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Current Research Interests

Experimental and systems-centric research on: **Learning and Dynamic Spectrum Access:** Deep learning applications in wireless spectrum sensing, fingerprinting and access from sub-6GHz to mmWave frequencies, multimodal learning, reconfigurable radios. **Networked robotics:** Coordination computation, and communication in unmanned aerial vehicles, aerial wireless base stations, synchronization and distributed beamforming. **Perpetually Operating Internet of Things:** Platforms and protocols for wireless RF energy harvesting, magnetic resonance and inductive energy transfer, wake-up radio and battery-less sensors. **Cyber-physical systems:** Galvanic and capacitive coupling based implants.

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

- Jul. 2020 - **Professor**, Northeastern University, Boston, USA.
present Department of Electrical and Computer Engineering
- Jul. 2015 - **Associate Professor**, Northeastern University, Boston, USA.
2020 Department of Electrical and Computer Engineering
- Sept. 2009 - **Assistant Professor**, Northeastern University, Boston, USA.
Jun. 2015 Department of Electrical and Computer Engineering

Other Key Affiliations

- Jul. 2019 - **Associate Director**, Institute for the Wireless Internet of Things, Northeastern University.
present
- Mar. 2017 - **Co-PI and Director of Academic Outreach**, Platforms for Advanced Wireless Research (PPO) Project Office.
present

International Visiting Positions

- Apr. 2017- **Invited Professor**, LINC Laboratory, Pierre and Marie Curie University.
Aug. 2017 Paris, France
- Jun. 2015- **Invited Researcher**, Université de Technologie de Compiègne.
Jul. 2015 Compiègne, France

Early Career Awards

- 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

- 2017 **Faculty Team Excellence Award**, Northeastern University, College of Engineering.
- 2016 **Faculty Fellow**, Northeastern University, College of Engineering.
- 2015 **IEEE Senior Member**.
- 2007 **BWN Lab Researcher of the Year award**, Georgia Institute of Technology.
- 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

- 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.
- Feb. 2009 I. F. Akyildiz, T. Melodia, and K. R. Chowdhury, “A Survey on Wireless Multimedia Sensor Networks,” published in 2007. *Fast Breaking paper in the field of Computer Science*, ESI ISI Thomson Reuters.
- 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 = 42, i10-index =95, citations = 12,300, with total of 64 journal papers, 96 conference/workshop/symposium papers, 4 book chapters, 5 short papers/demos. All metrics retrieved from Google Scholar in Sep. 2020.

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

- J64. 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*, accepted, Aug. 2020.
- J63. 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*, accepted, Aug. 2020.
- J62. 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*, accepted, Aug. 2020.
- J61. A. Trotta, U. Muncuk, M. Di Felice and K. R. Chowdhury, “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 Intra-body 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. Nintanavongsa, "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.
- J07. K. R. Chowdhury, P. Chanda, D. P. Agrawal, and Q. A. Zeng, "Channel Allocation and Medium Access Control for Wireless Sensor Networks," *Ad Hoc Networks Journal, (Elsevier)*, vol.7, no.2, pp. 307-321, March 2009.
- J06. I. F. Akyildiz, T. Melodia, and K. R. Chowdhury, "Wireless Multimedia Sensor Networks: Applications and Testbeds," *Proceedings of the IEEE*, vol.96, no.10, pp. 1588-1605, October 2008.
- J05. K. R. Chowdhury and I. F. Akyildiz, "Cognitive Wireless Mesh Networks with Dynamic Spectrum Access," *IEEE Journal on Selected Areas in Communications (JSAC)*, vol.26, no.1, pp. 168-181, January 2008.
- J04. I. F. Akyildiz, T. Melodia, and K. R. Chowdhury, "Wireless Multimedia Sensor Networks: A Survey," *IEEE Wireless Communications Magazine*, vol. 14, no. 6, pp. 32-39, December 2007.
- J03. T. Banerjee, K. R. Chowdhury, and D.P. Agrawal, "Using Polynomial Regression for Data Representation in Wireless Sensor Networks," *Wiley Intl. Journal of Communication Systems*, vol.20, no.7, pp. 829-856, July 2007.
- J02. I. F. Akyildiz, T. Melodia, and K. R. Chowdhury, "A Survey on Wireless Multimedia Sensor Networks," *Computer Networks (Elsevier) Journal*, vol.51, no.4, pp. 921-960, March 2007.
- J01. R. Biswas, K. R. Chowdhury, and D.P. Agrawal, "Attribute Allocation and Retrieval Scheme for Large Scale Sensor Networks," *Springer Intl. Journal of Wireless Information Networks*, vol.13, no.4, pp. 303-315, October 2006.

