# Kaushik Chowdhury

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*IEEE Fellow*

*Electrical and Computer Engineering*
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## Education History

2006–2009 **Ph.D. in Electrical & Computer Engineering**, *Georgia Institute of Technology*, Atlanta, USA

2003–2006 **Master of Science in Computer Science**, *Univ. of Cincinnati*, Cincinnati, USA

1999–2003 **Bachelor in Electronics Engineering**, *VJTI-Mumbai University*, Mumbai, India

## Employment History

May. 2022 - present **Vice Chair for Research**, *Northeastern University*, Boston, USA
Department of Electrical and Computer Engineering

Jul. 2020 - present **Professor**, *Northeastern University*, Boston, USA
Department of Electrical and Computer Engineering

Jul. 2019 - present **Associate Director**, *Boston, USA*, Institute for the Wireless Internet of Things
Northeastern University

Jul. 2015 - 2020 **Associate Professor**, *Northeastern University*, Boston, USA
Department of Electrical and Computer Engineering

Sept. 2009 - Jun. 2015 **Assistant Professor**, *Northeastern University*, Boston, USA
Department of Electrical and Computer Engineering

## Other Key Affiliations

Mar. 2017 - present **Co-PI and Director of Academic Outreach**, *Platforms for Advanced Wireless Research (PPO) Project Office*

## International Visiting Positions

Apr. 2017- Aug. 2017 **Invited Professor**, *LINCS Laboratory, Pierre and Marie Curie University*
Paris, France

Jun. 2015- Jul. 2015 **Invited Researcher**, *Université de Technologie de Compiègne*
Compiègne, France

## Major Professional Awards

2023 **Finalist for the 2023 US Blavatnik National Awards for Young Scientists**, *The New York Academy of Sciences*

2017 **Presidential Early Career Award for Scientists and Engineers (PECASE)**, *U.S. government's highest award for scientists and engineers in the early stages of their independent research careers*

2017 **Young Faculty Award (YFA)**, *Defense Advanced Research Projects Agency (DARPA)*

2016 **Director of Research Early Career Award**, *Office of Naval Research (ONR)*

2015 **CAREER Award**, *US National Science Foundation (NSF)*

## Selected Honors

2024 **IEEE Fellow**

2022 **Excellence in Mentoring Award**, *Northeastern University, College of Engineering*

2017 **Faculty Team Excellence Award**, *Northeastern University, College of Engineering*

2016 **Faculty Fellow**, *Northeastern University, College of Engineering*

2015 **IEEE Senior Member**

2006 **Outstanding Master's Thesis award by the ECE & CS departments**, *University of Cincinnati*

2003-2005 **University Grant Scholarship**, *University of Cincinnati*

## Best Paper and Thesis Awards

Feb. 2022 S.Garcia Sanchez, R. Shukla, K. R. Chowdhury, "Camera-enabled Joint Robotic-Communication Paradigm for UAVs mounted with mmWave Radios," ***4th Intl. Workshop on Drone Assisted Wireless Communications for 5G and Beyond (DroneCom'21), co-located with ACM MobiCom***, New Orleans, USA.

Nov. 2020 Z. Wang, B. Salehi, A. Gritsenko, K. R. Chowdhury, S Ioannidis, and J. Dy, "Open-World Class Discovery with Kernel Networks," ***IEEE International Conference on DataMining (ICDM)***, Sorrento, Italy.

Dec. 2019 K. Li, U. Muncuk, M. Y. Naderi, and K. R. Chowdhury, "SoftSense: Collaborative Surface-based Object Sensing and Tracking Using Networked Coils," ***IEEE Global Communications Conference (Globecom)***, Hawaii, USA.

Nov. 2019 A. Gritsenko, Z. Wang, J. Dy, K. R. Chowdhury, and S. Ioannidis, "Finding a 'New' Needle in the Haystack: Unseen Radio Detection in Large Populations Using Deep Learning," ***IEEE International Symposium on Dynamic Spectrum Access Networks (DySPAN)***, NJ, USA.

Nov. 2018 H.Truong, S. Zhang, U. Muncuk, P. Nguyen, N. Bui, A. Nguyen, Q. Lv, K. R. Chowdhury, T. Dinh, and T. Vu, "CapBand: Battery-free Successive Capacitance Sensing Wristband for Hand Gesture Recognition," ***ACM Conference on Embedded Networked Sensor Systems (SenSyS)***, Shenzhen, China. (*Best paper runner-up*)

Apr. 2018 S. Mohanti, E. Bozkaya, M. Y. Naderi, B. Canberk and K. R. Chowdhury, "WiFED: WiFi Friendly Energy Delivery with Distributed Beamforming," ***IEEE International Conference on Computer Communications (INFOCOM)***, Hawaii, USA.

Oct. 2016 G. Secinti, M. E. Ozcevik, K. R. Chowdhury, and B. Canberk, "Dynamic Power Adjustment and Resource Allocation Framework for LTE Networks," ***IEEE International Workshop on Computer-Aided Modeling Analysis and Design of Communication Links and Networks (CAMAD)***, Toronto, CA.

Jun. 2013 L. Chen, S. Cool, H. Ba, W. Heinzelman, I. Demirkol, U. Muncuk, K. R. Chowdhury, and S. Basagni, "Range Extension of Passive Wake-up Radio Systems through Energy Harvesting," ***IEEE International Communications Conference (ICC)*** - *flagship conference of the IEEE Communications Society*, Budapest, Hungary.

Jan. 2013 A. H. Coarasa, P. Nintanavongsa, S. Sanyal, and K. R. Chowdhury, "Impact of Mobile Transmitter Sources on Radio Frequency Wireless Energy Harvesting," ***IEEE Intl. Conference on Computing, Networking and Communications (ICNC)***, San Diego, CA.

Jun. 2012 R. Doost-Mohammady and K. R. Chowdhury, "Enhancing Wireless Medical Telemetry through Dynamic Spectrum Access," ***IEEE International Communications Conference (ICC)***, Ottawa, Canada.

Jun. 2009 K. R. Chowdhury and I. F. Akyildiz, "Interferer Classification, Channel Selection and Transmission Adaptation for Wireless Sensor Networks," ***IEEE International Communications Conference (ICC)***, Dresden, Germany.

2006 Best MS Thesis Award, annually awarded by Dept. of Electrical and Computer Engineering, and Computer Science, University of Cincinnati.

## Scholarship/Research

Summary h-index = 56, i10-index =149, citations = 17,972. All metrics retrieved from Google Scholar in Jan. 2024.

**Journal and Magazines**, *(in descending chronological order)*

J91 N. Soltani, J. Zhang, T. Jian, C. Dick, B. Salehi, D. Roy, R. Nowak, and K. R. Chowdhury, "Learning from the Best: Active Learning for Wireless Communications," *IEEE Wireless Communications Magazine*, accepted, Jan. 2024.

J90 B. Salehi, D. Roy, T. Jian, C. Dick, S. Ioannidis, and K. R. Chowdhury, "Omi-CNN: A Modality-agnostic Neural Network for mmWave Beam Selection," *IEEE Trans. on Vehicular Technology*, accepted, Jan. 2024.

J89 M. Wentz and K. R. Chowdhury, "Intra-Network Synchronization and Retrodirective Distributed Transmit Beamforming with UAVs," *IEEE Trans. on Vehicular Technology*, accepted, August 2023.

J88 G. Reus-Muns, P. Upadhyaya, U. Demir, N. Stephenson, N. Soltani, V. K. Shah, K. R. Chowdhury, "SenseORAN: O-RAN based Radar Detection in the CBRS Band," *IEEE Journal on Selected Areas in Communications (JSAC)*, vol. 42, no. 2, February 2024.

J87 J. Zhang, G. Shen, W. Saad, and K. R. Chowdhury, "Radio Frequency Fingerprint Identification for Device Authentication in the Internet of Things," *IEEE Communications Magazine*, vol. 61, no. 10, October 2023.

J86 C. Tassie, V. Chaudhary , A. Gaber, N. Soltani, M. Belgiovine, M. Loehning, V. Kotzsch, C. Schroeder and K. R. Chowdhury, "Detection of Co-existing RF Signals in CBRS using ML: Dataset and API-based Collection Testbed," *IEEE Communications Magazine*, vol. 61, no. 9, September 2023.

J85 U. Demir, S. Pradhan, R. Kumahia, D. Roy, S. Ioannidis, and K. R. Chowdhury, "Digital Twins for Maintaining QoS in Programmable Vehicular Networks," *IEEE Network Magazine*, vol. 37, no. 4, July/August 2023.

J84 S. Mohanti, D. Roy, M. Eisen, D. Cavalcanti, and K. Chowdhury, "L-NORM: Learning and Network Orchestration at the Edge for Robot Connectivity and Mobility in Factory Floor Environments," *IEEE Transactions on Mobile Computing*, accepted, April 2023.

J83 D. Roy, B. Salehi, S. Banou, S. Mohanti, G. Reus-Muns, M. Belgiovine, P. Ganesh, C. Dick, and K. R. Chowdhury, "Going Beyond RF: A Survey on how AI-enabled Multimodal Beamforming will Shape the NextG Standard," *Elsevier Computer Networks*, vol. 228, June 2023.

J82 N. Soltani, D. Roy, and K. R. Chowdhury, "PRONTO: Preamble Overhead Reduction with Neural Networks for Coarse Synchronization," *IEEE Transactions on Wireless Communications*, vol. 22, no. 11, November 2023.

J81 S. Garcia Sanchez, G. Reus-Muns, C. Bocanegra, Y. Li, U. Muncuk, Y. Naderi, Y. Wang, S. Ioannidis, and K. R. Chowdhury, "AirNN: Over-the-Air Computation for Neural Networks via Reconfigurable Intelligent Surfaces," *IEEE/ACM Transactions on Networking*, vol. 31, no. 6, December 2023.

