wen, J. Li, B. Liang, and X. Wang, "Performance analysis of heterogeneous cellular networks with HARQ under correlated interference," *IEEE Transactions on Wireless Communications*, vol. 16, no. 12, pp. 8377 – 8389, December 2017.

[J55] I. Trigui, S. Affes, and B. Liang, "Unified stochastic geometry modeling and analysis of cellular networks in LOS/NLOS and shadowed fading," *IEEE Transactions on Communications*, vol. 65, no. 12, pp. 5470 – 5486, December 2017.

[J54] A. Ramezani-Kebrya, B. Liang, M. Dong, G. Boudreau, and R. Casselman, "Interference minimization in cooperative relay beamforming with multiple communicating pairs," *IEEE Transactions on Wireless Communications*, vol. 16, no. 10, pp. 6514 – 6527, October 2017.

[J53] A. Ramezani-Kebrya, M. Dong, B. Liang, G. Boudreau, and S. H. Seyedmehdi, "Joint power optimization for device-to-device communication in cellular networks with interference control," *IEEE Transactions on Wireless Communications*, vol. 16, no. 8, pp. 5131 – 5146, August 2017.

[J52] S. Huang, B. Liang, and J. Li, "Distributed interference and delay aware design for D2D communication in large wireless networks with adaptive interference estimation," *IEEE Transactions on Wireless Communications*, vol. 16, no. 6, pp. 3924 – 3939, June 2017.

[J51] J. Tang, W. P. Tay, T. Q. S. Quek, and B. Liang, "System cost minimization in cloud RAN with limited fronthaul capacity," *IEEE Transactions on Wireless Communications*, vol. 16, no. 5, pp. 3371 – 3384, May 2017.

[J50] N. Zhang, P. Yang, S. Zhang, D. Chen, W. Zhuang, B. Liang, and X. Shen, "Software defined networking enabled wireless network virtualization: challenges and solutions," *IEEE Network*, vol. 31, no. 5, pp. 42 – 49, May 2017.

[J49] J. P. Champati and B. Liang, "Semi-online algorithms for computational task offloading with communication delay," *IEEE Transactions on Parallel and Distributed Systems*, vol. 28, no. 4, pp. 1189 – 1201, April 2017.

[J48] S. Sun, B. Liang, M. Dong, and J. Taylor, "Phase balancing using energy storage in power grids under uncertainty," *IEEE Transactions on Power Systems*, vol. 31, no. 5, pp. 3891 – 3903, September 2016.

[J47] S. Sun, M. Dong, and B. Liang, "Distributed real-time power balancing in renewable-integrated power grids with storage and flexible loads," *IEEE Transactions on Smart Grid*, vol. 7, no. 5, pp. 2337 – 2349, September 2016.

[J46] A. Ramezani-Kebrya, M. Dong, B. Liang, G. Boudreau, and R. Casselman, "Per-relay power minimization for multi-user multi-channel cooperative relay beamforming," *IEEE Transactions on Wireless Communications*, vol. 15, no. 5, pp. 3187 – 3198, May 2016.

[J45] W. Bao and B. Liang, "Rate maximization through structured spectrum allocation and user association in heterogeneous cellular networks," *IEEE Transactions on Communications*, vol. 63, no. 11, pp. 4510 – 4524, October 2015.

[J44] W. Bao and B. Liang, "Stochastic analysis of uplink interference in two-tier femtocell networks: open versus closed access," *IEEE Transactions on Wireless Communications*, vol. 14, no. 11, pp. 6200 – 6215, October 2015.

[J43] W. Bao and B. Liang, "Stochastic geometric analysis of user mobility in heterogeneous wireless networks," *IEEE Journal on Selected Areas in Communications*, Special Issue on Recent Advances in Heterogeneous Cellular Networks Part 2, vol. 33, no. 10, pp. 2212 – 2225, October 2015.

[J42] Y. Lin, W. Bao, W. Yu, and B. Liang, “Optimizing user association and spectrum allocation in HetNets: a utility perspective,” *IEEE Journal on Selected Areas in Communications*, Special Issue on Recent Advances in Heterogeneous Cellular Networks Part 1, vol. 33, no. 6, pp. 1025 – 1039, June 2015.

[J41] W. Bao and B. Liang, “Uplink interference analysis for two-tier cellular networks with diverse users under random spatial patterns,” *IEEE Transactions on Wireless Communications*, vol. 14, no. 3, pp. 1252 – 1265, March 2015.

[J40] W. Wang, B. Liang, and B. Li "Optimal online multi-instance acquisition in IaaS clouds," *IEEE Transactions on Parallel and Distributed Systems*, vol. 26, no. 12, pp. 3407 – 3419, December 2015.

[J39] H. Ju, B. Liang, J. Li, Y. Long, and X. Yang, “Adaptive cross-network cross-layer design in heterogeneous wireless networks,” *IEEE Transactions on Wireless Communications*, vol. 14, no. 2, pp. 655 – 669, February 2015.

[J38] W. Wang, B. Liang, and B. Li "Multi-resource fair allocation in heterogeneous cloud computing systems," *IEEE Transactions on Parallel and Distributed Systems*, vol. 26, no. 10, pp. 2822 – 2835, October 2015.

[J37] W. Wang, D. Niu, B. Liang, and B. Li "Dynamic cloud resource reservation via IaaS cloud brokerage," *IEEE Transactions on Parallel and Distributed Systems*, vol. 26, no. 6, pp. 1580 – 1593, June 2015.

[J36] S. Sun, M. Dong, and B. Liang, "Real-time power balancing in electric grids with distributed storage," *IEEE Journal of Selected Topics in Signal Processing*, vol. 8, no. 6, pp. 1167 – 1181, June 2014.

[J35] S. Sun, M. Dong, and B. Liang, "On stochastic feedback control for multi-antenna beamforming: formulation and low-complexity algorithms," *IEEE Transactions on Wireless Communications*, vol. 13, no. 9, pp. 4731 – 4745, September 2014.

[J34] S. Sun, M. Dong, and B. Liang, "Real-time welfare-maximizing regulation allocation in dynamic aggregator-EVs System," *IEEE Transactions on Smart Grid*, vol. 5, no. 3, pp. 1397 – 1409, May 2014.

[J33] W. Bao and B. Liang, “Insensitivity of user distribution in multicell networks under general mobility and session patterns,” *IEEE Transactions on Wireless Communications*, vol. 12, no. 12, pp. 6244 – 6254, December 2013.

[J32] M. Dong, B. Liang, and Q. Xiao, “Unicast multi-antenna relay beamforming with per-antenna power control: optimization and duality,” *IEEE Transactions on Signal Processing*, vol. 61, no. 23, pp. 6076 – 6090, December 2013.

[J31] H. Ju, B. Liang, J. Li, and X. Yang, “Dynamic joint resource optimization for LTE-Advanced relay networks,” *IEEE Transactions on Wireless Communications*, vol. 12, no. 11, pp. 5668 – 5678, November 2013.

[J30] A. Abdrabou, B. Liang, and W. Zhuang, “Delay analysis for sparse vehicular sensor networks with reliability considerations,” *IEEE Transactions on Wireless Communications*, vol. 12, no. 9, pp. 4402 – 4413, September 2013.

[J29] W. Wang, B. Liang, and B. Li, “Designing truthful spectrum double auctions with local markets,” *IEEE Transactions on Mobile Computing*, vol. 13, no. 1, pp. 75 – 88, January 2014.

[J28] H. Ju, B. Liang, J. Li, and X. Yang, “Dynamic power allocation for throughput utility maximization in interference-limited networks,” *IEEE Wireless Communications Letters*, vol. 2, no. 1, pp. 22 – 25, February 2013.

[J27] M. Dong, M. Hajiaghayi, and B. Liang, “Optimal fixed gain linear processing for amplify-and-forward multichannel relaying,” *IEEE Transactions on Signal Processing*, vol. 60, no. 11, pp. 6108 – 6114, November 2012.

[J26] M. Hajiaghayi, M. Dong, and B. Liang, "Jointly optimal channel and power assignment for dual-hop multi-channel multi-user relaying," *IEEE Journal on Selected Areas in Communications*, Special Issue on Cooperative Networking – Challenges and Applications, vol. 30, no. 9, pp. 1806 – 1814, October 2012.

[J25] M. Hajiaghayi, M. Dong, and B. Liang, "Jointly optimal channel pairing and power allocation for multi-channel multi-hop relaying," *IEEE Transactions on Signal Processing* vol. 59, no. 10, pp. 4998 – 5012, September 2011.

[J24] M. Hajiaghayi, M. Dong, and B. Liang, "Maximizing lifetime in relay cooperation through energy-aware power allocation," *IEEE Transactions on Signal Processing*, vol. 58, no. 8, pp. 4354 – 4366, August 2010.

[J23] M. Lotfinezhad, B. Liang, and E. Sousa, "On stability region and delay performance of linear-memory randomized scheduling for time-varying networks," *IEEE/ACM Transactions on Networking*, vol. 17, no. 6, pp. 1860 – 1873, December 2009.

[J22] Y. Lin, B. Liang, and B. Li, "Priority random linear codes in distributed storage systems," *IEEE Transactions on Parallel and Distributed Systems*, vol. 20, no. 11, pp. 1653 – 1667, November 2009.

[J21] S. Vakil and B. Liang, "Cooperative diversity in interference limited wireless networks," *IEEE Transactions on Wireless Communications*, vol. 7, no. 8, pp. 3185 – 3195, August 2008.