———— **Conference and Workshop Publications, (in descending chronological order).** .

- C96. B. Salehi, M. Belgiovine, S. Sanchez, J. Dy, S. Ioannidis, and K. R. Chowdhury, "Machine Learning on Camera Images for Fast mmWave Beamforming," *IEEE International Conference on Mobile Ad Hoc and Sensor Systems (MASS)*, Delhi, India, December 10-13, 2020.
- C95. K. Sankhe, D. Jaisinghani and K. R. Chowdhury, "CSIScan: Learning CSI for Efficient Access Point Discovery in Dense WiFi Networks," *IEEE International Conference on Network Protocols (ICNP)*, Madrid, Spain, October 13-16, 2020.
- C94. C. Bocanegra, M. A. Khojastepour, M. Y. Arslan, E. Chai, S. Rangarajan, and K. R. Chowdhury, "RFGo: A Seamless Self-checkout System Using RFID," *ACM International Conference on Mobile Computing and Networking (MobiCom)*, London, United Kingdom, 21-25 Sep. 2020.
- C93. G. Reus-Muns, D. Jaisinghani and K. R. Chowdhury, "Trust in 5G Open RANs through Machine Learning: RF Fingerprinting on the POWDER PAWR Platform," *IEEE Globecom*, 7-11 December 2020, Taipei, Taiwan.
- C92. S. Mohanti, N. Soltani, K. Sankhe, D. Jaisinghani, M. DiFelice and K. R. Chowdhury, "AirID: Injecting a Custom RF Fingerprint for Enhanced UAV Identification using Deep Learning," *IEEE Globecom*, 7-11 December 2020, Taipei, Taiwan.