J80 K. Li, M-Y. Naderi, U. Muncuk, and K. R Chowdhury, "MetaResonance–A Reconfigurable Surface for Holographic Wireless Power Transfer," *IEEE Transactions on Industrial Electronics*, vol. 70, no. 5, May 2023.

J79 D. Roy, Y. Li, T. Jian, P. Tian, K. R. Chowdhury, and S. Ioannidis, "Multi-modality Sensing and Data Fusion for Multi-vehicle Detection," *IEEE Transactions on Multimedia*, vol. 25, Jan. 2022.

J78 G. Reus-Muns, M. Diddi, C. Singhal, H. Singh, K. R. Chowdhury, "Flying Among Stars: Jamming-resilient Channel Selection for UAVs through Aerial Constellations," *IEEE Transactions on Mobile Computing*, vol. 22, no. 3, Mar. 2023.

J77 T. Jian, Y. Gong, Z. Zhan, R. Shi, N. Soltani, Z. Wang, J. Dy, K. Chowdhury, Y. Wang, S. Ioannidis, "Radio Frequency Fingerprinting on the Edge," *IEEE Transactions on Mobile Computing*, vol. 21, no. 11, Nov. 2022.

J76 B Azari, H. Cheng, N. Soltani, H. Li, Y. Li, M. Belgiovine, T. Imbiriba, S. D'Oro, T. Melodia, Y. Wang, P. Closas, K. R. Chowdhury, and D. Erdoğmuş, "Automated Deep Learning-based Wide-band Receiver," *Elsevier Computer Networks*, vol. 218, 2022.

J75 N. Soltani, H. Cheng, M. Belgiovine, Y. Li, H. Li, B. Azari, S. D'Oro, T. Imbiriba, T. Melodia, P. Closas, Y. Wang, D. Erdogmus, and K. R. Chowdhury, "Neural Network-based OFDM Receiver for Resource-Constrained IoT Devices," *IEEE Internet of Things Magazine*, vol. 5, no. 3, Sept. 2022.

J74 S. Mohanti, C. Bocanegra, S. Garcia, K. Alemdar, and K. R. Chowdhury, "SABRE: Swarm-based Aerial Beamforming Radios: Experimentation and Emulation," *IEEE Transactions on Wireless Communication*, vol. 22, no. 9, pp. 7460-7475, Sept. 2022.

J73 J. Gu, B. Salehi, D. Roy, and K. R. Chowdhury, "Multimodality in mmWave MIMO Beam Selection using Deep Learning: Datasets and Challenges," *IEEE Communications Magazine*, vol. 60, no. 11, Nov. 2022.

J72 B. Salehi, G. Reus-Muns, D. Roy, Z. Wang, T. Jian, J. Dy, S. Ioannidis, and K. Chowdhury, "Deep Learning on Multimodal Sensor Data at the Wireless Edge for Vehicular Network," *IEEE Transactions on Vehicular Technology*, vol. 71, no. 7, pp. 7639-7655, July 2022.

J71 K. Li, Y. Naderi, U. Muncuk, K. R. Chowdhury, "iSurface: Self-powered Reconfigurable Intelligent Surfaces with Wireless Power Transfer," *IEEE Communications Magazine*, vol. 59, no. 11, pp. 109-115, Nov. 2021.

J70. M. Belgiovine, K. Sankhe, C. Bocanegra, D. Roy, K. Chowdhury, "Deep Learning at the Edge for Channel Estimation in Beyond-5G Massive MIMO," *IEEE Wireless Communication Magazine*, vol. 28, no. 2, pp. 19-25, April 2021.

J69. G. Reus-Muns, K. R. Chowdhury, "Classifying UAVs with Proprietary Waveforms via Preamble Feature Extraction and Federated Learning," *IEEE Transactions on Vehicular Technology*, vol. 70, no. 7, pp. 6279-6290, July 2021.

J68. S. Mohanti, E. Bozkaya, Y. Naderi, B. Canberk, G. Secinti, and K. R. Chowdhury, "WiFED Mobile: WiFi Friendly Energy Delivery with Mobile Distributed Beamforming," *IEEE/ACM Transactions on Networking*, vol. 29, no. 3, pp. 1362-1375, June 2021.

J67. K. Sankhe, D. Jaisinghani and K. R. Chowdhury, "ReLy: Machine Learning for Ultra-Reliable, Low Latency Messaging in Industrial Robots," *IEEE Communications Magazine*, vol. 59, no. 4, pp. 75-81, April 2021.

J66. N. Soltani, G. Reus-Muns, B. Salehi, J. Dy, S. Ioannidis, and K. R. Chowdhury, "RF Fingerprinting Unmanned Aerial Vehicles with Non-standard Transmitter Waveforms," *IEEE Transactions on Vehicular Technology*, vol. 69, no. 12, pp. 15518-15531, Dec. 2020.

J65. S. Garcia Sanchez and K. R. Chowdhury, "Robust 60GHz Beamforming for UAVs: Experimental Analysis of Hovering, Blockage and Beam Selection," *IEEE Journal on Internet of Things*, vol. 8, no. 12, pp. 9838-9854, June 2021.

J64. S. Garcia Sanchez, S. Mohanti, D. Jaisinghani and K. R. Chowdhury, "Millimeter-wave Base Stations in the Sky: An Experimental Study of UAV-to-Ground Communications," *IEEE Transactions on Mobile Computing*, vol. 21, no. 2, pp. 644-662, Feb. 2022.

J63. K. Li, U. Muncuk, M. Y. Naderi, and K. R. Chowdhury, "iSense: Intelligent Object Sensing and Robot Tracking through Networked Coupled Magnetic Resonant Coils," *IEEE Internet of Things Journal*, vol. 8, no. 8, April 2021.

J62. N. Soltani, K. Sankhe, J. Dy, S. Ioannidis, and K. R. Chowdhury, "More is Better: Data Augmentation for Channel-Resilient RF Fingerprinting," *IEEE Communications Magazine*, vol. 52, no. 10, Oct. 2020.

J61. A. Trotta, U. Muncuk, M. Di Felice and K. R. Chowdhurys, "Persistent Crowd Tracking Using Unmanned AerIal Vehicle Swarms: A Novel Framework for Energy and Mobility Management," *IEEE Vehicular Technology Magazine*, vol. 15, no. 2, pp. 96-103, June 2020.

J60. T. Jian, B. C. Rendon, E. Ojuba, N. Soltani, Z. Wang, K. Sankhe, A. Gritsenko, J. Dy, K. R. Chowdhury, and S. Ioannidis, "Deep Learning for RF Fingerprinting: A Massive Experimental Study," *IEEE Internet of Things Magazine*, vol. 3, no. 1, pp. 50-57, April 2020.

J59. K. Li, U. Muncuk, M. Y. Naderi, and K. R. Chowdhury, "SoftCharge: Software Defined Multi-device Wireless Charging over Large Surfaces," *IEEE Journal on Emerging and Selected Topics in Circuits and Systems*, vol. 10, no. 1, pp. 38-51, March 2020

J58. G. Secinti, A. Trotta, S. Mohanti, M. Di Felice, and K. R. Chowdhury, "FOCUS: Fog Computing in UAS Software-defined Mesh Networks," *IEEE Trans. on Transactions on Intelligent Transportation Systems*, vol. 21, no. 6, pp. 2664-2674, June 2020.

J57. F. Nakayama, P. Lenz, S. Banou, M. Nogueira, A. Santos, and K. R. Chowdhury, "Shaping mHealth by Biosignal Authentication: State-of-the-Art, Case Study, and Future Directions," *Journal of Computing in Science and Engineering*, vol. 2019, Nov. 2019.

J56. K. Sankhe, M. Belgiovine, F. Zhou, L. Angioloni, F. Restuccia, S. D'Oro, T. Melodia, S. Ioannidis, and K. R. Chowdhury, "No Radio Left Behind: Radio Fingerprinting Through Deep Learning of Physical-Layer Hardware Impairments," *IEEE Trans. on Cognitive Communications and Networking, Special Issue: Evolution of Cognitive Radio to AI-enabled Radio and Networks*, vol. 6, no. 1, Oct. 2019.

J55. W. J. Tomlinson , S. Banou , S. Blechinger-Slocum, C. Yu, and K. R. Chowdhury, "Body-Guided Galvanic Coupling Communication for Secure Biometric Data," *IEEE Trans. on Wireless Communication*, vol. 18 , no. 8, Aug. 2019.

J54. S. Banou, M. Swaminathan, G. Reus Muns, D. Duong, F. Kulsoom, P. Savazzi, A.Vizziello and K. R. Chowdhury, "Beamforming Galvanic Coupling Signals for IoMT Implant-to-Relay Communication," *IEEE Sensors Journal*, vol. 19, no. 19 , Oct. 2019.

J53. W. Li, F. Zhou, K. R. Chowdhury, and W. Meleis, "QTCP: Adaptive Congestion Control with Reinforcement Learning," *IEEE Transactions on Network Science and Engineering*, vol. 6, no. 3, July-Sept. 2019.

J52. C. Versek, A. Rissmiller, A. Tran, M. Taya, K. R. Chowdhury, P. Bex, and S. Sridhar,"Portable System for Neuro-Optical Diagnostics Using Virtual Reality Display," *Military Medicine*, vol. 184, no. 1, pp. 584–592, March-April 2019.

J51. W. Tomlinson, S. Banou, C. Yu, M. Stojanovic and K. R. Chowdhury, "Comprehensive Survey of Galvanic Coupling and Alternative Intra-body Communication Technologies", *IEEE Communications Surveys and Tutorials*, vol. 21, no. 2, second quarter 2019. (IF 22.973)

J50. F. Zhou, D. Choffnes, and K. R. Chowdhury, "Janus: A Multi-TCP Framework for Application-Aware Optimization in Mobile Networks," *IEEE Transactions on Mobile Computing*, vol. 18, no. 9, September 2019.