[J20] G. Liang and B. Liang, "Effect of delay and buffering on jitter-free streaming over random VBR channels," *IEEE Transactions on Multimedia*, vol. 10, no. 6, pp. 1128 – 1141, October 2008.

[J19] A. So and B. Liang, "Optimal placement and channel assignment of relay stations in heterogeneous wireless mesh networks by modified Bender's decomposition," *Ad Hoc Networks (Elsevier)*, vol. 7, no. 1, pp. 118 – 135, January 2009 (invited from IFIP Networking 2007).

[J18] Y. Lin, B. Li, and B. Liang, "Stochastic analysis of network coding in epidemic routing," *IEEE Journal on Selected Areas in Communications*, Special Issue on Delay and Disruption Tolerant Wireless Communication Systems, vol. 26, no. 5, pp. 794 – 808, June 2008.

[J17] A. H. Zahran, B. Liang, and A. Saleh, "Mobility modeling and performance evaluation of heterogeneous wireless networks," *IEEE Transactions on Mobile Computing*, vol. 7, no. 8, pp. 1041 – 1056, August 2008.

[J16] M. Lotfinezhad, B. Liang, and E. Sousa, "Adaptive cluster-based data collection in sensor networks with direct sink access," *IEEE Transactions on Mobile Computing*, vol. 7, no. 7, pp. 884 – 897, July 2008.

[J15] A. Farbod and B. Liang, "Efficient structured policies for admission control in heterogeneous wireless networks," *ACM/Springer Mobile Networks and Applications*, vol. 12, no. 5, pp. 309 – 323, December 2007.

[J14] A. H. Zahran and B. Liang, "A generic framework for mobility modeling and performance analysis in next-generation heterogeneous wireless networks," *IEEE Communications Magazine*, vol. 45, no. 9, pp. 92 – 99, September 2007.

[J13] A. So and B. Liang, "An efficient wireless extension point placement algorithm in urban rectilineal WLANs," *IEEE Transactions on Vehicular Technology*, vol. 57, no. 1, pp. 532 – 547, January 2008.

[J12] B. Liang, S. Drew, and D. Wang, "Performance of multiuser network-aware prefetching in heterogeneous wireless systems," *ACM/Springer Wireless Networks*, vol. 16, no. 1, pp. 99 – 110, January 2009 (Online First edition appeared February 2007).

[J11] B. Liang and M. Dong, "Packet prioritization in multihop latency aware scheduling for delay constrained communication," *IEEE Journal on Selected Areas in Communications*, Special Issue on Cross-Layer Optimized Wireless Multimedia Communications, vol. 25, no. 4, pp. 819-930, May 2007.

[J10] A. So and B. Liang, "Enhancing WLAN capacity by strategic placement of tetherless relay points," *IEEE Transactions on Mobile Computing*, vol. 6, no. 5, pp. 522-535, May 2007.

[J9] K. Yuen, B. Liang, and B. Li, "A distributed framework for correlated data gathering in sensor networks," *IEEE Transactions on Vehicular Technology*, vol. 57, no. 1, pp. 578 – 593, January 2008.

[J8] J. Eshet and B. Liang, "Randomly ranked mini slots for fair and efficient medium access control in ad hoc networks," *IEEE Transactions on Mobile Computing*, vol. 6, no. 5, pp. 481-493, May 2007.

[J7] T. Small, B. Li, and B. Liang. "Outreach: peer-to-peer topology construction towards minimized server bandwidth costs," *IEEE Journal on Selected Areas in Communications*, Special Issue on Peer-to-Peer Communications and Applications, vol. 25, no. 1, pp. 35-45, January 2007.

[J6] A. H. Zahran, B. Liang, and A. Saleh, "Signal threshold adaptation for vertical handoff in heterogeneous wireless networks," *ACM/Springer Mobile Networks and Applications*, Special Issue on Soft Radio Enabled Heterogeneous Networks, vol. 11, no. 4, pp. 625-640, August 2006.

[J5] B. Liang and Z. J. Haas, "Hybrid routing in ad hoc networks with a dynamic virtual backbone," *IEEE Transactions on Wireless Communications*, vol. 5, no. 6, pp. 1392-1405, June 2006.

[J4] Y. Fang, Z. J. Haas, B. Liang, and Y.-B. Lin "TTL prediction schemes and effects of inter-update time distribution on wireless data access," *ACM/Kluwer Wireless Networks,* vol. 10, no. 5, pp. 607–619, September 2004.

[J3] B. Liang and Z. J. Haas, "Predictive distance-based mobility management for multi-dimensional PCS networks," *IEEE/ACM Transactions on Networking*, vol. 11, no. 5, pp. 718-732, October 2003.

[J2] Z. J. Haas and B. Liang, "Ad hoc mobility management with uniform quorum systems," *IEEE/ACM Transactions on Networking*, vol. 7, no. 2, pp. 228-240, April 1999.

[J1] S. U. Pillai and B. Liang, "Blind image deconvolution using a robust GCD approach," *IEEE Transactions on Image Processing*, vol. 8, no 2, pp. 295-301, February 1999.

Papers in Refereed Conferences

[C175] C. Zhang, M. Dong, B. Liang, A. Afana, and Y. Ahmed, "SegOTA: Accelerating over-the-air federated learning with segmented transmission," to appear in *Proceedings of the International Symposium on Modeling and Optimization in Mobile, Ad hoc, and Wireless Networks (WiOpt)*, Sweden, May 2025, 8 pages.

[C174] S. Saxena and B. Liang, "DOPart: Competitive-ratio optimal online offloading of sequentially dependent tasks," to appear in *Proceedings of the IEEE International Conference on Machine Learning for Communication and Networking (ICMLCN)*, May 2025.

[C173] W. Xu, B. Liang, G. Boudreau, and H. Sokun, "Client sampling for communication-efficient distributed minimax optimization," to appear in *Proceedings of the IEEE Conference on Computer Communications (INFOCOM)*, May 2025, 10 pages. (18.7% acceptance rate)

[C172] A. Almehdhar, M. Dong, B. Liang, G. Boudreau, and Y. Ahmed, "Wireless network virtualization in uplink coordinated multi-cell MIMO systems," to appear in *Proceedings of the IEEE Conference on Computer Communications (INFOCOM)*, May 2025, 10 pages. (18.7% acceptance rate)

[C171] J. Wang, Y. Liu, B. Liang, and M. Dong, "Constrained over-the-air model updating for wireless online federated learning with delayed information," to appear in *Proceedings of the IEEE Conference on Computer Communications (INFOCOM)*, May 2025, 10 pages. (18.7% acceptance rate)

[C170] M. Tavasoli Naeini, A. Bereyhi, M. Noshad, B. Liang, and A. O. Hero, "Universal training of neural networks to achieve Bayes optimal classification accuracy," in *Proceedings of the IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, Hyderabad, India, April 2025. (**Best Student Paper Award**)

[C169] S. Chowdhury, B. Liang, A. Tizghadam, and I. Albanese, “Communication-efficient loss minimization over heterogeneous data with federated hierarchical ensemble aggregation via distillation,” in the NeurIPS Optimization for Machine Learning Workshop (no proceeding), Vancouver, British Columbia, Canada, December 2024.

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[C59] M. Hajiaghayi, M. Dong, and B. Liang, "Using limited feedback in power allocation design for a two-hop relay OFDM system," in *Proceedings of the IEEE International Conference on Communications (ICC)*, Dresden, Germany, June 2009. (35% acceptance rate)

[C58] G. Ji, B. Liang, and A. Saleh, "Buffer schemes for VBR video streaming over heterogeneous wireless networks," in *Proceedings of the IEEE International Conference on Communications (ICC)*, Dresden, Germany, June 2009. (35% acceptance rate)

[C57] A. Farbod and B. Liang, "Structured admission control policies in heterogeneous wireless networks with mesh underlay," in *Proceedings of the IEEE Conference on Computer Communications (INFOCOM)*, Rio de Janeiro, Brazil, April 2009. (19.6% acceptance rate)

[C56] Y. Lin, B. Liang, and B. Li, "Passive loss inference in wireless sensor networks based on network coding," in *Proceedings of the IEEE Conference on Computer Communications (INFOCOM)*, Rio de Janeiro, Brazil, April 2009. (19.6% acceptance rate)

[C55] Y. Lin, B. Li, and B. Liang. "CodeOR: opportunistic routing in wireless mesh networks with segmented network coding," in *Proceedings of the 16th IEEE International Conference on Network Protocols (ICNP)*, Orlando, Florida, October 2008. (16% acceptance rate)

[C54] M. Lotfinezhad, B. Liang, and E. Sousa, "Dynamic control of tunable sub-optimal algorithms for scheduling of time-varying wireless networks," in *Proceedings of the IEEE International Workshop on Quality of Service (IWQoS)*, Enschede, Netherlands, June 2008.

[C53] S. Vakil and B. Liang, "Effect of joint cooperation and multi-hopping on the capacity of wireless networks," in *Proceedings of the IEEE Communications Society Conference on Sensor, Mesh and Ad Hoc Communications and Networks (SECON)*, San Francisco, California, June 2008. (21% acceptance rate)

[C52] M. Ibrahimi and B. Liang, "Efficient power allocation in cooperative OFDM system with channel variation," in *Proceedings of the IEEE International Conference on Communications (ICC)*, Beijing, China, May 2008. (35% acceptance rate)

[C51] Y. Lin, B. Liang, and B. Li, "Geometric random linear codes in sensor networks," in *Proceedings of the IEEE International Conference on Communications (ICC)*, Beijing, China, May 2008. (35% acceptance rate)

[C50] T. Small, B. Li, and B. Liang, "Topology affects the efficiency of network coding in peer-to-peer networks," in *Proceedings of the IEEE International Conference on Communications (ICC)*, Beijing, China, May 2008. (35% acceptance rate)

[C49] Y. Lin, B. Li, and B. Liang, "Efficient network coded data transmissions in disruption tolerant networks," in *Proceedings of the IEEE Conference on Computer Communications (INFOCOM)*, Phoenix, Arizona, April 2008. (21% acceptance rate)

[C48] A. H. Zahran and B. Liang, "Call admission control analysis in heterogeneous wireless networks," in *Proceedings of the International Computer Engineering Conference (ICENCO)*, Cairo, Egypt, December 2007.