- C91. 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 Data Mining (ICDM)*, November 17-20, 2020, Sorrento, Italy.
- C90. Z. Wang, T. Jian, K. R. Chowdhury, Y. Wang, J. Dy and S Ioannidis, "Learn-Prune-Share for Lifelong Learning," *IEEE International Conference on Data Mining (ICDM)*, November 17-20, 2020, Sorrento, Italy.
- C89. S. Banou, K. Li and K. R. Chowdhury, "MAGIC: Magnetic Resonance Coupling for Intra-body Communications," *IEEE INFOCOM*, Toronto, Canada, July 2020.
- C88. A. Al-Shawabka, F. Restuccia, S. D'Oro, T. Jian, B. C. Rendon, N. Soltani, J. Dy, S. Ioannidis, K. R. Chowdhury, T. Melodia, "Exposing the Fingerprint: Dissecting the Impact of the Wireless Channel on Radio Fingerprinting," *IEEE INFOCOM*, Toronto, Canada, July 2020.
- C87. G. R. Muns, M. Diddi, H. Singh, and K. R. Chowdhury, "Dynamic Channel Selection in UAVs through Constellations in the Sky," *IEEE Globecom*, Hawaii, USA, Dec. 2019.
- C86. K. Li, U. Muncuk, M. Y. Naderi, and K. R. Chowdhury, "SoftSense: Collaborative Surface-based Object Sensing and Tracking Using Networked Coils," *IEEE Globecom*, Hawaii, USA, Dec. 2019.
- C85. N. Soltani, K. Sankhe, D. Jaisinghani, S. Ioannidis, and K. R. Chowdhury, "Spectrum Awareness at the Edge: Modulation Classification using Smartphones," *IEEE DySpan*, Newark NJ, USA, Nov. 2019.
- C84. 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 DySpan*, Newark NJ, USA, Nov. 2019.
- C83. C. Bocanegra, K. Alemdar, S. Garcia, C. Singhal, and K. R. Chowdhury, "NetBeam: Networked and Distributed 3-D Beamforming for Multi-user Heterogeneous Traffic," *IEEE DySpan 2019*, Newark NJ, USA, Nov. 2019.
- C82. T. Jian, B. C. Rendon, A. Gritsenko, J. Dy, K. R. Chowdhury and S. Ioannidis, "MAC ID Spoofing-Resistant Radio Fingerprinting," *IEEE GlobalSIP 2019*, Ottawa, Canada, Nov. 2019.
- C81. S. Mohanti, C. Bocanegra, G. Secinti, M. Diddi, H. Singh, and K. R. Chowdhury, "AirBeam: Experimental Demonstration of Distributed Beamforming by a Swarm of UAVs," *IEEE MASS 2019*, Monterey, CA, Oct. 2019.
- C80. K. Sankhe, F. Restuccia, S. D'Oro, T. Jian, Z. Wang, A. Al-Shawabka, J. Dy, T. Melodia, S. Ioannidis, and K. R. Chowdhury, "Impairment Shift Keying: Covert Signaling by Deep Learning of Controlled Radio Imperfections," *IEEE MILCOM*, Norfolk, VA, Nov. 2019.
- C79. F. Restuccia, S. D'Oro, A. Al-Shawabka, M. Belgiovine, L. Angioloni, S. Ioannidis, K. R. Chowdhury, T. Melodia, "DeepRadioID: Real-Time Channel-Resilient Optimization of Deep Learning-based Radio Fingerprinting Algorithms," *ACM Intl. Symposium on Mobile Ad Hoc Networking and Computing (ACM MobiHoc)*, Italy, Jul. 2019.
- C78. G. Reus, K. Vijay, C. Bocanegra, Y. Eldar and K. R. Chowdhury, "Beam Alignment and Tracking for Autonomous Vehicular Communication using IEEE 802.11ad-based Radar," *IEEE INFOCOM 2019 Workshop on Hot Topics in Social and Mobile Connected Smart Objects*, Paris, France, May. 2019.
- C77. K. Sankhe, M. Belgiovine, F. Zhou, S. Riyaz, S. Ioannidis, and K. R. Chowdhury, "ORACLE: Optimized Radio Classification through Convolutional neural networks," *IEEE INFOCOM 2019*, Paris, France, May. 2019.