J49. C. Bocanegra, T. E. Kennouche, Z. Li, L. Favalli, M. Di Felice, and K. R. Chowdhury, "E-Fi: Evasive Wi-Fi Measures for Surviving LTE within 5GHz Unlicensed Band," *IEEE Transactions on Mobile Computing*, vol. 18, no. 4, April 2019. (IF: 4.474)

J48. Anna Vizziello, Pietro Savazzi, and K. R. Chowdhury, "A Kalman based Hybrid Precoding for Multi-User Millimeter Wave MIMO Systems ," *IEEE Access*, vol. 6, Sept. 2018.

J47. S. Riyaz, K. Sankhe, S. Ioannidis, and K. R. Chowdhury, "Deep Learning Convolutional Neural Networks for Radio Identification," *IEEE Communications Magazine*, vol. 56, no. 9, September, 2018.

J46. U. Muncuk, K. Alemdar, J. D. Sarode and K. R. Chowdhury, "Multi-band Ambient RF Energy Harvesting Circuit Design for Enabling Battery-less Sensors and IoTs," *IEEE Internet of Things Journal*, vol.5, no: 4, Aug. 2018.

J45. C. Versek, T. Frasca, J. Zhou, K. R. Chowdhury, S. Sridhar,"Electric Field Encephalography for Brain Activity Monitoring," *Journal of Neural Engineering*, vol. 15, no. 4, June 2018.

J44. A. S. Cacciapuoti, K. Sankhe, M. Caleffi, and K. R. Chowdhury, "Beyond 5G: THz-based Medium Access Protocol for Mobile Heterogeneous Networks," *IEEE Communications Magazine*, vol. 56, Issue. 6, June 2018.

J43. A. Trotta, M. Di Felice, F. Montori, K. R. Chowdhury and L. Bononi, "Joint Coverage, Connectivity and Charging Strategies for Distributed UAV Networks," *IEEE Transactions on Robotics, special issue in Aerial Swarm Robotics*, vol. 34, no. 4, August 2018.

J42. G. Secinti, P. Darian, B. Canberk and K. R. Chowdhury, "SDNs in the Sky: Robust End-to-end Connectivity for Aerial Vehicular Networks," *IEEE Communications Magazine*, accepted, vol. 56, no. 1, pp. 16-21, Jan. 2018.

J41. Tugce Bilen, B. Canberk and K. R. Chowdhury, "Handover Management in Software-Defined Ultra-Dense 5G Networks," *Special Issue on Ultra-dense Heterogeneous Small Cell Deployment in 5G and Beyond, IEEE Network Magazine*, vol. 31, no. 4, July-August 2017.

J40. B. Drozdenko, M. Zimmermann, T. Dao, K. Chowdhury, and M. Leeser, "Hardware-Software Codesign of Wireless Transceivers on Zynq Heterogeneous Systems," *IEEE Transactions on Emerging Topics in Computing, Special Issue on Next Generation Wireless Computing Systems*, accepted, 2017.

J39. Milan Erdelj and Enrico Natalizio and K. R. Chowdhury and Ian F. Akyildiz, "Help from the Sky: Leveraging UAVs for Disaster Management," *IEEE Pervasive Computing Special Issue on Drones*, vol. 16, Jan.-Mar. 2017.

J38. R. G. Cid-Fuentes, M. Y. Naderi, K. R. Chowdhury, A. Cabellos-Aparicio, and E. Alarcon, "On the Scalability of Energy in Wireless RF Powered Internet of Things," *IEEE Communication Letters*, vol. 20, no. 2, Dec. 2016.

J37. K. Kaushik, D. Mishra, S. De, K. R. Chowdhury, and W. Heinzelman, "Low-Cost Wake-Up Receiver for RF Energy Harvesting Wireless Sensor Networks," *IEEE Sensors Journal*, vol. 16, no. 16, Aug. 2016.

J36. R. Subramanian, B. Drozdenko, E. Doyle, R. Ahmed, M. Leeser, and K. R. Chowdhury, "High-Level System Design of IEEE 802.11b Standard-Compliant Link Layer for MATLAB-based SDR," *IEEE Access*, vol. 4, 1494 - 1509, 2016.

J35. R. Doost-Mohammady, M. Y. Naderi, and K. R. Chowdhury, "Performance Analysis of CSMA/CA based Medium Access in Full-Duplex Wireless Communications," *IEEE Transactions on Mobile Computing*, vol. 15, no. 6, Jun. 2016

J34. M. Swaminathan, F. S. Cabrera, J. S. Pujol, U. Muncuk, G. Schirner, and K. R. Chowdhury, "Multi-path Model and Sensitivity Analysis for Galvanic Coupled Intrabody Communication through Layered Tissue," *IEEE Transactions on Biomedical Circuits and Systems*, vol. 10, no. 2, Apr. 2016.

J33. L. Chen, J. Warner, P. L. Yung, D. Zhou, W. Heinzelman, I. Dermirkol, U. Muncuk, K. R. Chowdhury, and S. Basagni, "REACH2-Mote: A Range Extending Passive Wake-up Wireless Sensor Node," *ACM Transactions on Sensor Networks*, vol. 11, no. 4, Dec. 2015.

J32. D. Mishra, S. De, S. Jana, S. Basagni, K. R. Chowdhury, and W. Heinzelman, "Smart RF Energy Harvesting Communications: Challenges and Opportunities," *IEEE Communications Magazine*, vol. 33, no. 4, 2015.

J31. S. De, D. Mishra, and K. R. Chowdhury, "Charging Time Characterization for Wireless RF Energy Transfer," *IEEE Transactions on Circuits and Systems II*, vol. 64, no. 4, 2015.

J30. A. Al-Ali, Y. Sun, M. DiFelice, J. Paavola, and K. R. Chowdhury, "Accessing Spectrum Databases using Interference Alignment in Vehicular Cognitive Radio Networks," *IEEE Transactions on Vehicular Technology*, vol. 64, no. 1, Jan 2015.

J29. Y. Sun and K. R. Chowdhury, "Enabling Emergency Communication through Cognitive Radio Vehicular Network," *IEEE Communications Magazine*, vol. 52, no. 10, Oct. 2014.

J28. J. Ding, J. Liu, K. R. Chowdhury, W. Zhang, Q. Hue, and J. Leif, "A Particle Swarm Optimization using Local Stochastic Search and Enhancing Diversity for Continuous Optimization," *Elsevier Neurocomputing*, vol. 137, Aug. 2014.

J27. R. Doost-Mohammady, M. Y. Naderi, and K. R. Chowdhury, "Spectrum Allocation and QoS Provisioning Framework for Cognitive Radio with Heterogeneous Service Classes," *IEEE Transactions on Wireless Communication*, vol. 13, no. 7, Jul. 2014.

J26. M. Y. Naderi, P. Nintanavongsa, and K. R. Chowdhury, "RF-MAC: A Medium Access Control Protocol for Re-chargeable Sensor Networks Powered by Wireless Energy Harvesting," *IEEE Transactions on Wireless Communication*, vol. 13, no. 7, Jul. 2014.

J25. K. R. Chowdhury, M. DiFelice, and L. Bononi, "XCHARM: A Routing Protocol for Multi-channel Wireless Mesh Networks in Fading and Interference-rich Environments," *Elsevier Computer Communications journal*, vol. 36, no. 14, pp. 1485-1497, Aug. 2013.

J24. G. Ning, K. R. Chowdhury, J. Duan and P. Ninatanavongsa, "Licensed User Activity Estimation and Track in Mobile Cognitive Radio Ad Hoc Networks," *Elsevier Computers and Electrical Engineering Journal*, vol. 39, no. 6, pp. 1705-1716, August 2013.

J23. A. Al-Ali and K. R. Chowdhury, "TFRC-CR: An Equation-based Transport Protocol for Cognitive Radio Networks," *Elsevier Ad Hoc Networks Journal*, vol. 11, no. 6, pp. 1836–1847, Aug. 2013.

J22. K. R. Chowdhury, M. DiFelice, and I. F. Akyildiz, "TCP CRAHN: A Transport Control Protocol for Cognitive Radio Ad Hoc Networks," *IEEE Transactions on Mobile Computing*, vol. 12, no. 4, Apr. 2013.

J21. P. Nintanavongsa, R. Doost-Mohammady, M. DiFelice, and K. R. Chowdhury, "Device Characterization and Cross-layer Protocol Design for RF Energy Harvesting Sensors," *Elsevier Pervasive and Mobile Computing Journal*, vol. 9, no. 1, pp. 120-131, Feb. 2013.

J20. G. Schirner, D. Erdogmus, K. R. Chowdhury, and T. Padir, "The Future of Human-in-the-Loop Cyber-Physical Systems," *IEEE Computer*, vol. 46, no. 1, pp. 36-45, Jan. 2013.

J19. R. Doost-Mohammady and K. R. Chowdhury, "Transforming Healthcare and Medical Telemetry through Cognitive Radio Networks," *IEEE Wireless Communications Magazine*, vol. 19, no. 4, Aug. 2012.

J18. M. DiFelice, R. Doost-Mohammady, K. R. Chowdhury, and L. Bononi, "Smart Radios for Smart Vehicles: Cognitive Vehicular Networks," *IEEE Vehicular Technology Magazine - special issue on Applications of Cognitive Radio Networks*, vol. 7, no. 2, June 2012.

J17. P. Nintanavongsa, U. Muncuk, D. R. Lewis, and K. R. Chowdhury, "Design Optimization and Implementation for RF Energy Harvesting Circuits," *IEEE Journal on Emerging and Selected Topics in Circuits and Systems*, vol. 2, no.1, March 2012.