[C47] A. Farbod and B. Liang, "Optimal admission control policies for heterogeneous wireless networks," in *Proceedings of the International Conference on Heterogeneous Networking for Quality, Reliability, Security and Robustness (QShine)*, Vancouver, British Columbia, August 2007.

[C46] M. Lotfinezhad, B. Liang, and E. Sousa, "On the stability region of linear-memory scheduling for time varying channels," in *Proceedings of the IEEE International Workshop on Quality of Service (IWQoS)*, Evanston, Illinois, June 2007, (short paper).

[C45] Y. Lin, B. Liang, and B. Li, "Performance modeling of network coding in epidemic routing," in *Proceedings of the ACM International Workshop on Mobile Opportunistic Networking (MobiOpp)*, San Juan, Puerto Rico, June 2007.

[C44] Y. Lin, B. Li, and B. Liang, "Differentiated data persistence with priority random linear codes," in *Proceedings of the IEEE International Conference on Distributed Computing Systems (ICDCS)*, Toronto, Ontario, June 2007. (13.4% acceptance rate)

[C43] S. Vakil and B. Liang, "Decentralized multiuser diversity with cooperative relaying in wireless sensor networks," in *Proceedings of the IEEE Communication Society Conference on Sensor, Mesh and Ad Hoc Communications and Networks (SECON)*, San Diego, California, June 2007. (20% acceptance rate)

[C42] A. So and B. Liang, "Minimum cost configuration of relay and channel infrastructure in heterogeneous wireless mesh networks," in *Proceedings of the IFIP Networking*, Atlanta, Georgia, May 2007. (22.5% acceptance rate)

[C41] A. H. Zahran, B. Liang, and A. Saleh, "Impact of technology overlap in next-generation wireless heterogeneous systems," in *Proceedings of the IFIP Networking*, Atlanta, Georgia, May 2007. (22.5% acceptance rate)

[C40] J. Lau and B. Liang, "Optimal pricing for selfish users and prefetching in heterogeneous wireless networks," in *Proceedings of the IEEE International Conference on Communications (ICC)*, Glasgow, Scotland, June 2007. (39% acceptance rate)

[C39] G. Liang and B. Liang, "Balancing interruption frequency and buffering penalties in VBR video streaming," in *Proceedings of the IEEE Conference on Computer Communications (INFOCOM)*, Anchorage, Alaska, May 2007. (18% acceptance rate)

[C38] Y. Lin, B. Liang, and B. Li, "Data persistence in large-scale sensor networks with decentralized fountain codes," in *Proceedings of the IEEE Conference on Computer Communications (INFOCOM)*, Anchorage, Alaska, May 2007. (18% acceptance rate)

[C37] T. Small, B. Liang, and B. Li. "Scaling laws and tradeoffs in peer-to-peer live multimedia streaming," in *Proceedings of ACM Multimedia*, Santa Barbara, California, October 2006, pp. 539 - 548. (16% acceptance rate)

[C36] S. Vakil and B. Liang, "Balancing cooperation and interference in wireless sensor networks," in *Proceedings of the IEEE Communications Society Conference on Sensor, Mesh and Ad Hoc Communications and Networks (SECON)*, Reston, Virginia, September 2006, pp. 198 - 206. (25.9% acceptance rate)

[C35] G. Liang and B. Liang, "Jitter-free probability bounds for video streaming over random VBR channel," in *Proceedings of the International Conference on Quality of Service in Heterogeneous Wired/Wireless Networks (QShine)*, Waterloo, Ontario, August 2006, (**Runner-up Best Paper Award**).

[C34] B. Liang and S. Drew, "Multiuser prefetching with queuing prioritization in heterogeneous wireless systems," in *Proceedings of the International Conference on Quality of Service in Heterogeneous Wired/Wireless Networks (QShine)*, Waterloo, Ontario, August 2006.

[C33] A. So and B. Liang, "Optimal placement of relay infrastructure in heterogeneous wireless mesh networks by bender's decomposition," in *Proceedings of the International Conference on Quality of Service in Heterogeneous Wired/Wireless Networks (QShine)*, Waterloo, Ontario, August 2006, (poster).

[C32] A. H. Zahran, B. Liang, and A. Saleh, "Modeling and performance analysis of beyond 3G integrated wireless networks," in *Proceedings of the IEEE International Conference on Communications (ICC)*, Istanbul, Turkey, June 2006, pp. 1819 - 1824. (39.0% acceptance rate)

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[C30] A. H. Zahran, B. Liang, and A. Saleh, "Beyond 3G wireless network design for optimal resource utilization," in *Proceedings of the 23nd Biennial Symposium on Communications*, Kingston, Ontario, June 2006.

[C29] T. Small, B. Li, and B. Liang, "On optimal peer-to-peer topology construction with maximum peer bandwidth contributions," in *Proceedings of the 23nd Biennial Symposium on Communications*, Kingston, Ontario, June 2006.

[C28] A. Farbod, G. Liang, and B. Liang, "Vertical handoff provisioning and capacity planning in the deployment of hybrid networks," in *Proceedings of the 23rd Biennial Symposium on Communications*, Kingston, Ontario, June 2006.

[C27] S. Vakil and B. Liang, "Relaying in wireless sensor networks with interference mitigation," in *Proceedings of the 23nd Biennial Symposium on Communications*, Kingston, Ontario, June 2006.

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[C25] K. Yuen, B. Li, and B. Liang, "Distributed data gathering in multi-sink sensor networks with correlated sources," in *Proceedings of the IFIP Networking Conference*, Coimbra, Portugal, May 2006, pp. 868 – 879, in *Springer- Verlag Lecture Notes in Computer Science*, vol. 3976. (20% acceptance rate)

[C24] A. So and B. Liang, "A Lagrangian approach for the optimal placement of wireless relay nodes in wireless local area networks," in *Proceedings of the IFIP Networking Conference*, Coimbra, Portugal, May 2006, pp. 160 – 172, in *Springer-Verlag Lecture Notes in Computer Science*, vol. 3976. (20% acceptance rate)

[C23] A. H. Zahran and B. Liang, "Mobility modeling for two-tier integrated wireless multimedia networks," in *Proceedings of the IEEE International Symposium on Multimedia (ISM), Workshop on Multimedia Technologies over Wireless Networks*, Irvine, California, December 2005.

[C22] B. Liang and S. Drew, "Multi-user prefetching in two-tier wireless networks," in *Proceedings of the 2nd IEEE Upstate NY Workshop on Communications and Networking*, Rochester, New York, November 2005.

[C21] A. So and B. Liang, "Exploiting spatial diversity in rate adaptive WLANs with relay infrastructure," in *Proceedings of the IEEE Global Telecommunications Conference (GLOBECOM)*, St. Louis, Missouri, October 2005.

[C20] A. So and B. Liang, "An efficient algorithm for the optimal placement of wireless extension points in rectilinear WLANs," in *Proceedings of the International Conference on Quality of Service in Heterogeneous Wired/Wireless Networks (QShine)*, Orlando, Florida, August 2005.

[C19] B. Liang, "Performance of multihop latency aware scheduling in delay constrained ad hoc networks," in *Proceedings of the IEEE International Conference on Communications (ICC)*, Seoul, Korea, May 2005, pp. 3499 – 3504. (35.0% acceptance rate)

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[C12] S. Drew and B. Liang, "Mobility-aware web prefetching over heterogeneous wireless networks," in *Proceedings of the IEEE Symposium on Personal, Indoor and Mobile Radio Communications (PIMRC)*, Barcelona, Spain, September 2004, pp. 687 – 691.

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[C9] J. Li, Z. J. Haas, and B. Liang, "Performance analysis of random database group scheme for mobility management in ad hoc networks," in *Proceedings of the IEEE International Conference on Communications (ICC)*, Anchorage, Alaska, May 2003, pp. 313 – 317. (37.5% acceptance rate)

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[C7] M. R. Pearlman, J. Deng, B. Liang, and Z. J. Haas, "Elective participation in ad hoc networks based on energy consumption," in *Proceedings of the IEEE Global Telecommunications Conference (GLOBECOM)*, Taipei, Taiwan, November 2002, pp. 26 – 31. (30.6% acceptance rate)

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[C2] B. Liang and S. U. Pillai, "Two-dimensional deconvolution using a robust GCD approach," in *Proceedings of the IEEE International Conference on Image Processing (ICIP)*, Santa Barbara, CA, October 1997, pp. 424 – 427.

[C1] B. Liang and S. U. Pillai, "Blind image deconvolution using a robust 2-D GCD approach," in *Proceedings of the IEEE International Symposium on Circuits and Systems (ISCAS)*, Hong Kong, June 1997, pp. 1185 – 1188.

Book Chapters

[BC3] B. Liang, "Mobile edge computing," in *Key Technologies for 5G Wireless Systems*, V. W. S. Wong, R. Schober, D. W. K. Ng, and L.-C. Wang, Eds., Cambridge University Press, 2017.