- C76. W. J. Tomlinson, S. Banou, C. Yu, M. Nogueira, and K. R. Chowdhury, "Secure On-skin Biometric Signal Transmission using Galvanic Coupling," *IEEE INFOCOM 2019*, Paris, France, May. 2019.
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- C74. K. Sankhe, U. Muncuk, M. Y. Naderi, and K. R. Chowdhury, "Talking When No One is Listening: Piggybacking City-scale IoT Control Signals Over LTE," *IEEE INFOCOM 2018*, Hawaii, USA, Apr. 2018.
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- C72. F. Zhou, M. Y. Naderi, K. Sankhe and K. R. Chowdhury, "Making the Right Connections: Multi-AP Association and Flow Control in 60GHz Band," *IEEE INFOCOM 2018*, Hawaii, USA, Apr. 2018.
- C71. S. Mohanti, E. Bozkaya, M. Y. Naderi, B. Canberk and K. R. Chowdhury, "WiFED: WiFi Friendly Energy Delivery with Distributed Beamforming," *IEEE INFOCOM 2018*, Hawaii, USA, Apr. 2018.
- C70. M. DiFelice, C. Bocanegra, and K. R. Chowdhury, "WI-LO: Wireless Indoor Localization through Multi-Source Radio Fingerprinting," *COMSNETS 2018*, India, Jan. 2018.
- C69. F. Zhou, M. DiFelice, B. Drozdenko, and K. R. Chowdhury, "Towards Fast Flow Convergence in Cognitive Radio Cellular Networks," *IEEE Globecom 2017*, Singapore, Dec. 2017.
- C68. G. Secinti, P. B. Darian, B. Canberk and K. R. Chowdhury, "Resilient End-to-end Connectivity for Software Defined Unmanned Aerial Vehicular Networks," *IEEE PIMRC 2017*, Montreal, Oct. 2017.
- C67. A. Trotta, M. DiFelice, K. R. Chowdhury, and L. Bononi, "Fly and Recharge: Achieving Persistent Coverage using Small Unmanned Aerial Vehicles (SUAVs)," *IEEE ICC 2017*, Paris, May 2017.
- C66. W. Li, F. Zhou, W. Meleis and K. R. Chowdhury, "Dynamic Generalization Kanerva Coding in Reinforcement Learning for TCP Congestion Control Design," *16th International Conference on Autonomous Agents and Multiagent Systems (AAMAS2017)*, Brazil, May 2017.
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- C61. B. Drozdenko, M. Zimmermann, T. Dao, K. R. Chowdhury, and M. Leeser, "Modeling Considerations for the Hardware-Software Co-design of Flexible Modern Wireless Transceivers," *International Conference on Field-Programmable Logic and Applications (FPL)*, Lausanne, Switzerland, August 2016.
- C60. W. Lei, F. Zhou, W. Meleis, and K. R. Chowdhury, "Learning-based and Data-driven TCP Design for Memory-constrained IoT," *IEEE DCOSS*, Washington D.C., May 2016.
- C59. R. Subramanian, E. Doyle, B. Drozdenko, M. Leeser and K. R. Chowdhury, "State-action based Link Layer Design for IEEE 802.11b Compliant MATLAB-based SDR," *IEEE DCOSS*, Washington D.C., May 2016.
- C58. M. Swaminathan, U. Muncuk, and K. R. Chowdhury, "Tissue Safety Analysis and Duty Cycle Planning for Galvanic Coupled Intra-body Communication," *IEEE ICC*, Kuala Lumpur, Malaysia, May 2016.
- C57. M. Swaminathan, U. Muncuk, and K. R. Chowdhury, "Topology Optimization for Galvanic Coupled Wireless Intra-body Communication," *IEEE INFOCOM*, San Francisco, April 2016.
- C56. R. G. Cid-Fuentes, M. Y. Naderi, S. Basagni, K. R. Chowdhury, A. Cabellos-Aparicio, and E. Alarcon, "On Signaling Power: Communications over Wireless Energy," *IEEE INFOCOM*, San Francisco, April 2016.
- C55. Y. Chen, J. Moskal, M. Kokar, and K. R. Chowdhury, "A Comparison of OWL and XML based Approaches to Representing Cognitive Radio Functions," *Wireless Innovation Forum Conference on Communications Technologies and Software Defined Radio (WInnComm)*, Reston, VA, Mar. 2016.
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- C53. W. J. Tomlinson, F. Arbarca, K. R. Chowdhury, M. Stojanovic and C. Yu, "Experimental Assessment of Human-Body-Like Tissue as a Communication Channel using Galvanic Coupling," *Intl. Conference on Wearable and Implantable Body Sensor Networks (BSN)*, Cambridge, MA. June 2015.
- C52. F. Zhou, A. Al-Ali and K. R. Chowdhury, "TCP Protocols in Dynamically Varying Bandwidth Conditions," *CROWNCOM*, Doha, Qatar, April 2015.
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- C47. W. Tomlinson, K. R. Chowdhury and C. Yu, "A Multi-Cast Communication Scheme Using Weak Electrical Current for Intra-Body Networks," *9th International Conference on Body Area Networks*, London UK, Sept. 2014.