J16. M. DiFelice, K. R. Chowdhury, A. Kassler, W. Kim, and L. Bononi, "End-to-end Protocols for Cognitive Radio Ad Hoc Networks: An Evaluation Study," *Performance Evaluation (Elsevier) journal*, vol. 68, no. 9, pp 859–875, Sept. 2011.

J15. K. R. Chowdhury and I. F. Akyildiz, "CRP: A Routing Protocol for Cognitive Radio Ad Hoc Networks," *IEEE Journal on Selected Areas in Communications (JSAC)*, vol. 29, no. 4, Apr. 2011.

J14. K. R. Chowdhury and I. F. Akyildiz,"OFDM based Common Control Channel Design for Cognitive Radio Ad Hoc Networks," *IEEE Trans. on Mobile Computing*, vol. 10, no. 2, pp. 228 - 238, February 2011.

J13. K. R. Chowdhury and T. Melodia,"Platforms and Testbeds for Experimental Evaluation of Cognitive Radio Ad Hoc Networks," *IEEE Communications Magazine*, vol. 48, no. 9, Sept. 2010.

J12. C. Cormio and K. R. Chowdhury, "Common Control Channel Design for Cognitive Radio Wireless Ad Hoc Networks using Adaptive Frequency Hopping," *Ad Hoc Networks (Elsevier) Journal*, vol. 8, no. 4, pp. 430-438, June 2010.

J11. K. R. Chowdhury and M. DiFelice, "SEARCH: A Routing Protocol for Mobile Cognitive Radio Ad-hoc Networks," *Computer Communications (Elsevier) Journal*, vol. 32, no. 18, pp. 1983-1997, December 2009.

J10. C. Cormio and K. R. Chowdhury, "A survey on MAC Protocols for Cognitive Radio Networks," *Ad Hoc Networks (Elsevier) Journal*, vol.7, no.7, pp. 1315-1329, September 2009.

J09. I. F. Akyildiz, W-Y. Lee, and K. R. Chowdhury, "Spectrum Management in Cognitive Radio Ad Hoc Networks," *IEEE Networks Magazine-Special Issue on Networking over Multi-Hop Cognitive Networks*, vol. 23, no. 4, pp. 6-12, July 2009.

J08. I. F. Akyildiz, W-Y. Lee, and K. R. Chowdhury,"CRAHNs: Cognitive Radio Ad Hoc Networks," *Ad Hoc Networks Journal, (Elsevier)*, vol.7, no.5, pp. 810-836, July 2009.

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C124. C. Tassie, B. Kim, J. Groen, M. Belgiovine and K. R. Chowdhury, "Leveraging Explainable AI for Reducing Queries of Performance Indicators in Open RAN," *IEEE International Conference on Communications (ICC)*, June 2024.

C123. J. Groen, M. Belgiovine, U. Utku, B. Kim, and K. R. Chowdhury, "TRACTOR: Traffic Analysis and Classification Tool for Open RAN," *IEEE International Conference on Communications (ICC)*, June 2024.

C122. A. Z. Chiejina, B. Kim, K. R. Chowdhury, and V. Shah, "System-level Analysis of Adversarial Attacks and Defenses on Intelligence in O-RAN based Cellular Networks," *ACM Conference on Security and Privacy in Wireless and Mobile Networks (WiSec)*, May. 2024.

C121. M. Belgiovine, J. Groen, M. Sirera, C. Tassie, S. Trudeau, S. Ioannidis, and K. R. Chowdhury, "T-prime: Transformer-based Protocol Identification for Machine-learning at the Edge," *IEEE Conference on Computer Communications (INFOCOM)*, May. 2024.

C120. S. Pradhan, D. Roy, B. Salehi, and K. R. Chowdhury, "COPILOT: Cooperative Perception using Lidar for Handoffs between Road Side Units," *IEEE Conference on Computer Communications (INFOCOM)*, May. 2024.

C119. M. Belgiovine, J. Gu, J. Groen, U. Demir, and K. R. Chowdhury, "MEGATRON: Machine Learning in 5G with Analysis of Traffic in Open Radio Access Networks," *International Conference on Computing, Networking and Communications (ICNC)*, Feb. 2024.

C118. M. Wentz, J. Capper, B. Kurien, K. Forsythe, and K. R. Chowdhury, "Classification-Based Transfer Learning for Blind Adaptive Receiver Beamforming," *IEEE Consumer Communications and Networking Conference (CCNC)*, Jan. 2024.

C117. G. Reus-Muns, K. Alemdar, S. G. Sanchez, D. Roy, K. Chowdhury, "AirFC: Designing Fully Connected Layers for Neural Networks with Wireless Signals," *ACM Intl. Symposium on Theory, Algorithmic Foundations, and Protocol Design for Mobile Networks and Mobile Computing (ACM MobiHoc)*, July 2023.

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C115. J. Gu, L. Collins, D. Roy, A. Mokhtari, S. Shakkottai, and K. R. Chowdhury, "Meta-Learning for Image-Guided Millimeter-Wave Beam Selection in Unseen Environment," *IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, June. 2023.

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C108. M. Belgiovine and K. R. Chowdhury, "Improve your aim: a Deep Reinforcement Learning approach for 5G NR mmWave beam refinement," *IEEE Intl. Communications Conference (ICC)*, May. 2023.

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C21. G. Ning, X. Cao, J. Duan, and K. R. Chowdhury, "A Spectrum Sharing Algorithm based on Spectrum Heterogeneity for Centralized Cognitive Radio Networks," *IEEE Vehicular Technology Conference (VTC Spring)*, May 2011.

C20. K. R. Chowdhury, M. DiFelice, and L. Bononi, "CORAL: Spectrum Aware Admission Policy in Cognitive Radio Mesh Networks," *Proc. of IEEE Globecom*, Miami, Fl, December 2010.

C19. M. Di Felice, K. Chowdhury, L. Bononi, "Analyzing the Potential of Cooperative Cognitive Radio Technology on Inter-Vehicle Communication," *in Proc. of the IFIP Wireless Days*, Venice, Italy, October 2010.

C18. R. Doost, K. R. Chowdhury, and M. DiFelice, "Routing and Link Layer Protocol Design for Sensor Networks with Wireless Energy Transfer," *Proc. of IEEE Globecom*, Miami, Fl, December 2010.

C17. M. DiFelice, K. R. Chowdhury, W. Meleis, and L. Bononi, "To Sense or To Transmit: A Learning-based Spectrum Management Scheme for Cognitive Radio Mesh Networks," *Proc. of IEEE WiMesh (in conjunction with IEEE SECON)*, Boston, MA, USA, June, 2010.

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C15. C. Wu, K. R. Chowdhury, M. DiFelice and W. Meleis, "Spectrum Management of Cognitive Radio Using Multi-agent Reinforcement Learning," *Proc. of Intl. Conf. on Autonomous Agents and Multiagent Systems (AAMAS)*, Toronto, Canada, May, 2010.

C14. C. Cormio and K. R. Chowdhury, "An Adaptive Multiple Rendezvous Control Channel for Cognitive Radio Wireless Ad Hoc Networks," *Proc. of IEEE PerCom Workshops*, Mannheim, Germany, March-April, 2010.

C13. K. R. Chowdhury, M. DiFelice, and L. Bononi, "A Fading and Interference Aware Routing Protocol for Multi-channel Multi-radio Wireless Mesh Networks," *Proc. of the 6th ACM Symposium on Perf. Evaluation of Wireless Ad Hoc, Sensor, and Ubiquitous Networks*, Tenerife, Canary Islands, Spain, pp. 1-8, October, 2009.

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C11. K. R. Chowdhury and I. F. Akyildiz, "Interferer Classification, Channel Selection and Transmission Adaptation for Wireless Sensor Networks," *Proc. of IEEE International Conf. on Comm. (ICC)*, Dresden, Germany, June 2009. (Best Paper Award)

C10. K. R. Chowdhury and M. DiFelice, "SEARCH: A Routing Protocol for Mobile Cognitive Radio Ad-hoc Networks," *Proc. of IEEE Sarnoff Symposium*, pp. 1-6, Princeton, New Jersey, USA, March 2009.

C9. K. R. Chowdhury, M. DiFelice, and I. F. Akyildiz, "TP-CRAHN: A Transport Protocol for Cognitive Radio Ad-hoc Networks," *Proc. of IEEE INFOCOM*, pp. 2482-2490, Rio de Janeiro, Brazil, April 2009.

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C7. K. R. Chowdhury, N. S. P. Nandiraju, D. Cavalcanti, and D. P. Agrawal, "CMAC-A Multi-Channel Energy Efficient MAC for Wireless Sensor Networks," *Proc. of IEEE Wireless Comm. and Networking Conf. (WCNC)*, Las Vegas, USA, April 2006.

C6. R. Biswas, K. R. Chowdhury, and D. P. Agrawal, "Optimal Data-centric Attribute Allocation and Retrieval (DCAAR) Scheme for Wireless Sensor Networks," *Proc. of IEEE Conf. on Mobile Ad Hoc and Sensor Systems (MASS)*, Washington D.C, November 2005.

C5. T. Banerjee, K. R. Chowdhury, and D. P. Agrawal, "Distributed Data Aggregation in Wireless Sensor Networks by Regression Based Compression," *Proc. of the Wkshp. on RPMSN, in conjunction with IEEE MASS*, Washington D.C, November 2005.

C4. K. R. Chowdhury, P. Chanda, D. P. Agrawal, and Q. A. Zeng,"DCA-A Distributed Channel Allocation Scheme for Wireless Sensor Networks," *Proc. of IEEE Personal, Indoor and Mobile Radio Comm. Symp. (PIMRC)* , Berlin, Germany, September 2005.

C3. N. S. P. Nandiraju, K. R. Chowdhury, and D. P. Agrawal "Investigation of MAC and Network Layer Fairness for Multihop Ad-hoc Networks," *Proc. of Opnetworks*, Washington D.C, August 2005.