[BC2] J. Eshet and B. Liang, "Fairness and scheduling in ad hoc networks," in *Security and Routing in Wireless Networks*, Y. Xiao, J. Li, and Y. Pan, Eds., Nova Science, 2005.

[BC1] Z. J. Haas, J. Deng, B. Liang, P. Papadimitratos, and S. Sajama, "Wireless ad hoc networks," in *Wiley Encyclopedia of Telecommunications*, J. Proakis, Ed., John Wiley & Sons, 2002.

Patents (inventors in alphabetical order)

[P24] Y. Ahmed, H. T. Cheng, M. Dong, B. Liang, F. Moradi Kalarde, "Optimal Device Selection and Beamforming in Federated Learning with Over-the-Air Aggregation," International Patent Application PCT/IB2023/060536, October 2023.

[P23] A. Afana, G. Boudreau, M. Dong, B. Liang, and J. Wang, "Online Distributed Optimization with Efficient Communication via Temporal Similarity," International Patent Application PCT/IB2023/057601, July 2023.

[P22] H. Dalal, E. T. Fapi, B. Liang, J. Wang, and Z. Zhu, "Method for Online Joint Design of Consensus Weight Matrix and Resource Allocation for Communication-Efficient Network Topology Design in Distributed Machine Learning," International Patent Application PCT/IB2023/057370, July 2023.

[P21] G. Boudreau, B. Liang, H. Sokun, and W. Xu, "Probabilistic Client Selection and Resource Allocation for Federated Learning," International Patent Application PCT/IB2023/052875, March 2023.

[P20] A. Afana, Y. Ahmed, M. Dong, B. Liang, and C. Zhang, "Joint Scheduling and Beamforming for Multi-Group Multicast Systems," International Patent Application PCT/IB2023/051914, March 2023.

[P19] H. Abou-Zeid, G. Boudreau, M. Dong, B. Liang, and J. Wang, "Online Optimization for Joint Computation and Communication in Edge Learning," International Patent Application PCT/IB2022/057077, July 2022.

[P18] H. Abou-Zeid, G. Boudreau, M. Dong, B. Liang, and J. Wang, "Online Multi-Cell Coordinated MIMO Wireless Network Virtualization with Imperfect CSI," International Patent Application PCT/IB2022/053974, April 2022.

[P17] H. Abou-Zeid, G. Boudreau, M. Dong, B. Liang, and J. Wang, "Hierarchical Online Convex Optimization," International Patent Application PCT/IB2022/050212, January 2022.

[P16] H. Dalal, E. T. Fapi, B. Liang, J. Wang, Z. Zhu, "Distributed Machine Learning," International Patent Application PCT/IB2021/061946, December 2021.

[P15] H. Abou-Zeid, G. Boudreau, M. Dong, B. Liang, and J. Wang, "Delay-Tolerant Constrained Online Convex Optimization," International Patent Application PCT/IB2021/057106, August 2021.

[P14] A. Al-Helali, B. Liang, and N. Nasser, "Two Factor Authentication Using Molecular Communication - A System and Method," US Patent US11039749B1 granted June 2021. (**Silver Medal at the 50th International Exhibition of Inventions Geneva**, 2025)

[P13] H. Abou-Zeid, G. Boudreau, M. Dong, B. Liang, and J. Wang, "Distributed Coordinated Downlink Precoding for Multi-cell MIMO Wireless Network Virtualization," International Patent Application PCT/IB2021/054717, May 2021.

[P12] G. Boudreau, M. Dong, B. Liang, and J. Wang, "Online MIMO Wireless Network Virtualization with Unknown Channel Information," US Patent US12003286B2 granted June 2024; Chinese Patent CN113692711B granted August 2024.

[P11] G. Boudreau, M. Dong, B. Liang, and J. Wang, "Online Convex Optimization with Periodic Updates for Downlink Multi-cell MIMO Wireless Network Virtualization," US Patent US11979206B2 granted May 2024.

[P10] A. Al-Helali, B. Liang, and N. Nasser, "Molecular Communication and Molecular Signalling - A System and Method," US Patent Application 16720908, December 2019.

[P9] G. Boudreau, B. Liang, and Y. Xu, "Joint Spectrum Allocation and Cache Placement in a D2D Network," US Patent US11570598B2 granted January 2023; European Patent EP3831040B1 granted October 2024.

[P8] A. Abu Al Haija, G. Boudreau, M. Dong, and B. Liang "Hybrid Quantized-Forward and Decode-Forward Relaying Transmission for Massive MIMO HetNets," US Patent US12004069B2 granted June 2024.

[P7] G. Boudreau, B. Liang, and Y. Xu, "Online Power Control in D2D Networks," US Patent US11553439B2 granted January 2023; European Patent EP3850894B1 granted May 2024.

[P6] G. Boudreau, B. Liang, S. H. Seyedmehdi, and M. Soltanizadeh, "Virtualized Massive MIMO in Multi-operator Wireless Networks," US Patent US10749580B2 granted August 2020; European Patent EP3622630C0 granted July 2023.

[P5] A. Abu Al Haija, G. Boudreau, M. Dong, B. Liang, and S. H. Seyedmehdi, "Method and Nodes of Relaying Signals between a User Terminal and a Base Station in a Heterogeneous Network," International Patent Application PCT/US2017/058885, October 2017.

[P4] G. Boudreau, M. Dong, B. Liang, A. Ramezani-Kebrya, and S. H. Seyedmehdi, "Device-to-Device Communication in a Multi-cell Network with Perfect and Imperfect CSI," US Patent US10644832B2 granted May 2020.

[P3] R. AliHemmati, G. Boudreau, M. Dong, B. Liang, and S. H. Seyedmehdi, "Device-to-Device Communication with Long-Term Resource Allocation," US Patent US10327256B2 granted June 2019, European Patent EP3363249B1 granted August 2019.

[P2] G. Boudreau, M. Dong, B. Liang, A. Ramezani-Kebrya, and S. H. Seyedmehdi, "Power Allocation for Device-to-Device Communication Underlaying Cellular Networks," European Patent EP3269185B1 granted July 2019; US Patent US10470137B2 granted November 2019; Chinese Patent CN107431984B granted November 2020.

[P1] G. Boudreau, R. Casselman, M. Dong, B. Liang, and A. Ramezani-Kebrya, "Interference and/or Power Reduction for Multiple Relay Nodes Using Cooperative Beamforming," US Patent US10042852B2 granted August 2018, European Patent EP3202052B1 granted November 2018.

INVITED PRESENTATIONS

- "Communication-Efficient Online Distributed Optimization with Application to Wireless Federated Learning," Tsinghua University, August 2024.
- "Communication-Efficient Online Distributed Optimization with Application to Wireless Federated Learning," Beijing Jiaotong University, August 2024.
- "Communication-Efficient Online Distributed Optimization for Federated Learning," keynote speech in IEEE INFOCOM Sponsor Workshop, May 2024.
- "Joint Consideration of Computation and Communication in Online Distributed Optimization with Application to Wireless Federated Learning," Distinguished Seminar Speaker Series in the Department of Electrical and Computer Engineering at Queen's University, April 2024.
- "Joint Offloading and Resource Allocation in Mobile Cloud with Computing Access Point," keynote speech in the IEEE International Conference on Communications (ICC) 5th International Workshop on 5G Architecture (5GArch), May 2018.
- "Stochastic Geometric Analysis of Handoff Rates in Heterogeneous Wireless Networks," keynote speech in the International Conference on Networking and Network Applications (NaNA), Hakodate, Japan, July 2016
- "Buffon's Needle and Fiber Processes: Stochastic Geometric Analysis of Handoff Rates in Heterogeneous Wireless Networks," Carleton University, January 2016
- "To Reserve or Not to Reserve: Optimal Online Multi-Instance Acquisition in IaaS Clouds," McMaster University, November 2013

- "Insensitivity of User Distribution in Mutlicell Wireless Networks: Theory and Applications," Xidian University, August 2013
- "Optimizing Resource Allocation for Multi-channel Cooperative Communications," Fudan University, April 2011
- "Weighting and Matching: on Optimizing Resource Allocation for Multi-channel Relaying," keynote speech in the 29th IEEE International Performance Computing and Communications Conference (IPCCC), Albuquerque, New Mexico, December 2010
- "Structured Admission Control in Heterogeneous Wireless Networks with Mesh Underlay," Deutsche Telekom Laboratories, June 2009
- "Data Persistence in Large-Scale Sensor Network with Decentralized Fountain Codes," Tsinghua University, June 2008
- "Data Persistence in Large-Scale Sensor Network with Decentralized Fountain Codes," University of Waterloo, April 2008
- "Distributed Persistent Data Storage in Wireless Sensor Networks," Simon Fraser University, August 2007
- "Distributed Persistent Data Storage in Wireless Sensor Networks," Argon ST – San Diego Research Center, July 2007
- "Rank-Based Medium Access in Multihop Wireless Networks," University of British Columbia, October 2006.
- "Performance of Multihop Latency Aware Scheduling in Wireless Ad Hoc Networking," IEEE Communications Society Rochester Chapter, May 2005.