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- C44. D. Mishra, K. Kaushik, S. De, S. Basagni, K. R. Chowdhury, S. Jana, W. Heinzelman, "Implementation of Multi-Path Energy Routing," *IEEE PIMRC*, Washington D.C., September 2014.
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- C38. P. Nintanavongsa, M. Y. Naderi, and K. R. Chowdhury, "A Dual-band Wireless Energy Transfer Protocol for Heterogeneous Sensor Networks Powered by RF Energy Harvesting," *IEEE Intl. Computer Science and Engineering Conference (ISCEC)*, Bangkok, Thailand, September 2013.
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- C28. R. Doost-Mohammady and K. R. Chowdhury, "Design of Spectrum Database Assisted Cognitive Radio Vehicular Networks," in *Proc. of 7th International Conference on Cognitive Radio Oriented Wireless Networks (CrownCom)*, Stockholm, Sweden, June 2012.
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- C26. J. Ventura and K. R. Chowdhury, "Markov Modeling of Energy Harvesting Body Sensor Networks," in *Proc. of IEEE PIMRC*, Toronto, Canada, September 2011.
- C25. M. Di Felice, K. R. Chowdhury, L. Bononi, "Cooperative Spectrum Management in Cognitive Vehicular Ad Hoc Networks," in *Proc. of IEEE Vehicular Networking Conference (VNC 2011)*, Amsterdam, Netherlands, November 14-16, 2011.
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- C22. K. R. Chowdhury, M. DiFelice, R. Doost, W. Meleis and L. Bononi, "Cooperation and Communication in Cognitive Radio Networks based on TV Spectrum Experiments," *Proc. of IEEE WoWMoM*, Lucca, Italy, June 2011.
- 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.
- C16. M. DiFelice, K. R. Chowdhury, C. Wu, W. Meleis, and L. Bononi, "Learning-based Spectrum Selection in Cognitive Radio Ad Hoc Networks," *Proc. of the Intl. Conf. on Wired/Wireless Internet Communications*, Lulea, Sweden, June, 2010.
- 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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- 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.**

- P5. INV-20016, "Method and Apparatus for Software-defined Cognitive Wireless Charging Networks", provisional patent filed Oct 2019.
- P4 INV-20044, "Method and Apparatus for Collaborative Device Sensing and Charging Using Networked Coils", provisional patent filed Dec 2019.
- P3. WPIO/PCT/US2018/057748, "Encoding and Decoding Data in Communication Frames of a Communications Protocol", publication date May 2019.
- P2. PCT/US2017/022106, "Distributed Wireless Charging System and Method", publication date Sep. 2017.
- P1. PCT/US2014/043425: Sensor system for measuring brain electric activity, Publication date Feb 19, 2015.

———— **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

Active Projects.

12. **Efficient and Adaptive Real-Time Learning for Next Generation Wireless Systems**, *National Science Foundation*, Oct. 2019-Sept.2022, Credit: Co-PI-16.66%.
11. **Colosseum: Opening and Expanding the World's Largest Wireless Network Emulator to the Wireless Networking Community**, *National Science Foundation*, Sept. 2019-Aug.2024, Credit: Co-PI-25%.
10. **DISCOVER: Device Identification for Spectrum-optimization using Convolutional nEural netwoRks**, *National Science Foundation*, Sept. 2019-Aug.2022, Credit: PI-50%.
9. **Advancing Warfighter Technologies - Phase 2**, *Office of Naval Research (ONR) and George J. Kostas Research Institute for Homeland Security (KSTS)*, Jun. 2020-Dec. 2021, Credit: PI-10%.
7. **NASCE: A National Spectrum Center to Conquer, Program, and Protect the Wireless Spectrum**, *National Science Foundation*, Aug. 2020-Jul.2021, Credit: Co-PI-14.3%.
6. **SPiNN for Wireless IoT**, *DARPA*, 2017-2020, Credit: Co-PI-25%.
Apr. 2020- Oct. 2021
5. **PAWR Project Office**, *National Science Foundation/U.S. Ignite*, Mar. 8, 2017- Feb. 27, 2022, Credit: Co-PI-25%.
4. **Coordinating US-Finland Collaboration on Wireless Research through WiFiUS PI Meetings**, *National Science Foundation*, Aug. 1, 2016- Jul. 31, 2021, Credit: PI-100%.
3. **End-to-end Protocol Designs that Address the Challenges of Distributed Dynamic Spectrum Access Networks**, *Office of Naval Research*, Sept. 1, 2016-Aug. 31, 2021, Credit: PI-100%.
2. **CAREER: IDEA: Integrated Data and Energy Access for Wireless Sensor Networks**, *National Science Foundation*, Apr. 1, 2015- Mar. 30, 2021, Credit: PI-100%.
1. **Robust Decentralized Classification and Coordination Algorithms for Swarms of SUAS**, *Air Force Research Laboratory (AFRL)*, Aug. 2018- Feb. 2020, Credit: Co-PI-20%.