C2. R. Biswas, K. R. Chowdhury, and D. P. Agrawal, "Attribute Allocation in Large Scale Sensor Networks," *Proc. of International Workshop on Data Management for Sensor Networks*, Trondheim, Norway, August 2005.

C1. T. Banerjee, K. R. Chowdhury, and D. P. Agrawal, "Tree Based Data Aggregation in Sensor Networks Using Polynomial Regression," *Proc. of Conf. on Information Fusion*, Philadelphia, July 2005.

**Patents**

P15. PCT/US2023/013941, "Federated learning for automated selection of high band mm wave sectors", Priority: 2022-02-25, Filed: 2023-02-27, Published: 2023-08-31.

P14. US16/911,280, "Wireless Charging of Unmanned Aerial Vehicles", Patent Granted June 2022.

P13. US11363531B2 (US), "Encoding and Decoding Data in Communication Frames of a Communications Protocol", Patent Granted June 2022.

P12 US10797537B2 (US), "Distributed Wireless Charging System and Method", Patent Granted June 2022.

P11. US20160120432A1 (US), "Sensor System and Process for Measuring Electric Activity of the Brain, Including Electric Field Encephalography", Patent Granted Feb 2021.

P10. US11362549B2 (PCT/WIPO Worldwide), "Distributed Wireless Charging System and Method", Patent Granted Oct 2020.

P9. US63/292,700, "Programmable Intelligent Surfaces with AI-enabled Autonomous Sensing, Charging, Computing, and Networking", Provisional Filed, Priority Date: 12/22/2021.

P8. US63/292,714, "Self-powered Reconfigurable Intelligent Surfaces with Wireless Power Transfer", Provisional Filed, Priority Date: 12/22/2021.

P7. US63/175,114, "Method and Apparatus with Over-the-Air Neural Networks via Reconfigurable Intelligent Surfaces", Provisional Filed, Priority Date: 4/15/2021.

P6. US17/700,331, "Method And Apparatus For Software-defined Radio with Timing, Phase, and Frequency Synchronization", Patent Granted Oct 2020.

P5. PCT/US2022/019638, "Method and Apparatus for Programmatic Wireless Charging Solutions Development", PCT Application Filed, Priority Date: Mar. 2021.

P4. SWDISC2021/190, "DeepCharge CoilOS Platform", Software License, Priority Date: Oct. 2020.

P3. US17/319,141, "Method and Apparatus for Access Point Discovery in Dense WiFi Networks", Patent Granted Jan 2023.

P2. PCT/US2020/053937, "Device Sensing and Charging Using Networked Coils", PCT Application Filed, Priority Date: Oct. 2019.

P1. WO2019084429A1 (PCT/WIPO worldwide), "Encoding and Decoding Data in Communication Frames of a Communications Protocol", Priority Date: Oct. 2017.

**Book Chapters**

B4. M. Y. Naderi, U. Muncuk and K. R. Chowdhury, "DeepCharge: Next-generation Software-defined Wireless Charging System," The Philosophy of Mission-Oriented Wireless Sensor Networks, H. Ammari ed., *Springer Publications.*, 2017, accepted.

B3. M. DiFelice, K. R. Chowdhury, and L. Bononi, "Cognitive Radio Vehicular Ad Hoc Networks: Design, Implementation and Future Challenges," Mobile Ad Hoc Networking: Cutting Edge Directions, S. Basagni, M. Conti, and S. Giordano, and I. Stojmenovic eds., *John Wiley & Sons, Inc.*, 2013, Hoboken, NJ, USA. doi: 10.1002/9781118511305.ch18

B2. W-Y. Lee, K. R. Chowdhury, and M. C. Vuran, "Spectrum Sensing Algorithms for Cognitive Radio Networks," Cognitive Radio Networks, Y. Xiao, and F. Hu, Ed., *Auerbach Publications, CRC Press*, 2008.

B1. T. Melodia and K. R. Chowdhury, "Wireless Multimedia Sensor Networks: Challenges and Solutions," invited book chapter in Broadband Mobile Multimedia: Techniques and Applications , Y. Zhang, S. Mao, L. T. Yang, and T. M. Chen, Eds. *Auerbach Publications, CRC Press*, Taylor and Francis Group, 2007.

**Selected Posters/Demos**

D5. U. Muncuk, S. Mohanti, K. Alemdar, M Y. Naderi, and K. R Chowdhury, "Software-defined Wireless Charging of Internet of Things using Distributed Beamforming," *ACM SenSys Demonstration*, Stanford, CA, USA, November 2016.

D4. B. Drozdenko, M. Zimmermann, T. Dao, M. Leeser and K. R. Chowdhury, "High-Level Hardware-Software Co-design of an 802.11a Transceiver System using Zynq SoC," *IEEE INFOCOM, Poster Session*, San Francisco, CA, USA, Apr. 2016.

D3. F. Zhou, K. R. Chowdhury and D. Choffnes, "Janus: Network and Application-aware Multi-TCP Optimization Engine," *IEEE INFOCOM, Poster Session*, San Francisco, CA, USA, Apr. 2016.

D2. T. Eddine-Kennouche, R. Doost-Mohammady, L .Favalli and K. R. Chowdhury, "Accurate Physical to Network LTE Simulation Framework," *IEEE INFOCOM, Demo Session*, San Francisco, CA, USA, Apr. 2016.

D1. W. Tomlinson, K. R. Chowdhury and C. Yu, "Galvanic Coupling Intra-Body Communication Link for Real-Time Channel Assessment," *IEEE INFOCOM, Demo Session*, San Francisco, CA, USA, Apr. 2016.

## External Sponsored Research Funding

| Project Status | Northeastern's Total Share | Chowdhury's Share |
|---|---|---|
| Active | $21,437,587 | $4,953,023 |
| Completed | $40,951,891 | $11,441,522 |

**Active Projects**

11. **Machine/Deep Learning for Wireless Signal Classification- Phase II**, *Defence Science and Technology Laboratory, UK*, April. 2024 - Dec. 2024, **Co-PI**
Total Funding: $250,000; Chowdhury's share: $125,000

10. **Platforms for Advanced Wireless Research (PAWR) Supplement**, *NSF*, Jul. 2022 - Jun. 2025, **Co-PI**
Total Funding: $1,743,993; Chowdhury's share: $435,998

9. **Cognitive Distributed Sensing in Congested Radio Frequency Environments**, *ARL*, Nov. 2022- Sept. 2026, **Co-PI**
Total Funding: $10,073,728; Chowdhury's share: $1,000,000

8. **Interdigital Research Gift for Federated Learning**, *Interdigital*, Sept. 2023- Aug. 2024, **Lead-PI**
Total Funding: $60,000; Chowdhury's share: $60,000

7. **QualComm Research Gift for Ai/ML on Edge Computing Systems**, *QualComm*, Oct. 2023- Sept. 2024, **Lead-PI**
Total Funding: $60,000; Chowdhury's share: $60,000

6. **MEDUSA: Mid-band Environmental Sensing Capability for Detecting Incumbents during Spectrum Sharing** , *NSF*, Oct. 2022- Sept. 2025, **Lead PI**
Total Funding: $470,166; Chowdhury's share: $282,100

5. **RFDataFactory: Principled Dataset Generation, Sharing and Maintenance Tools for the Wireless Community**, *NSF*, Oct. 2021- Sept. 2024, **Lead PI**
Total Funding: $1,440,000; Chowdhury's share: $480,000

4. **AI Institute: Symbiotic Foundations for AI and Network Research**, *The Ohio State University via NSF*, Oct. 2021- Sept. 2026, **Lead PI from NU**
Total Funding: $1,800,000; Chowdhury's share: $720,000

3. **Multi-sensory State estimation, Prediction and Adaptation for the Autonomous & Intelligent Edge**, *Intel Corp.*, Oct. 2021- Sept. 2024, **Lead PI**
   Total Funding: $140,000; Chowdhury's share: $140,000
2. **Colosseum: Opening and Expanding the World's Largest Wireless Network Emulator to the Wireless Networking Community**, *NSF*, Sept. 2019- Aug.2024, **Co-PI**
   Total Funding: $4,999,700; Chowdhury's share: $1,249,925
1. **Rapid Beamforming for Massive MIMO using Machine Learning on RF-only and Multi-modal Sensor Data** , *NSF*, Mar. 2024- Feb. 2028, **Lead PI**
   Total Funding: $400,000; Chowdhury's share: $400,000