COURSES TAUGHT

At the University of Toronto:

Undergraduate			**Enrollment/Instructors**
2025 Spring	ECE368S	Probabilistic Reasoning	160/1
2024 Spring	ECE421S	Introduction to Machine Learning	200/1
2022 Fall	ECE361F	Computer Networks I	103/1
2022 Spring	ECE421S	Introduction to Machine Learning	230/2
2021 Fall	ECE355F	Signal Analysis and Communications	96/1
2021 Spring	ECE421S	Introduction to Machine Learning	250/2
2020 Fall	ECE355F	Signal Analysis and Communications	92/1
2020 Spring	ECE421S	Introduction to Machine Learning	260/2
2019 Fall	ECE355F	Signal Analysis and Communications	60/1
2019 Spring	ECE421S	Introduction to Machine Learning	418/4
2018 Fall	ECE355F	Signal Analysis and Communications	62/1
2018 Spring	ECE361S	Computer Networks I	195/2
2017 Fall	ECE355F	Signal Analysis and Communications	53/1
2016 Fall	ECE355F	Signal Analysis and Communications	91/1
2015 Fall	ECE302F	Probability and Applications	265/2
2015 Spring	ECE361S	Computer Networks I	130/1
2014 Fall	ECE537F	Random Processes	50/1
2014 Spring	ECE302S	Probability and Applications	80/1
2013 Fall	ECE537F	Random Processes	36/1
2013 Spring	ECE302S	Probability and Applications	70/1
2012 Fall	ECE537F	Random Processes	52/1
2012 Spring	ECE302S	Probability and Random Processes	50/1
2011 Fall	ECE302F	Probability and Random Processes	180/2

2010 Fall	ECE302F	Probability and Random Processes	160/2
2010 Spring	ECE361S	Computer Networks I	80/1
2010 Spring	ECE302S	Probability and Random Processes	70/1
2009 Spring	ECE361S	Computer Networks I	51/1
2008 Spring	ECE302S	Probability and Random Processes	74/1
2007 Fall	ECE302F	Probability and Random Processes	177/2
2007 Spring	ECE302S	Probability and Random Processes	56/1
2007 Spring	ECE351S	(Eng Sci) Prob. and Random Proc.	64/1
2006 Spring	ECE302S	Probability and Random Processes	97/1
2006 Spring	ECE351S	(Eng Sci) Prob. and Random Proc.	47/1
2005 Spring	ECE351S	(Eng Sci) Prob. and Random Proc.	28/1
2004 Fall	ECE190F	Discrete Mathematics	360/3
2003 Fall	ECE190F	Discrete Mathematics	360/3

Graduate			**Enrollment/Instructors**
2024 Fall	ECE1549S	Stochastic Networks	6/1
2023 Fall	ECE1549S	Stochastic Networks	3/1
2021 Spring	ECE1549S	Stochastic Networks	4/1
2020 Spring	ECE1549S	Stochastic Networks	3/1
2019 Spring	ECE1549S	Stochastic Networks	8/1
2018 Spring	ECE1549S	Stochastic Networks	4/1
2017 Spring	ECE1549S	Stochastic Networks	2/1
2015 Spring	ECE1549S	Stochastic Networks	9/1
2014 Spring	ECE1549S	Stochastic Networks	4/1
2013 Spring	ECE1549S	Stochastic Networks	2/1
2012 Spring	ECE1528S	(Special Topics) Stochastic Networks	4/1
2011 Spring	ECE1528S	(Special Topics) Stochastic Networks	5/1
2009 Fall	ECE1500F	Stochastic Processes	30/1
2007 Fall	ECE1500F	Stochastic Processes	33/1
2006 Fall	ECE1500F	Stochastic Processes	35/1
2005 Fall	ECE1500F	Stochastic Processes	28/1
2004 Fall	ECE1500F	Stochastic Processes	22/1
2003 Fall	ECE1500F	Stochastic Processes	24/1
2002 Fall	ECE1500F	Stochastic Processes	22/1

At Cornell University:

Undergraduate			**Enrollment/Instructors**
2002 Spring	ECE 210	Introduction to Circuits (Recitation)	120/2

Graduate			**Enrollment/Instructors**
2001 Fall	ECE 516	Error Control Systems	25/1

ADVISING AND SUPERVISORSHIP

Graduate Theses in Progress

- Chong Zhang (M.A.Sc./Ph.D., co-supervised with M. Dong, 2019 – present)
- Shiva Saxena (Ph.D., sole-supervised, 2021 – present)
- Faeze Moradi-Kalarde (Ph.D., co-supervised with M. Dong, 2021 – present)
- Wen Xu (Ph.D., sole-supervised, 2021 – present)

- Yue Liu (Ph.D., sole-supervised, 2021 – present)
- Ahmed Al-Mehdhar (Ph.D., co-supervised with M. Dong, 2022 – present)
- Yao Zeng (Ph.D., sole-supervised, 2023 – present)
- Fan Yang (Ph.D., sole-supervised, 2024 – present)
- Yicheng Qu (Ph.D., co-supervised with A. Bereyhi, 2024 – present)

Completed Ph.D. Theses

- Sayantan Chowdhury (Ph.D., sole-supervised)
  "Knowledge Distillation and Its Application to Network Traffic Classification," 2024
- Jingrong Wang (Ph.D., sole-supervised)
  "Network Resource Allocation and Topology Design for Distributed Machine Learning," 2024
- Juncheng Wang (Ph.D., co-supervised with M. Dong)
  "Online Learning and Optimization in Communication Networks," 2023
- Erfan Meskar (Ph.D., sole-supervised)
  "Fair Multi-resource Allocation for Mobile Edge Computing," 2022
- Nima Eshraghi (Ph.D., sole-supervised)
  "Improving Online Mirror Descent for Convex Optimization in Dynamic Environments," 2022
- AbdulAziz Al-Helali (Ph.D., sole-supervised)
  "Molecular Communication in the Human Body for Implanted Electronic Medical Devices," 2022
- Sowndarya Sundar (Ph.D., sole-supervised)
  "Optimization Algorithms for Task Offloading and Scheduling in Cloud Computing," 2019
- Yujie Xu (Ph.D., sole-supervised)
  "Spectrum, Power, and Storage Management in Device-to-Device Networks," 2018
- Meng-Hsi Chen (Ph.D., co-supervised with M. Dong)
  "Joint Task Offloading and Resource Allocation for Mobile Cloud with Computing Access Point," 2017
- Ali Ramezani-Kebrya (Ph.D., co-supervised with M. Dong)
  "Resource Management in Distributed and Heterogeneous Networks," 2017
- Jaya Prakash Champati (Ph.D., sole-supervised)
  "Task Scheduling on Parallel Processors: Semi-Online Settings and Job Placement Constraints," 2017
- Wei Bao (Ph.D., sole-supervised)
  "Stochastic Analysis and Optimization of Heterogeneous Wireless Networks," 2015
- Sun Sun (Ph.D., co-supervised with M. Dong)
  "Management of Electrical Grids with Storage and Flexible Loads under High-Penetration Renewables," 2015
- Wei Wang (Ph.D., co-supervised with B. Li)
  "Fair Scheduling in Cloud Datacenters with Multiple Resource Types," 2015
- Seyed Hossein Seyedmehdi (Ph.D., sole-supervised)
  "Device-to-Device Assisted Cooperative Communications," 2014
- Mahdi Hajiaghayi (Ph.D., co-supervised with M. Dong)
  "Resource Management in Multi-channel Relaying," 2012
- Amin Farbod (Ph.D., sole-supervised)
  "Stochastic Resource Control in Heterogeneous Wireless Networks," 2012
- Yunfeng Lin (Ph.D., co-supervised with B. Li)
  "Decentralized Coding in Unreliable Communication Networks," 2010
- Mahdi Lotfinezhad (Ph.D., sole-supervised)
  "Stochastic Control of Time-Varying Wireless Networks," 2009
- Sam Vakil (Ph.D., sole-supervised)

"Cooperative Communication Schemes in Wireless Networks: a Cross Layer Approach," 2008
- Aaron So (Ph.D., sole-supervised)
  "Strategic Placement of Relay Infrastructure in Wireless Networks," 2007
- Ahmed Zahran (Ph.D., sole-supervised)
  "Modeling and Design of Next-Generation Heterogeneous Wireless Networks," 2007

Completed Master Theses
- Donney Fan (M.A.Sc., sole-supervised)
  "Online Non-preemptive Resource Constrained Scheduling," Sep. 2024
- Chong Zhang (M.A.Sc., co-supervised with M. Dong)
  "First-Order Fast Algorithm for Structurally Optimal Large-Scale Multi-Group Multicast Beamforming," Aug. 2021
- Rozhina Ghanavi (M.A.Sc., sole-supervised)
  "A Deep Generative Model for Missing Data Imputation," Jan. 2021
- Sayantan Chowdhury (M.A.Sc., sole-supervised)
  "Explaining Class-of-Service Oriented Network Traffic Classification with Superfeatures," Jan. 2020
- Eric Jiang (M.A.Sc., sole-supervised)
  "Offloading and Resource Allocation in Mobile Edge Computing with Multiple Computing Access Points," 2019
- Yifan Gong (M.A.Sc., co-supervised with B. Li)
  "Minimizing the Completion Time of Distributed Learning Workloads via Deep Reinforcement Learning," 2019
- Zhongbin Huang (M.A.Sc., co-supervised with J. Taylor)
  "Distributed Linear Quadratic Control with an Attack Detectability Constraint," 2018
- Mohammadmoein Soltanizadeh (M.A.Sc., sole-supervised)
  "Power Minimization in Wireless Network Virtualization with Massive MIMO," 2017
- Sowndarya Sundar (M.A.Sc., sole-supervised)
  "Communication Augmented Scheduling for Cloud Computing with Delay Constraint and Task Dependency," 2016
- Qiang Xiao (M.A.Sc., co-supervised with M. Dong)
  "Multi-antenna Relay Beamforming with Per-Antenna Power Constraints," 2012
- Saied Mehdian (M.A.Sc., sole-supervised)
  "Efficient Frame Transmission for Scalable Video Streaming with Dependency Structure," 2012
- Rostom Ohannessian (M.A.Sc., sole-supervised)
  "Wireless Network SNR Enhancement Using Mobile Relay Stations," 2010
- Junqi Yu (M.A.Sc., co-supervised with B. Li)
  "Profit Optimization under Risk in Cognitive Radio," 2010
- Lei Hua (M.A.Sc., sole-supervised)
  "Joint Buffering and Rate Control for Video Streaming over Heterogeneous Wireless Networks," 2010
- Seyed Amir Hejazi (M.A.Sc., sole-supervised)
  "Throughput Analysis of Multiple Access Relay Channel under Collision Avoiding Relaying Schemes," 2010
- Guang Ji (M.A.Sc., sole-supervised)
  "VBR Video Streaming over Wireless Networks," 2009
- Morteza Ibrahimi (M.A.Sc., sole-supervised)
  "Power Allocation in Cooperative OFDM Wireless Systems with Imperfect Implementation," 2007
- Jonathan Lau (M.A.Sc., sole-supervised)
  "Optimal Pricing for Selfish Users and Prefetching in Heterogeneous Wireless Networks," 2007