Completed Projects.

17. **Advancing Warfighter Technologies - Phase 1**, *Office of Naval Research (ONR) and George J. Kostas Research Institute for Homeland Security (KSTS)*, 2017-2019, Credit: PI-10%.
16. **Deep Learning Convolutional Neural Networks for Radio Identification**, *DARPA*, Jul. 2018-Jul.2020, Credit: PI-30%.
15. **RAIDER: Reconfigurable and Application Independent DEsign for Radios**, *DARPA*, 2017-2020, Credit: PI-100%.

14. **PROTECT: A Millimeter-wave Programmable Radio platfOrm and Tactical wireLess Communication Testbed**, *Office of Naval Research (ONR)*, Jun. 2019- Jun.2020, Credit: Co-PI-25%.
13. **HealthSense: Assessing and Protecting Privacy in Wireless Wearable Sensor-generated Medical Data**, *National Science Foundation*, Sept. 1, 2017 - Aug. 31, 2019, Credit: Co-PI-50%.
12. **Cross Layer Approach to 5G Communications**, *MathWorks Inc.*, Jun. 1, 2016- May. 31, 2019, Credit: Co-PI-50%.
11. **DeepBeam: Wirelessly chargeable portable batteries through energy beam-forming**, *National Science Foundation*, Jul. 16, 2017- July. 15, 2019, Credit: PI-100%.
10. **Sensing, Computation and Communication on the Fly: Connected UAS Mesh Networks**, *Office of Naval Research*, Dec. 1, 2016- Nov. 30, 2018, Credit: PI-100%.
9. **Network Protocol Stack for Galvanic Coupled Intra-body Sensors**, *National Science Foundation*, Oct. 1, 2014- Sept. 30, 2018, Credit: PI-100%.
8. **Transport Layer Design and Analysis for Cognitive Radio Ad Hoc Networks**, *Office of Naval Research*, Mar. 26, 2014- Feb. 2017, Credit: PI-100%.
7. **Link Layer Design and Implementation for Software Defined Radios**, *Math-Works Inc.*, Jul. 18, 2012- Apr. 30, 2017, Credit: PI-100%.
6. **I-Corps: Software-Defined Distributed Wireless Charging**, *National Science Foundation*, Jul. 19, 2016- Jan. 18, 2017, Credit: PI-100%.
5. **Holistic Design Methodology for Automated Implementation of Human-in-the-Loop Cyber-Physical Systems**, *National Science Foundation*, Sept. 1, 2011- Aug. 31, 2016, Credit: Co-PI.
4. **CDRIVE: Cognitive Radio Enabled Spectrum Aware Intelligent Vehicular Networks**, *National Science Foundation*, Feb. 1, 2013- Jan. 31, 2016, Credit: PI-100%.
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. 1, 2014- Mar. 30, 2017, Credit: PI, 100%.
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. 28, 2013- Dec. 31, 2013, Credit: PI-100%.
1. **GENIUS: Green sEnsor Networks for aIr qUality Support**, *National Science Foundation*, Jan. 1, 2012- Jun. 15, 2015, Status: PI-50%.