——— **Completed Projects**

36. **RTML: Efficient and Adaptive Real-Time Learning for Next Generation Wireless Systems**, *NSF*, Oct. 2019- Sept.2023, **Co-PI**
    Total Funding: $1,700,000; Chowdhury's share: $329,650
35. **Advanced terrain analytics to support tactical scale planning and operations over varied environments in support of the U.S. Army Engineer Research and Development Center**, *Kostas Research Institute/Army Corps of Engineers*, Sept. 2022- Sept. 2023, **Co-PI**
    Total Funding: $1,753,978; Chowdhury's share: $249,065
34. **DISCOVER: Device Identification for Spectrum-optimization using COnVolutional nEural netwoRks**, *NSF*, Sept. 2019- Sept.2023, **Lead PI**
    Total Funding: $700,000; Chowdhury's share: $325,000
33. **Machine/Deep Learning for Wireless Signal Classification- Phase I**, *Defence Science and Technology Laboratory, UK*, Nov. 2022 - Sept. 2023, **Co-PI**
    Total Funding: $235,294; Chowdhury's share: $117,647
32. **FASTER: Full-StAck Software-Defined Ultrabroadband Terahertz Radio Testbed for Tactical WirEless Research Beyond 5G**, *ONR*, Mar. 2022- Feb. 2023, **Co-PI**
    Total Funding: $738,576; Chowdhury's share: $110,786
31. **Smart AI-enabled Future-proof Engine for Guarding against Unauthorized and Anomalous RF Radiation (SAFEGUARD)**, *Airanaculus via IARPA*, Sept. 2021- Feb. 2023, **Lead PI**
    Total Funding: $2,900,000; Chowdhury's share: $957,000
30. **Spectrum Testing, Modeling and Emulation**, *Federal Highway Administration*, Aug. 2021- Aug. 2023, **Co-PI**
    Total Funding: $2,211,562; Chowdhury's share: $737,187
29. **Expeditionary Cyber Program: Cyber-Assured Expeditionary Systems and Full Spectrum Cyber Effects**, *ONR*, Sept. 2021- Mar. 2023, **Lead PI**
    Total Funding: $10,779,682; Chowdhury's share: $750,000
28. **I-Corps: Smart Mask for Respiratory Monitoring and Prevention of Airborne Diseases**, *NSF*, Feb. 2021- Sept. 2022, **Lead PI**
    Total Funding: $50,000; Chowdhury's share: $50,000
27. **NRDZ Supplement to Colosseum**, *NSF*, Sept. 2020-Aug.2022, **Co-PI**
    Total Funding: $999,980; Chowdhury's share: $249,995
26. **PAWR Project Office**, *National Science Foundation/U.S. Ignite*, Mar. 8, 2017- Feb. 27, 2022, **Co-PI**
    Total Funding: $2,532,355; Chowdhury's share: $633,089

25. **Extreme Scale RF Test with DARPA Colosseum**, *MITRE Corporation*, Apr. 2021- May 2022, **Co-PI**
    Total Funding: $406,636; Chowdhury's share: $203,318
24. **Coordinating US-Finland Collaboration on Wireless Research through WiFiUS PI Meetings**, *National Science Foundation*, Aug. 1, 2016- Jul. 31, 2022, **Lead PI**
    Total Funding: $300,000; Chowdhury's share: $300,000
23. **NASCE: A National Spectrum Center to Conquer, Program, and Protect the Wireless Spectrum**, *NSF*, Aug. 2020-Jul.2022, **Co-PI**
    Total Funding: $300,000; Chowdhury's share: $42,840
22. **End-to-end Protocol Designs that Address the Challenges of Distributed Dynamic Spectrum Access Networks**, *Office of Naval Research*, Sept. 1, 2016- Aug. 31, 2022, **Lead PI**
    Total Funding: $1,000,000; Chowdhury's share: $1,000,000
21. **Advancing Warfighter Technologies**, *Office of Naval Research (ONR) and George J. Kostas Research Institute for Homeland Security (KSTS)*, Jun. 2020- Dec. 2021, **Lead PI**
    Total Funding: $4,538,720; Chowdhury's share: $413,023
20. **CAREER: IDEA: Integrated Data and Energy Access for Wireless Sensor Networks**, *National Science Foundation*, Apr. 1, 2015- Dec. 31, 2021, **Lead PI**
    Total Funding: $505,731; Chowdhury's share: $505,731
19. **SPiNN for Wireless IoT**, *DARPA*, Apr. 2020- Oct. 2021, **Co-PI**
    Total Funding: $1,000,000; Chowdhury's share: $250,000
18. **Contested and Congested Environment Emulations for UAS**, *Army Research Laboratory*, Jun. 2020- Sept. 2021, **Lead PI**
    Total Funding: $100,000; Chowdhury's share: $40,000
17. **Robust Decentralized Classification and Coordination Algorithms for Swarms of SUAS**, *Air Force Research Laboratory (AFRL)*, Aug. 2018- Mar. 2021, **Co-PI**
    Total Funding: $1,941,518; Chowdhury's share: $388,303
16. **Deep Learning Convolutional Neural Networks for Radio Identification**, *DARPA*, Jul. 2018-Jul.2020, **Lead PI**
    Total Funding: $1,507,494; Chowdhury's share: $502,498
15. **RAIDER: Reconfigurable and Application Independent DEsign for Radios**, *DARPA*, 2017-2020, **Lead PI**
    Total Funding: $500,000; Chowdhury's share: $500,000
14. **PROTECT: A Millimeter-wave Programmable Radio platfOrm and Tactical wirelEss Communication Testbed**, *Office of Naval Research (ONR)*, Jun. 2019- Jun.2020, **Co-PI**
    Total Funding: $295,000; Chowdhury's share: $73,750
13. **HealthSense: Assessing and Protecting Privacy in Wireless Wearable Sensor-generated Medical Data**, *NSF*, 2017-2019, **Co-PI**
    Total Funding: $300,000; Chowdhury's share: $150,000
12. **Cross Layer Approach to 5G Communications**, *MathWorks Inc.*, Jun. 2016- May. 2019, **Co-PI**
    Total Funding: $100,000; Chowdhury's share: $50,000
11. **DeepBeam: Wirelessly chargeable portable batteries through energy beamforming**, *NSF*, Jul.2017- July. 2019, **PI**
    Total Funding: $200,000; Chowdhury's share: $200,000

10. **Sensing, Computation and Communication on the Fly: Connected UAS Mesh Networks**, *Office of Naval Research*, Dec. 2016- Nov. 2018, **PI**
    Total Funding: $387,495; Chowdhury's share: $387,495
9. **Network Protocol Stack for Galvanic Coupled Intra-body Sensors**, *NSF*, Oct. 2014- Sept. 2018, **Lead PI**
    Total Funding: $299,953; Chowdhury's share: $299,953
8. **Transport Layer Design and Analysis for Cognitive Radio Ad Hoc Networks**, *Office of Naval Research*, Mar. 2014- Feb. 2017, **Lead PI**
    Total Funding: $299,661; Chowdhury's share: $299,661
7. **Link Layer Design and Implementation for Software Defined Radios**, *MathWorks Inc.*, Jul. 2012- Apr. 2017, **Lead PI**
    Total Funding: $239,999; Chowdhury's share: $239,999
6. **I-Corps: Software-Defined Distributed Wireless Charging**, *NSF*, Jul. 2016- Jan. 2017, **Lead PI**
    Total Funding: $50,000; Chowdhury's share: $50,000
5. **Holistic Design Methodology for Automated Implementation of Human-in-the-Loop Cyber-Physical Systems**, *NSF*, Sept. 2011- Aug. 2016, **Co-PI**
    Total Funding: $1,250,000; Chowdhury's share: $312,500
4. **CDRIVE: Cognitive Radio Enabled Spectrum Aware Intelligent Vehicular Networks**, *NSF*, Feb. 2013- Jan. 2016, **Lead PI**
    Total Funding: $293,974; Chowdhury's share: $293,974
3. **A Flexible and Extensible Solution to incorporating new RF Devices and Capabilities into EWI ISR Networks**, *DARPA STTR Phase II (with Vistology Inc.)*, Sept. 2014- Mar. 2017, **Lead PI**
    Total Funding: $294,339; Chowdhury's share: $294,339
2. **A Flexible and Extensible Solution to incorporating new RF Devices and Capabilities into EWI ISR Networks**, *DARPA STTR Phase I (with Vistology Inc.)*, Jun. 2013- Dec. 2013, **Lead PI**
    Total Funding: $29,494; Chowdhury's share: $29,494
1. **GENIUS: Green sEnsor Networks for aIr qUality Support**, *National Science Foundation*, Jan. 2012- Jun. 2015, **Lead PI**
    Total Funding: $210,450; Chowdhury's share: $105,225

## Courses Taught

5. Capstone Design. Summer 2021, Spring 2022, Spring 2023
4. Fundamentals of Networks. Spring 2015-16, Fall 2017, Fall 2021
3. Mobile and Wireless Networks. Spring 2012-16, Fall 2016, Spring 2019-21, Spring 2024
2. Computer and Telecommunications Networks. Fall 2009, Spring 2010-14
1. Wireless Cognitive Radio Networks. Fall 2010

## International Talks & Tutorials

17. **Keynote**-"Establishing High Bandwidth Connections with Autonomous Cars using Multimodal Data Fusion", **Presented at:** MEITY-NSF Research Collaboration Workshop, India, Nov, 2023.
16. **Keynote**-"Extreme Reconfigurability for 6G: From Programmable Wireless Networks to Programmable Environments", **Presented at:** ACM MobiHoc 6G Programmable Deterministic Networking with AI Workshop, Oct, 2023.