- Guanfeng Liang (M.A.Sc., sole-supervised)
  "Balancing Interruption Frequency and Buffering Penalties in VBR Video Streaming," 2007
- Kevin Yuen (M.A.Sc., co-supervised with B. Li)
  "A Distributed Framework for Correlated Data Gathering in Sensor Networks," 2006
- Stephen Drew (M.A.Sc., sole-supervised)
  "Multiuser Network-Aware Web Prefetching in Heterogeneous Wireless Networks," 2005
- Mahdi Lotfinezhad (M.A.Sc., sole-supervised)
  "Energy Efficient Clustering in Wireless Sensor Networks," 2004
- Jacob Eshet (M.A.Sc., sole-supervised)
  "Randomly Ranked Mini Slots: a Fair MAC Layer Protocol for Ad Hoc Networks," 2004

On-going Master Projects

- Yiming Chen (M.Eng., 2024 – present)

Completed Master Projects

- Mingrui Liu (M.Eng., 2024)
- Boyang Kan (M.Sc.Ac.), 2022
- Mengyan Liu (M.Sc.Ac.), 2022
- Shanning Liu (M.Sc.Ac.), 2022
- Yichao Yang (M.Sc.Ac.), 2022
- Shiva Saxena (M.Eng.), 2020

Post-doctoral Fellows

- Kiana Noroozi, March 2025 - present
- Shayan Mohajer Hamidi, January 2025 - present
- Jingrong Wang, October 2024 – present
- Erfan Meskar (part-time), October 2022 – present
- Ali Bereyhi, February 2023 – December 2023
- Yong Deng, December 2021 – December 2022
- Samira Rahimian, March 2021 – August 2021
- Yupeng Li, February 2019 – January 2021
- Nan Cheng (NSERC PDF), August 2017 – May 2019
- Ahmad Abu Al Haija, November 2016 – April 2018
- Ali Ramezani-Kebrya, November 2017 – August 2018
- Ning Zhang (NSERC PDF), May 2016 – September 2017
- Imene Trigui (NSERC PDF), January 2016 – December 2017
- Ruhallah Ali Hemmati, September 2014 – December 2016
- Amir Esmailpour (NSERC PDF), September 2010 – August 2011
- Atef Lotfy Abdrabou (NSERC PDF), September 2009 – January 2010
- Mahinthan Veluppillai, October 2008 – January 2009
- Tara Small (co-supervised with B. Li), September 2005 – August 2006

Visiting Ph.D. Students

- Ruoyu Wu (University of Sydney), May 2024 – October 2024
- Liming Ge (University of Sydney), May 2023 – August 2023
- Tianming Feng (Harbin Institute of Technology), May 2021 – May 2022
- Vignesh Sivaraman (National University of Singapore), September 2019 – January 2020
- Lijun He (Xidian University), September 2018 – August 2019

- Nalam Venkata Abhishek (National University of Singapore), September 2018 – January 2019
- Dinh Quang Thinh (Singapore University of Technology and Design), September 2017 – February 2018
- Fang Tian (Xidian University), September 2015 – August 2017
- Chaoqun You (University of Electronic Science and Technology of China), September 2015 – September 2017
- Sheng Huang (Xidian University), September 2015 – September 2016
- Yong Wang (Harbin Institute of Technology), January 2014 – June 2015
- Jianhua Tang (Nanyang Technological University), October 2014 – November 2014
- Juan Wen (Xidian University), September 2013 – September 2014
- Honghao Ju (Xidian University), September 2011 – August 2012
- Jialiang Zhang (Chinese University of Hong Kong), January 2006 – April 2006

Ph.D. Defense Committees Served

- Javane Rostampoor, Shiva Akbari, MohammadReza Ebrahimi, Paridhika Kayal, Kristina Dzeparoska, Simona Marinova, 2024
- Chen Ying, Hao Lan, Tianhang Zheng, Behraz Vatankhahghadim, Ahmad Khan, Bahareh Najafi, Tharindu Adikari, Tao Jiang, 2023
- Amir Tasbihi, 2022
- Hojjat Salehinejad, Majid Raeis, Behzad Khamidehi, 2021
- Kaimin Shen, Zhilin Chen, Wanyu Lin, 2020
- Antoine Lesage-Landry, Zahra Naghsh, Arin Minasian, 2019
- Binbin Dai, Li Chen, Liyao Xiang, Shuhao Liu, 2018
- Pirathayini Srikantha, Weiwei Li, Hazem Soliman, Farzad Salehisadaghiani, Seyyed Mahmood Jafari Sadeghi, Eman Hammad, 2017
- Agop Koulakezian, Ali Shariat, Hamed Sadeghi, Zakia Asad, 2016
- Veria Havary-Nassab, Zimu Liu, Le Zhang, Kianoush Hosseini, Nadeem Abji, 2015
- Houman Rastegarfar, Petros Spachos, Yicheng Lin, 2014
- Behnam Hassanabadi, Armin Ghayoori, Yuan Feng, Ehsan Karamad, 2013
- Alireza Bigdeli, Bijan Golkar, 2012
- Sameh Sorour, Yashar Ghiassi-Farrokhfal, 2011
- Jin Jin, Hadi Bannazadeh, Hassan Shojania, 2010
- Mark Defaria, Josephine Chu, Xiaoyang Guan (CS), Peyman Razaghi, Danilo Silva, Ali Tizghadam, 2009
- Elzbieta Beres, Chuan Wu, 2008
- Petar Djukic, Jiang Guo, 2007
- Ying Zhu, Kannan Karthik, 2006
- Guangji Shi, Liang Song, Zongpeng Li, 2005
- Do-Sung Jun, 2003

Ph.D. Defense External Examiner/Appraiser

- Juaren Steiger (Queen's University), 2024
- Sogand Sadrhaghighi (University of Calgary), Hao Zhou (University of Ottawa), 2023

- Sladana Jošilo (KTH), 2020
- Lilatul Ferdouse (Ryerson University), 2019
- Xiuhua Li (University of British Columbia), Jalal Khamse Ashari (Carleton University), 2018
- Samira Niafa (Hong Kong University of Science and Technology), Manar Jammal (Western University), 2017
- Rozita Rashtchi (Carleton University), Nan Cheng (University of Waterloo), Ahmed Hamid Sakr (University of Manitoba), 2016
- Mohsen Mollanoori Shamsi (University of Calgary), 2015
- Wang Yu (National University of Singapore), 2014
- Gencheng Guo (University of Alberta), 2012
- Mounib M. A. Khanafer (University of Ottawa), 2012
- Sandra L. Cespedes-Umana (University of Waterloo), 2012
- Xiao Yu Wang (University of Waterloo), 2010
- Mehri Mehrjoo (University of Waterloo), 2008
- Jun Zou (McMaster University), 2008
- Ping Wang (University of Waterloo), 2008
- Dan Wang (Simon Fraser University), 2007

Student Design Project Award

- Department of Electrical and Computer Engineering Centennial Thesis Award, "Wireless Household Automation System," fourth-year design project by Daniel Altin and Ian Swartz, 2008

PROFESSIONAL AND SCIENTIFIC SOCIETY MEMBERSHIPS

Fellow of the Institute of Electrical and Electronic Engineers (IEEE)

Member of the Association for Computing Machinery (ACM)

Member of the Tau Beta Pi National Engineering Honor Society

Licensed Professional Engineer, Ontario, Canada

PROFESSIOINAL SERVICES

Journal Editorship

- Area Editor (Cross-Layer Design and Optimization), *IEEE Transactions on Wireless Communications*, 2025 - present
- Associate Editor, *IEEE/ACM Transactions on Networking*, 2025 - present
- Associate Editor, *IEEE Transactions on Mobile Computing*, 2017 - 2024
- Editor, *IEEE Transactions on Communications*, 2014 - 2019
- Editor, *IEEE Transactions on Wireless Communications*, 2008 - 2013
- Associate Editor, Wiley *Security and Communication Networks*, 2007 - 2016
- Guest Editor, ACM/Springer *Mobile Networks and Applications (MONET)*, Special Issue on Ambient Media and Systems, 2008