Courses Taught

4. Fundamentals of Networks. Spring 2015-16, Fall 2017
3. Mobile and Wireless Networks. Spring 2012-16, Fall 2016, Spring 2019-20
2. Computer and Telecommunications Networks. Fall 2009, Spring 2010-14
1. Wireless Cognitive Radio Networks. Fall 2010

International Talks & Tutorials

15. **Keynote Presentation**-“Deep Convolutional Neural Networks for RF Fingerprinting”, **Presented at:** Lipari School on Network and Computer Sciences, Italy, June 11, 2019.

14. **Keynote Presentation-** “(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 Presentations-** (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.

- 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.

- 3 Dr. Ufuk Muncuk, 2019-date
- 2 Dr. Debashri Roy, 2020-date
- 1 Dr. Yousof Naderi, 2015-date

Current Ph.D. Students, Expected Graduation.

- 12 Kai Li, 2022
- 11 Batool Salehi, 2023
- 10 Jerry Gu, 2024
- 9 Kubra Alemdar, 2021
- 8 Chinenye Tassie, 2024
- 7 Carlos Bocanegra, 2021
- 5 Subhramoy Mohanti, 2021
- 5 Stella Banou, 2021
- 4 Guillem Rus Muns, 2022
- 3 Mauro Belgiovine, 2022

2 Nasim Soltani, 2022

1 Sara Sanchez, 2022

Prior Post Doctoral Associates.

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.

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.

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. Jitin Jagannath (2019), Nan Cen (2019), Wei Li (2018), Emre Can 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),
- M.S. Jonathan Pendlum (2014), Kasra Moazzemi (2014), Kivanç Kerse (2013), Xin Fang (2013), Jianzhe Tai (2014), Cai Wei (2012), George Eichinger (2012), Rohan Kangralkar (2012), Jiahui Chen (2011), Zhen Li (2011), Rameez Ahmed (2010), Mohamed Ahmed T. Elgalhud (2009),

Other Thesis Committee Member.

- Ph.D. Takai Eddine, *University of Pavia, Italy* (2017); Gokhan Secinti, *Istanbul Technical University, Turkey* (2017); Janis Werner, *University of Tampere, Finland* (2015); Ignacio Llatser, *UPC Barcelona, Spain* (2014); Adnan Abu-Mahfouz, *University of Pretoria, South Africa* (2011)
- M.S. Gokhan Secinti, *Istanbul Technical University, Turkey* (2017); Jeremy Lerch, *Gordon Scholar, Raytheon* (2015), Andrew Musto, *Gordon Scholar, Aurora Flight Sciences* (2016); Geoffrey Ashton, *Gordon Scholar, Raytheon* (2011);

Service to the Institution

Department Service.

- Chair Faculty Hiring Committee, 2019-2020
- Faculty Advisor ECE Department Ph.D. Student Association, 2016-date
- 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
- 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

Service to the Discipline/Profession

- Coordinator National Science Foundation sponsored U.S.-Finland collaboration on IoT. 2016-2019
- Chair IEEE Technical Society on Simulation, 2014-2017.

Vice-Chair IEEE Technical Society on Simulation, 2011-2014.

General WWIC 2018

TPC INFOCOM 2021, DySPAN 2020, CCNC 2021, SECON 2019, EWSN 2018, CROWN-COM 2016, ICNC 2015, VTC 2015

Workshop 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 INFOCOM 2015, MASS 2012

Keynote/Panel INFOCOM 2017, DySpan 2019

Arrangements NANOCOM 2015, DCOSS 2013, SECON 2010

Editorial Work for Journals.

———— **Current Responsibilities.**

4. IEEE Transactions on Mobile Computing, Associate Editor, Jul. 2019- date
3. IEEE Transactions on Network Science and Engineering, Area Editor, Jan. 2019- date
2. IEEE Transactions on Wireless Communications, Area Editor, Jan. 2016- date
1. Computer Networks (Elsevier) journal, Area Editor, Jul. 2017- date

———— **Prior Responsibilities.**

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), 2013-20; 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), Gaithersburg, 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-date, annually
- 2 Hosting 100+ students annually from Brooke Charter Schools, Boston, with talks and demonstration sessions- 2012-date, annually
- 1 Talks and demonstrations at the Boston Museum of Science, 2011