15. **Keynote**-"Deep Convolutional Neural Networks for RF Fingerprinting", **Presented at:** Lipari School on Network and Computer Sciences, Italy, June 11, 2019.
14. **Keynote**- "(Air)space is the Final Frontier: Experiments with Learning, Sensing and Communications in UAVs", **Presented at:** IEEE Intl. Symposium on Measurement and Networking, Catania, July 9, 2019.
13. "No Radio Left Behind: Radio Fingerprinting Through Deep Learning of Physical-Layer Hardware Impairments", **Presented at:** University Pierre Marie Curie, Paris, France, April 30, 2019.
12. "Perennial and Personalized Sensing through Wireless Energy Transfer and Intra-body Networks", **Presented at:** (i) Istanbul Technical University, Turkey, Aug. 7, 2017; (ii) University Pierre Marie Curie, Paris, France, June 21, 2017.
11. "Intra-body Sensors and Networks", **Presented at:** (i) University of Pavia, Nov. 19, 2015; (ii) University of Pavia, Dec. 2016.
10. "Next Generation Cellular Networks", **Presented at:** (i) University of Pavia, Nov. 18, 2015; (ii) University of Pavia, Dec. 2016.
9. "Closing the loop in cognitive radio networks: Towards higher layer protocol design, user applications, and systems," **Presented at:** (i) University Pierre Marie Curie LIP6-PHARE, Paris, France, July 22, 2015.
8. "Research Challenges in Cognitive Radio Networks and Wireless Energy Transfer for Internet of Things", **Presented at:** (i) Université de Technologie de Compiègne, France, July 16, 2015; (ii) Universidad Carlos III de Madrid, Spain, July 13, 2015.
7. "Solving Energy and Spectrum Dependent Connectivity Problems in Smart Cities through Wireless Networking", **Presented at:** (i) Qatar University, Doha, Qatar, April 22, 2015.
6. "The role of body coupled communication, energy harvesting sensors and dynamic spectrum access in future medical telemetry", **Presented at:** (i) IIT Hyderabad, India, Nov. 27, 2013; (ii) IIT Delhi, India, Nov. 25, 2013.
5. "Wireless Networks for Efficient Spectrum Access and Applications in Health", **Presented at:** (i) Wuhan University, Wuhan, China, Aug. 27, 2013; (ii) China University of GeoSciences, Beijing, China, Aug. 22, 2013.
4. "Protocol Design Challenges and Applications for Distributed Cognitive Radio Networks", **Presented at:** (i) Sapienza University of Rome, Italy, Nov. 4, 2011; (ii) IIT-Bombay, Mumbai, India, December 14, 2011; (iii) University of Milan, Italy, Nov. 2, 2011.
3. "Cognitive Radio: A Next Generation Communication Paradigm", **Presented at:** (i) University of Pavia, Nov. 3, 2011; (ii) CogArt, Barcelona, Spain, Oct. 2011.
2. "Energy Harvesting Wireless Sensor Networks: From Device Design to Deployment", **Presented at:** (i) Polytechnic University of Catalonia, Spain, Oct. 28, 2011.
1. "Cognitive Radio Networks: Fundamentals and Applications," IFIP Networking conference", **Presented at:** (i) IFIP Networking conference, Valencia, Spain, May 2011.

## Domestic Talks & Tutorials

D11. **Keynote**- (1) "Multi-objective SDR Optimization for Wireless Access, Actuation and Attacks" **Presented at:** 8th New England Workshop on Software Defined Radio, May 4, 2018. (2) "Closing the loop in cognitive radio networks: Towards higher layer protocol design and user applications," **Presented at:** (i) IEEE Workshop on Cognitive Radio Architectures for Broadband (CRAB), Raleigh, in conjunction with the 22nd IEEE International Conference on Network Protocols (ICNP), NC, Oct 21, 2014.

D12. "Deep Convolutional Neural Networks for Device Identification," **Presented at:** Distinguished Seminar Series at (i) -Princeton University, Sept. 2020, (ii) Texas A&M University Kingsville, Oct. 2020.

D11. "(Air)space is the Final Frontier: Experiments with Learning, Sensing and Communications in UAVs," **Presented at:** Distinguished Seminar Series at (i) -Rice University, Aug 2020, (ii) Virginia Tech, Sept 2020.

D10. "Optimizing Vehicle to Infrastructure Communication in DTV, mmWave and THz Bands," **Presented at:** (i)IEEE VTS Connected & Autonomous Vehicles Summer School, Worcester Polytechnic Institute (WPI), Jul. 28, 2016.

D9. "Perennial and Personalized Sensing through Wireless Energy Transfer and Intra-body Networks," **Presented at:** (i)University of Southern California, Dec. 10, 2015, (ii) MIT Lincoln Lab, Aug. 23, 2016.

D8. "Research Challenges in Cognitive Radio Networks and Wireless Energy Transfer for Internet of Things," **Presented at:** (i) Worcester Polytechnic Institute, Nov. 5, 2015.

D7. "Solving Energy and Spectrum Dependent Connectivity Problems in Smart Cities through Wireless Networking," **Presented at:** (i) Philips Research NY, Dec. 5, 2014.

D6. "Ensuring Multimedia QoS in Multi-channel Medical Telemetry Applications," **Presented at:** (i) 27th IEEE Annual Computer Communications Workshop (CCW), Niagara Falls, Ontario, Canada, Nov. 14, 2013.

D5. "Transformative Cognitive Radio Applications in Healthcare and Vehicular Emergency Networks," **Presented at:** (i) 27th IEEE Annual Computer Communications Workshop (CCW), Niagara Falls, Ontario, Canada, Nov. 14, 2013 (ii) 2nd WiFiUS Meeting and Summer School, Troy, NY, Aug. 12, 2013; (iii) 25th IEEE Annual Computer Communications Workshop (CCW), Hyannis, Cape Cod, MA, Oct. 10-12, 2011.

D4. "Green Communication Networks," **Presented at:** (i) GreenComNet Summer School, Boston MA, May 2013.

D3. "Prototyping and Implementation Challenges for Cognitive Radio Networks," **Presented at:** (i) National Institute of Standards and Technology (NIST), Mar. 29, 2013.

D2. "Protocol Design Challenges and Applications for Distributed Cognitive Radio Networks," **Presented at:** (i) Worcester Polytechnic Institute (WPI), Mar. 23, 2012; (ii) University of Massachusetts, Boston. Oct. 21, 2010; (iii) University of SUNY-Buffalo, Dec. 4, 2009.

D1. "Energy Harvesting Wireless Sensor Networks: From Device Design to Deployment," **Presented at:** (i) University of Rochester, Mar. 16, 2012.

## Student Advising

**Current Post Doctoral Associates & Research Asst. Professors**

4 Dr. Utku Demir, 2022-date

3 Dr. Vini Chaudhary, 2021-date

2 Dr. Ufuk Muncuk, 2019-date

1 Dr. Yousof Naderi, 2015-date

**Current Ph.D. Students, Expected Graduation**

12 Suyash Pradhan, 2027

11 Michael Wentz, 2025

10 Batool Salehi, 2024

9 Jerry Gu, 2025

8 Kubra Alemdar, 2023

7 Chinenye Tassie, 2025

6 Nina Samsi, 2025

5 Sage Trudeau, 2025

4 Wan Liu, 2026

3 Mauro Belgiovine, 2024

2 Nasim Soltani, 2024

1 Joshua Groen, 2025

**Prior Post Doctoral Associates**

9 Dr. Kai Li, 2022-2023

8 Dr. Brian Kim, 2022-2023

7 Dr. Debashri Roy, 2020-2023

6 Dr. Ananya Mohanty, 2021-2022

5 Dr. Dheryta Jaisinghani, 2019-20

4 Dr. Gokhan Secinti, 2017-19

3 Dr. Chetna Singhal, 2018-18

2 Dr. Berk Canberk, 2016-17

1 Dr. Rahman Doost-Mohammady, 2015-16

**Graduated Ph.D. Students**

17 Guillem Rus Muns, Thesis title:*AI for Communications and Sensing in RF Environments*, 2023.

16 Stella Banou, Thesis title:*Coupling Methods for Wireless Intra-body Communication and Sensing*, 2022.

15 Sara Sanchez, Thesis title:*Learning and Shaping the Wireless Environment: An Integrated View of Sensing, Computing and Communication*, 2022.

14 Subhramoy Mohanti, Thesis title:*Distributed Beamforming with Unmanned Vehicles and Edge Network Resource Orchestration for Wireless IoT : A Systems Perspective*, 2022.

13 Kai Li, Thesis title:*Reconfigurable and Intelligent Wireless Charging Surfaces*, 2021.

12 Carlos Bocanegra, Thesis title:*A Systems Approach to Spectrum Sharing and Multi-antenna Operation for Emerging Networks*, 2021.

11 Kunal Sankhe, Thesis title: *Overlaying Control Signal over Standard-Compliant Frames: From Energy Harvesting to Deep Learning*, 2020.

10 Ufuk Muncuk, Thesis title: *Cognitive RF Energy Harvesting: From Design to Applications*, 2019.

9 Fan Zhou, Thesis title: *Transport Protocol Design for End-to-End Data Delivery in Emerging Wireless Networks*, 2019.

8 William Tomlinson, Thesis title: *Physical Layer Design and Implementation of a Biometric Authentication System using Galvanic Coupling Intra-body Communication*, 2018.

7 Meenupriya Swaminathan, Thesis title: *Wireless Intra-body Communication for Implantable and Wearable Body Devices using Galvanic Coupling*, 2017.

6 Ramanathan Subramanian, Thesis title: *Link layer Designs for Short-range Wireless Access Spanning ISM to mmWave Bands*, 2017.

5 Benjamin Drozdenko, Thesis title: *Enabling Protocol Coexistence: Hardware-Software Codesign of Wireless Transceivers on Heterogeneous Computing Architectures*, 2017.

4 Yousof Naderi, Thesis title: *RF-powered Internet of Things*, 2015.

3 Rahman Doost-Mohammady, Thesis title: *Enabling Protocol Coexistence: Hardware-Software Codesign of Wireless Transceivers on Heterogeneous Computing Architectures*, 2014.

2 Abdulla Al Ali, Thesis title: *Database-assisted end-to-end theoretical and simulation framework for cognitive radio networks*, 2014.

1 Prusayon Nintanavongsa, Thesis title: *Prototype Design and Network Protocols for Wireless Energy Harvesting Sensors*, 2012.

**Graduated M.S. Thesis Students**

10 Suyash Pradhan, Thesis title: *COPILOT: Cooperative Perception using Lidar for Handoffs between Road Side Units*, 2023.

9 Rahul Bathini, Thesis title: *Distributed Containerized Wireless Systems*, 2021.

8 Jason Meyer, Thesis title: *FPGA Acceleration of a Mobile SDR Receiver for Distributed Beamforming in Wireless Networks*, 2019.

7 Shamnaz Riyaz, Thesis title: *Radio Fingerprinting Using Convolutional Neural Networks*, 2018.

6 Zhengnan Li, Thesis title: *Millimeter Wave Massive MIMO beamforming communication simulator design: a systematic approach*, 2018.