Conference Organization

- Steering Committee Member, IEEE Conference on Computer Communications (Infocom), 2022 – present
- TPC Area Chair, IEEE Conference on Computer Communications (Infocom), 2025
- Faculty Advisor, IEEE VTS/ComSoc/YP Workshop on Leaders of Tomorrow, 2024
- TPC Area Chair, IEEE Conference on Computer Communications (Infocom), 2024
- Best Paper Award Committee Member, IEEE Conference on Computer Communications (Infocom), 2024
- Keynote Co-chair, IEEE Comsoc Frontier Networking Symposium, 2023
- TPC Area Chair, IEEE Conference on Computer Communications (Infocom), 2023
- Online Conference Chair, IEEE Conference on Computer Communications (Infocom), 2022
- TPC Area Chair, IEEE Conference on Computer Communications (Infocom), 2022
- General Chair, IEEE Conference on Computer Communications (Infocom), 2021
- TPC Area Chair, IEEE Conference on Computer Communications (Infocom), 2021
- Best Paper Award Committee Member, ACM International Symposium on Theory, Algorithmic Foundations, and Protocol Design for Mobile Networks and Mobile Computing (Mobihoc), 2020
- General Chair, IEEE Conference on Computer Communications (Infocom), 2020
- TPC Area Chair, IEEE Conference on Computer Communications (Infocom), 2020
- Technical Track Co-chair, IEEE Vehicular Technology Conference (VTC) - Fall, "Spectrum Management, Radio Access Technology, Heterogeneous Networks" Track, 2020
- Advisory Committee Member, International Conference on Networking and Network Applications (NaNA), 2017 - 2023
- Local Arrangement Chair, IEEE International Conference on Network Protocols (ICNP), 2017.
- Steering Committee Member, IEEE Conference on Computer Communications (Infocom) Workshop on Communications and Networking Techniques for Contemporary Video, 2015
- Co-chair, IEEE Conference on Computer Communications (Infocom) Workshop on Communications and Networking Techniques for Contemporary Video, 2014
- TPC Meeting Arrangement Co-chair, IEEE Conference on Computer Communications (Infocom), 2014
- Technical Track Co-chair, IEEE International Symposium on Personal, Indoor and Mobile Radio Communications (PIMRC) "Local and Personal Area Networks" Track, 2011
- Invited-paper session co-organizer and co-chair, Asilomar Conference on Signals, Systems, and Computers, 2008
- General Co-chair, Ambient Media and Systems (Ambi-sys), 2008
- Best Student Paper Award Committee, ACM International Conference on Mobile Computing and Networking (MobiCom), 2007
- Publicity Chair, Symposium on Next Generation Mobile Networks (NGMN), 2007
- Technical Vice Co-chair, IEEE International Conference on Mobile Ad-hoc and Sensor Systems (MASS), 2006
- Technical Track Co-chair, International Conference on Communications Circuits and Systems (ICCCAS), 2006

Technical Program Committee Membership

- 2025
    - IEEE Conference on Computer Communications (Infocom)
    - ACM International Symposium on Theory, Algorithmic Foundations, and Protocol Design for Mobile Networks and Mobile Computing (Mobihoc)
    - IEEE Canadian Conference on Electrical and Computer Engineering (CCECE)
- 2024
    - IEEE Conference on Computer Communications (Infocom)

    - IEEE International Conference on Distributed Computing Systems (ICDCS)
    - ACM International Symposium on Theory, Algorithmic Foundations, and Protocol Design for Mobile Networks and Mobile Computing (Mobihoc)
    - IEEE International Conference on Metaverse Computing, Networking and Applications (MetaCom)
- 2023
    - IEEE Conference on Computer Communications (Infocom)
    - ACM International Symposium on Theory, Algorithmic Foundations, and Protocol Design for Mobile Networks and Mobile Computing (Mobihoc)
    - IEEE International Conference on Metaverse Computing, Networking and Applications (MetaCom)
    - 31st Biennial Symposium on Communications (BSC)
- 2022
    - IEEE Conference on Computer Communications (Infocom)
    - ACM International Symposium on Theory, Algorithmic Foundations, and Protocol Design for Mobile Networks and Mobile Computing (Mobihoc)
    - IFIP Networking Conference (Networking)
- 2021
    - IEEE Conference on Computer Communications (Infocom)
    - ACM International Symposium on Theory, Algorithmic Foundations, and Protocol Design for Mobile Networks and Mobile Computing (Mobihoc)
    - IEEE Canadian Conference on Electrical and Computer Engineering (CCECE)
- 2020
    - IEEE Conference on Computer Communications (Infocom)
    - ACM International Symposium on Theory, Algorithmic Foundations, and Protocol Design for Mobile Networks and Mobile Computing (Mobihoc)
    - IEEE Vehicular Technology Conference (VTC) - Fall
    - IEEE Canadian Conference on Electrical and Computer Engineering (CCECE)
- 2019
    - IEEE Conference on Computer Communications (Infocom)
- 2018
    - IEEE Conference on Computer Communications (Infocom)
    - IEEE International Conference on Communications (ICC) 5GArch Workshop
    - IEEE Canadian Conference on Electrical and Computer Engineering (CCECE)
    - 29th Biennial Symposium on Communications (BSC)
- 2017
    - IEEE Conference on Computer Communications (Infocom)
    - IEEE International Conference on Communications (ICC)
    - IEEE Global Telecommunications Conference (Globecom)
- 2016
    - IEEE Conference on Computer Communications (Infocom)
    - IEEE Canadian Conference on Electrical and Computer Engineering (CCECE)
    - IEEE International Conference on Communication Systems and Networks (COMSNET)
    - International Symposium on Modeling and Optimization in Mobile, Ad Hoc and Wireless Networks (WiOpt)
    - 28th Biennial Symposium on Communications (BSC)
    - International Conference on Telecommunications (ICT)
- 2015
    - IEEE Conference on Computer Communications (Infocom)
    - IEEE International Conference on Communications (ICC)

    - International Conference on Telecommunications (ICT)
- 2014
    - IEEE Conference on Computer Communications (Infocom)
    - IEEE International Conference on Network Protocols (ICNP)
    - IEEE International Conference on Cloud Computing Technology and Science (CloudCom)
    - IEEE International Conference on Communications (ICC)
    - IEEE Canadian Conference on Electrical and Computer Engineering (CCECE)
    - IEEE International Conference on Computer and Information Technology (CIT)
    - International Conference on Heterogeneous Networking for Quality, Reliability, Security and Robustness (QShine)
- 2013
    - IEEE Conference on Computer Communications (Infocom)
- 2012
    - IEEE Conference on Computer Communications (Infocom)
    - IEEE Global Telecommunications Conference (Globecom)
    - IEEE Wireless Communications and Networking Conference (WCNC)
    - IEEE International Conference on Computer Communication Networks (ICCCN)
    - 26th Queen's Biennial Symposium on Communications (QBSC)
- 2011
    - IEEE Conference on Computer Communications (Infocom)
    - IEEE Global Telecommunications Conference (Globecom)
    - IEEE International Symposium on Personal, Indoor and Mobile Radio Communications (PIMRC)
    - IEEE Canadian Conference on Electrical and Computer Engineering (CCECE)
- 2010
    - IEEE Conference on Computer Communications (Infocom)
    - IEEE Communications Society Conference on Sensor, Mesh and Ad Hoc Communications and Networks (SECON)
    - IEEE Global Telecommunications Conference (Globecom)
    - IEEE International Conference on Communications (ICC)
    - IEEE International Symposium on a World of Wireless Mobile and Multimedia Networks (WoWMoM)
    - IEEE Vehicular Technology Conference (VTC)
    - International Conference on Heterogeneous Networking for Quality, Reliability, Security and Robustness (QShine)
    - 25th Queen's Biennial Symposium on Communications (QBSC)
- 2009:
    - IEEE Conference on Computer Communications (Infocom)
    - IEEE Communications Society Conference on Sensor, Mesh and Ad Hoc Communications and Networks (SECON)
    - IEEE International Conference on Communications (ICC)
    - International Conference on Heterogeneous Networking for Quality, Reliability, Security and Robustness (QShine)
    - IEEE Canadian Conference on Electrical and Computer Engineering (CCECE)
- 2008:
    - IEEE Conference on Computer Communications (Infocom)
    - IEEE Communications Society Conference on Sensor, Mesh and Ad Hoc Communications and Networks (SECON)
    - IFIP-TC6 Networking Conference (Networking)
    - IEEE Global Telecommunications Conference (Globecom)

    - IEEE International Conference on Communications (ICC)
    - IEEE Wireless Communications and Networking Conference (WCNC)
    - International Conference on Quality of Service in Heterogeneous Wired/Wireless Networks (QShine)
    - 24th Queen's Biennial Symposium on Communications (QBSC)
- 2007:
    - ACM International Conference on Mobile Computing and Networking (MobiCom)
    - IEEE International Conference on Mobile Ad-hoc and Sensor Systems (MASS)
    - IEEE Global Telecommunications Conference (Globecom)
    - IEEE International Conference on Communications (ICC)
    - IFIP-TC6 Networking Conference (Networking)
    - International Conference on Quality of Service in Heterogeneous Wired/Wireless Networks (QShine)
    - International Wireless Communications and Mobile Computing Conference (IWCMC)
    - IEEE Vehicular Technology Conference (VTC)
    - IEEE International Conference on Advanced Information Networking and Applications (AINA)
- 2006:
    - IEEE International Conference on Mobile Ad-hoc and Sensor Systems (MASS)
    - ACM International Workshop on Performance Evaluation of Wireless Ad Hoc, Sensor, and Ubiquitous Networks (PE-WASUN)
    - IEEE International Conference on Communications Circuits and Systems (ICCCAS)
    - IEEE Global Telecommunications Conference (Globecom)
    - IEEE Conference on Local Computer Networks (LCN)
    - 23rd Queen's Biennial Symposium on Communications (QBSC)
    - International Conference on Quality of Service in Heterogeneous Wired/Wireless Networks (QShine)
    - IEEE International Workshop on Mobility in the Evolving Internet Architecture (MobiArch)
    - International Wireless Communications and Mobile Computing Conference (IWCMC)
- 2005:
    - IEEE International Conference on Mobile Ad-hoc and Sensor Systems (MASS)
    - IEEE Global Telecommunications Conference (Globecom)
    - IEEE Conference on Local Computer Networks (LCN)
    - IEEE Wireless Communications and Networking Conference (WCNC)
    - International Conference on Wired/Wireless Internet Communications (WWIC)
- 2004:
    - International Conference on Wired/Wireless Internet Communications (WWIC)
    - Canadian Conference on Electrical and Computer Engineering (CCECE)

Reviewer for numerous IEEE, ACM, and other journals and conferences

Panelist/Referee for research funding agencies:

- British Columbia Innovation Council, Canada
- Foundation for Science and Technology, Portugal
- Kentucky Science and Engineering Foundation, United States
- Mitacs Network of Centres of Excellence, Canada
- Natural Sciences and Engineering Research Council (NSERC) of Canada
- National Science Foundation (NSF), United States
- Science Foundation Ireland
- SMART Innovation Centre, Singapore

- The Knowledge Foundation, Sweden

Reviewer/Referee for tenure or promotion:

- Al Hussein Technical University
- Carleton University
- Carnegie Mellon University
- Cornell University
- Hongkong Polytechnic University
- Hongkong University of Science and Technology
- King Abdulaziz City for Science and Technology
- Memorial University of Newfoundland
- Ontario Tech University
- Queen's University
- ShanghaiTech University
- The Pennsylvania State University
- Toronto Metropolitan University
- University of Calgary
- University of Florida

MAJOR UNIVERSITY AND DEPARTMENTAL COMMITTEES

- ECE Director of M.Eng. Admissions, 2023 – present
- ECE Graduate Matters Committee, 2012 – 2015, 2023 – present
- FASE M.Eng. Working Group, 2024 - present
- ECE Computer Systems User Committee, 2023 – 2024
- ECE Tenure Committee, 2023 – 2024
- ECE Canada Research Chair Adjudication Committee, 2023
- ECE CLTA Faculty Hiring Committee, 2023
- Chair, ECE Canada Excellence Research Chair (CERC) Intelligent Digital Infrastructures Search Committee, 2022
- ECE Canada Excellence Research Chairs (CERC) Steering Committee, 2022
- Chair of the Communications Group, 2016 – 2022
- ECE Advisory Committee, 2016 - 2022
- ECE Promotions Committee (substitute), 2018 – 2019
- ECE Progress Through the Ranks Committee, 2014 - 2015
- ECE Awards Committee, 2013 - 2015
- ECE Graduate Coordinator for the Communications Group, 2011 - 2013
- ECE Curriculum Matters Committee, 2011 – 2013
- APSC Teaching Methods and Resources Committee, 2009 – 2011
- APSC Standing Committee on Community Affairs and Gender Issues, 2007 – 2010
- ECE Computer System Users Committee, 2007 – 2009
- Review Panelist for the Ontario Graduate Scholarship program, 2004 – 2007

EXTERNAL RESEARCH FUNDING

Active Grants

- "Communication-Efficient Mobile Edge Assisted Decentralized Machine Learning Architecture and Methods," MITACS Accelerate, 2024 – 2028
- "5G Wireless Network System Optimization," Ericsson Research Chair 5G Wireless Network System Optimization, 2021 – 2025.
- "Adaptive Intelligent Wireless Networking with Advanced Communication and Machine Learning Techniques," NSERC Alliance and MITACS Accelerate joint program, 2022 – 2026 (PI, with R. Adve and N. Papernot).
- "Collaborative Communication and Computation for Hierarchical Learning at the Mobile Edge," NSERC Discovery Grant, 2020 – 2025, extended to 2026.
- "Toward Situational-aware and Adaptive 5G Networks for Defence and Security: A Machine Learning Approach," DND IDEaS Micro-net, 2022 – 2026 (co-PI, with V. W.S. Wong (PI), L. Cai, L. Le, K. Pattabiraman, and R. Xiao).

Prior Grants

- "Dynamic Network Traffic Identification with Scalable and Resilient Machine Learning," NSERC Alliance Grant, 2022 – 2024, with TELUS matching grant.
- "Computational Support for Joint Computer Networking and Machine Learning Research," Digital Research Alliance of Canada, Resources for Research Groups (RRG) competition, 2023 - 2024.
- "Distributed Machine Learning for Large-Scale IoT Systems with MEC," MITACS Accelerate, 2020 – 2024
- "Integrated Communication-Computation for Distributed Machine Learning at the Mobile Edge," Compute Canada, Resources for Research Groups (RRG) competition, 2020 - 2023.
- "Interference Management in Heterogeneous Wireless Networks," Ontario Centres of Excellence ENCQOR 5G Grant, 2020 – 2022.
- "Network Traffic Classification with Machine Learning and Edge Computing," NSERC Collaborative Research and Development Grant, 2018 – 2020, extended to 2021, with TELUS matching grant.
- "Leading Edge: An Integrated Communication and Computation Framework for Mobile Edge Computing," NSERC Strategic Project Grant, 2017 – 2020 (PI, with M. Dong and V. W.S. Wong).
- "Multi-tier Wireless Networking with Massive MIMO," NSERC Collaborative Research and Development Grant, 2018 – 2019.
- "Integrated Communication and Computation Resource Management for Mobile Cloud Computing," NSERC Discovery Grant, 2015 – 2020.
- "Integrated Communication and Computation Resource Management for Mobile Cloud Computing," NSERC Discovery Accelerator Supplement Award, 2015 – 2018.
- "Interference Management in Heterogeneous Wireless Networks with Device-to-Device Communication," Ericsson Research Contract, 2016 - 2018.
- "Interference Management in Multi-tier Heterogeneous Wireless Networks," NSERC Collaborative Research and Development Grant, 2014 – 2017 (PI, with M. Dong).
- "Cloud in the Air: a Heterogeneous Data Communication Framework for Mobile Cloud Computing," NSERC Strategic Project Grant, 2013 – 2016, extended to 2017 (PI, with M. Dong and V. W.S. Wong).

- “Interference Management under Heterogeneous Network Deployment via Virtual MIMO,” Ericsson Research Contract, 2013 - 2016.
- “Advanced Techniques for Interference Management with Network MIMO,” Ontario Centres of Excellence TalentEdge Fellowship, 2014 – 2016.
- “Advanced Techniques for Interference Management with Network MIMO,” Ontario Centres of Excellence TalentEdge Internship, 2014 – 2016.
- “Voice and Multimedia Streaming over Heterogeneous Wireless Networks using Rate Adaptation and Data Buffering,” NSERC Collaborative Research and Development Grant, 2012 – 2015.
- “Voice and Multimedia Streaming over Heterogeneous Wireless Networks using Rate Adaptation and Data Buffering,” Bell Innovation Fund Research Grant, 2011 – 2014.
- “Multi-tier Mobile Resource Management for Broadband Wireless Communication,” NSERC Discovery Grant, 2010 – 2015.
- “Self-Reconfiguring Peer Collaboration in Wireless Communication Networks,” Ontario MRI Early Researcher Award, 2007 – 2012.
- “On Design of Next-Generation Wireless Metropolitan Area Networks with Mobile Multi-hop Relays,” NSERC Strategic Project Grant - Supplemental Competition, 2008 – 2010 (PI, with P-H. Ho and L-L. Xie).
- “Cooperative Communication toward Autonomous Multihop Wireless Networking,” NSERC Discovery Grant, 2007 – 2012 (requested early renewal in 2010).
- “Cooperative Communication in Sensor Networks with Correlated Sources,” Electronics and Telecommunications Research Institute (ETRI) Research Contract, 2009 – 2010.
- “Cooperative Broadband Mobile Networking toward IMT-Advanced,” LG Electronics Research Grant, 2008 – 2009.
- “Cooperative Source and Transmission Coding for Wireless Sensor Networks,” Electronics and Telecommunications Research Institute (ETRI) Research Contract, 2008 – 2009.
- “Multimedia Application and Service Management in Multi-Tier Heterogeneous Wireless Networks,” Bell University Laboratories Research Grant, 2005 – 2008.
- “Inter-Networking Technologies for IP Packet Switched RANs,” LG Electronics Research Grant, 2006 – 2008 (PI, with A. Leon-Garcia, B. Li, and S. Valaee).
- “Wireless and Embedded Systems Architecture Laboratory,” CFI/OIT New Opportunities Fund, 2004 – 2007 (Co-PI, with A. Brown, E. de Lara, and J. G. Steffan).
- “Advanced Networking Technologies for Next-Generation Wireless Multimedia Systems,” Sun Microsystems Equipment Donation, 2004.
- “The Planet in Blades: A Highly Condensed Infrastructure for Planet-Scale Overlay Network Implementations,” NSERC Research Tools and Instruments Grant, 2004 (Co-PI, with B. Li).
- “Mobility Management in Heterogeneous Wireless Inter-Networking,” CITO Student Internship Program, 2004 – 2006.
- “Inter-Networking Technologies for Next-Generation Wireless Multimedia Systems,” Bell University Laboratories Research Grant, 2003 – 2005.

- “Cross-Layer Design for Multimedia Communication in Mobile Ad Hoc Networks,” NSERC Discovery Grant, 2003 – 2007.