5 Jianlin Zhou, Thesis title: *Noise Resilient Wireless Communication: Joint Analog and Digital Optimization*, 2016.

4 Subhromoy Mohanti, Thesis title: *Distributed Control Plane for Software Defined Radio Networks*, 2016.

3 Yifei Sun, Thesis title: *Implementation and Pilot Testing of an Android-based Real-time Activity Detection System*, 2013.

2 Ufuk Muncuk, Thesis title: *Design Optimization and Implementation for RF Energy Harvesting Circuits*, 2012.

1 David Lewis, Thesis title: *Towards Harvesting Energy from Digital Television and Energy Transfer Scheduling Algorithms*, 2012.

**Thesis Committee Member at Northeastern University**

Ph.D. Kerem Enhos (2023), Daniel Uyadov (2023), Tong Jian (2022), Mithin Diddi (2022), Leonardo Bonatti (2022), Abhimanyu Sheshashayee (2022), Amit Sanghwan (2022), Lorenzo Bertizzolo (2021), Jitin Jagannath (2019), Nan Cen (2019), Wei Li (2018), Emrecan Demirors (2017), Enrico Santagati (2016), Rameez Ahmed (2015), Koorosh Firouzbakht (2015), Jianzhe Tai (2014), Curtis Watson (2013), Yueqian Li (2012), Leszek Lechowicz (2012), Shujun Rachel Li (2011), Maurizio Nanni (2010),

## Service to the Institution

**Department Service**

| | |
|---|---|
| Chair | Faculty Hiring Committee, 2019-2020; Tenure and Promotion committee, 2023-2023 |
| Faculty Advisor | ECE Department Ph.D. Student Association, 2016-date |
| Member | ECE Merit Review Committee, 2021 |
| Member | ECE Department Faculty Council, 2017-2019 |
| Member | ECE Department Distinguished Speaker Series, 2018-2019 |
| Chair | Graduate Recruiting Task Force, 2015-2017 |
| Member | Tenure and Promotion Committee, 2016-2017, 2022-2023 |
| Chair | ECE Publicity Committee, 2022-2023 |
| Chair | ECE Tenure and Promotion Committee, 2023-current |
| Member | Undergraduate Study Committee, 2010-2011, 2014-2015 |
| Member | ECE Department Hiring Committee, 2014-2015 |
| Member | Graduate Recruiting Task Force, 2014-date |
| Member | Graduate Affairs Committee, 2011-2014 |
| Member | Ph.D. Information Assurance Admission committee, 2011-2019 |
| Member | Computer Engineering faculty hiring committee, 2011 |
| Lead organizer | CDSP Annual Workshop at Northeastern University, 2011 |

**College Service**

| | |
|---|---|
| Member | COE Community Committee, 2011-2015 |
| Member | COE Research Affairs Committee, 2022-current |

## Service to the Discipline/Profession

| | |
|---|---|
| Steering-Committee | IEEE INFOCOM, IEEE CCNC. |
| Chair | IEEE Technical Society on Simulation, 2014-2017. |
| Vice-Chair | IEEE Technical Society on Simulation, 2011-2014. |
| General-Chair | IEEE CCNC 2023, WWIC 2018 |
| TPC-Chair | IEEE MILCOM 2023, ACM MOBIHOC 2022, ACM MobiSys DroNET Workshop, INFOCOM 2021, DySPAN 2021, CCNC 2021, SECON 2019, EWSN 2018, CROWNCOM 2016, ICNC 2015, VTC 2015 |
| Workshop-Chair | DCOSS 2020, NSF Workshop on Future Directions in Smart Networking and Communication, US, May 2017, INFOCOM 2016, ICC 2015, WoWMoM 2016, DCOSS 2014, ICDCN 2013, GLOBECOM 2012, IPCCC 2010 |
| Poster/Demo Chair | INFOCOM 2015, MASS 2012 |
| Keynote/Panel Chair | INFOCOM 2017, DySpan 2019 |

**Editorial Work for Journals**

——— **Current Responsibilities**

1. IEEE/ACM Transactions on Networking, Area Editor, Aug. 2021- date

——— **Prior Responsibilities**

9. IEEE Transactions on Mobile Computing, Associate Editor, Jul. 2019- 2023
8. Computer Networks (Elsevier) journal, Area Editor, Jul. 2017- 2023
7. IEEE Transactions on Wireless Communications, Area Editor, Jan. 2016- Oct 2022
6. IEEE Transactions on Network Science and Engineering, Area Editor, Jan. 2019- 2021
5. Computer Communications (Elsevier) journal, Area Editor, Jan. 2012- May 2017
4. Ad Hoc Networks (Elsevier) journal, Area Editor, Jan. 2011- May 2017
3. Ad Hoc Networks (Elsevier) journal, Special Issue on Advances in Wireless Communication and Networking for Cooperating Autonomous Systems, Guest Editor, to appear, 2018
2. Ad Hoc Networks (Elsevier) journal, Special Issue on Cognitive Radio Ad Hoc Networks, Guest Editor, volume 10, no. 5, 2012
1. IEEE Computer, Special Issue on Modeling and Simulation of Smart and Green Computing Systems, Guest Editor, September 2012

**Technical Program Committee Membership**

Conferences Intl. Conference on Computer Communications (INFOCOM), 2013-23; ACM Intl. Conference on Mobile Computing and Networking (MOBICOM), 2018-20; ACM Intl. Conference on Mobile Systems, Applications, and Services (MOBISYS), 2019; Intl. Wireless Communications and Mobile Computing Conference (IWCMC), 2012; Intl. Conference on Cognitive Radio Oriented Wireless Networks (CROWNCOM), 2012, 2014-16; IEEE Symposium on Computers and Communications (ISCC), 2012; Intl. Conference on Computing, Networking and Communications (ICNC), 2012-15; IEEE Vehicular Technology Conference (VTC), 2012-16; IEEE Intl.Conf. on Communications (ICC), 2011-15; Student Travel Grant Committee, IEEE Intl. Conference on High Performance Computing and Communications (HPCC), 2011, 2012; IEEE Intl. Conference on Communication Technology (ICCT), 2011; IEEE Intl. Symposium on a World of Wireless Mobile and Multimedia Networks (WoWMoM), 2011-12; IEEE Global Communications Conference (GLOBECOM), 2011-13; IEEE Intl. Conf. on Computer Communications and Networks (ICCCN), 2011-12; ACM Intl. Conf. on Modeling, Analysis and Simulation of Wireless and Mobile Systems (MSWiM), 2010-14; IEEE Conf. on Sensor, Mesh and AdHoc Communications and Networks (SECON), 2010-14; IEEE Intl. Conf. on Mobile Ad-hoc and Sensor Systems (MASS), 2012-15; IFIP Intl. Conference on New Technologies, Mobility and Security (NTMS), 2011-14; Wireless and Optical Communications Conference (WOCC), 2013; IEEE Intl. Performance Computing and Communications Conf. (IPCCC), 2010-11; IEEE Intl. Conf. on Smart Grid Communications (SmartGridComm), 2010; IFIP Wireless Days Conf., 2010-11.

Workshops IEEE Workshop on Wireless Sensor, Robot and UAV Networks (WiSARN),held with IEEE INFOCOM 2018; IEEE Workshop on Emerging Densely Connected Networks, held with IEEE Consumer Communications and Networking Conference (CCNC), 2011, 2012; IEEE Multimedia Communications & Services (MCS) Workshop, held with IEEE; GLOBECOM, 2010; Autonomic Wireless Networking Workshop, held with Intl. Wireless Communications and Mobile Computing Conf. (IWCMC), 2009.

**Reviewer for Journals**

IEEE/ACM Transactions on Networking; IEEE Transactions on Mobile Computing; IEEE Transactions on Vehicular Technology; IEEE Transactions on Parallel and Distributed Systems; IEEE Transactions on Communications; IEEE Transactions on Wireless Communications; ACM Transactions on Sensor Networks; IEEE Communications Magazine; IEEE Network; IEEE Communications Letters; Computer Networks (Elsevier); Ad Hoc Networks (Elsevier); Wireless Comm. and Mobile Computing (Wiley); Wireless Networks Journal (Kluwer)

**Participation in National Science Foundation (NSF) Workshops**

12 Lead Organizer: NSF Workshop on Wireless, Spectrum & Innovation, US, August 2020.

11 Wireless Spectrum R&D Workshop on Artificial Intelligence & Wireless Spectrum: Opportunities and Challenges, Rome, NY, Aug. 28-29, 2019.

10 Lead Organizer: NSF WiFiUS Summer School on Wireless Challenges in the Internet of Things, US, June 12-15, 2018.

9 Lead Organizer: NSF Workshop on Future Directions in Smart Networking and Communication, US, May 2017.

8 Global Experimentation for the Future Internet, Brussels, Belgium, April 2016.

7 Advanced Wireless Initiative, US, Jul. 2016.

6 NSF Smart Cities Workshop, US, Feb. 2016.

5 NSF CyberBridges Workshop, US, Sept. 2015.

4 NSF Workshop on Future Directions of Wireless Networking, US, Nov. 2013.

3 Member of US contingent at NSF US-China Workshop on Environmental Monitoring for Public Health and Disaster Recovery, Yellow Mountains, China, 2012.

2 Selected for the US contingent at the NSF Indo-US Workshop on developing a research agenda in Pervasive Communications and Computing Collaboration, Delhi, India, 2011.

1 NSF Workshop on Future Directions in Networked Sensing Systems: Fundamentals and Applications, Arlington VA, US, 2009.

**Service to Community/Public**

3 Participation in the CoE organized "Building Bridges Program" targeted towards K-12 students for generating awareness about careers in engineering- 2011-2020

2 Hosting 100+ students annually from Brooke Charter Schools, Boston, with talks and demonstration sessions- 2012- 2019

1 Talks and demonstrations at the Boston Museum of Science, 2011