RAHMAN DOOST-MOHAMMADY

Rice University, Houston, TX
http://doost.rice.edu

RESEARCH INTEREST

Wireless Systems Design, Large-Antenna Systems, Virtualized Radio Access Networks, AI/ML in Wireless.

EDUCATION

Ph.D., Northeastern University, Computer Engineering, 2015.

M.Sc., Delft University of Technology, Computer Engineering, 2009.

B.Sc., Sharif University of Technology, Computer Engineering, 2007.

POSITIONS

Assistant Research Professor Jan 2020 – Present

- ECE Department, Rice University, Houston, TX.

NSF/PAWR RENEW Project Technical Lead Apr 2018 – Present

- ECE Department, Rice University, Houston, TX.

Postdoctoral Research Engineer Apr 2016 – Dec 2019

- ECE Department, Rice University, Houston, TX.

Postdoctoral Research Engineer Feb 2015 – Feb 2016

- ECE Department, Northeastern University, Boston, MA.

Research Intern July 2014 – Oct 2014

- Microsoft Research, Cambridge, UK.

Engineering Intern March 2012 – May 2012

- Qualcomm Inc, Boxborough, MA.

Research Assistant Jan 2010 – Jan 2015

- ECE Department, Northeastern University, Boston, MA.

Research Intern Sep 2008 – June 2009

- Netherlands Organisation for Applied Scientific Research (TNO), The Hague, Netherlands.

Research Assistant January 2008 – Aug 2008

- Faculty of Electrical Engineering, Mathematics and Computer Science, TU Delft, Delft, Netherlands.

TEACHING

- ELEC 430/551: Modern Communications Theory and Practice, Rice University (Spring '20, Fall '20,'21,'22).
- Wireless Technologies: Design and Simulation, Northeastern University (Summer 2015).

AWARDS AND HONORS

- Best Paper Award, IEEE ICC 2012 - Cognitive Radio and Networks Symposium.
- Graduate Fellowship, Department of Computer Engineering and Microelectronics, TU Delft (2007).

PUBLICATIONS

Journal Articles

1. N. Zilberstien, C. Dick, **R. Doost-Mohammady**, A. Sabharwal, S. Segarra, *"Annealed Langevin Dynamics for Massive MIMO Detection"*, IEEE Transactions on Wireless Communications, Under Review.
2. **R. Doost-Mohammady**, L. Zhong, A. Sabharwal, *"RENEW: A Software-Defined Massive Mimo Wireless Experimentation Platform"*, ACM GetMobile: Mobile Computing and Communications, Vol. 26, no. 2, July 2022.
3. **R. Doost-Mohammady**, O. Bejarano, A. Sabharwal, *"Good Times for Wireless Research"*, Computer Networks, Vol. 188, April 2021.
4. **R. Doost-Mohammady**, M. Yousof Naderi, K.R. Chowdhury, *"Performance Evaluation of CSMA/CA based Medium Access in Full Duplex Wireless Communications"*, IEEE Transactions on Mobile Computing, Vol, 15, No,. 6, June 2016.
5. **R. Doost-Mohammady**, M. Yousof Naderi, K.R. Chowdhury, *"Spectrum Allocation and QoS Provisioning Framework for Cognitive Radio with Heterogeneous Service Classes"*, IEEE Transactions on Wireless Communications, Vol, 13, No. 7, April 2014.
6. **R. Doost-Mohammady**, K.R. Chowdhury, *"Transforming Healthcare and Medical Telemetry Through Cognitive Radio Networks"*, IEEE Wireless Communications Magazine, vol. 19, no. 4, August 2012.
7. P. Nintanavongsa, **R. Doost-Mohammady**, M. D. Felice, K.R. Chowdhury, *"Device characterization and cross-layer protocol design for RF energy harvesting sensors"*, Elsevier Pervasive and Mobile Computing Journal, accepted, October 2012.
8. M. Di Felice, **R. Doost-Mohammady**, K. Chowdhury, L. Bonnoni, *"Smart Radios for Smart Vehicles: Cognitive Vehicular Ad Hoc Networks"*, IEEE Vehicular Technology Magazine, vol. 7, no. 2, June 2012.

Conference Papers

1. N. Zilberstein, C. Dick, **R. Doost-Mohammady**, A. Sabharwal, and S. Segarra, *"Detection by Sampling: Massive MIMO Detector based on Langevin Dynamics"*, European Signal Process. Conf. (EUSIPCO), pp. (accepted), 2022.
2. N. Zilberstein, C. Dick, **R. Doost-Mohammady**, A. Sabharwal, and S. Segarra, *"Robust MIMO Detection using Hypernetworks with Learned Regularizers"*, European Signal Process. Conf. (EUSIPCO), pp. (accepted), 2022.
3. **R. Doost-Mohammady**, M. Zafari, A. Sabharwal, *"Robustness of Distributed Multi-User Beamforming: An Experimental Evaluation"*, in Proc. of IEEE SAM, June 2022.
4. J. Ding, **R. Doost-Mohammady**, A. Kalia, L. Zhong, *"Agora: Software-based real-time massive MIMO baseband processing"*, in Proc. of ACM CoNEXT, December 2020 (acceptence rate: 24%).
5. **R. Doost-Mohammady**, O. Bejarano, A. Sabharwal, *'Good Times for Wireless Research"*, in Proc. of ACM WiNTECH Workshop, September 2020.
6. C. Shepard, J. Blum, R. E. Guerra, **R. Doost-Mohammady**, L. Zhong, *'Design and Implementation of Scalable Massive MIMO"*, in Proc. of ACM Open Wireless Workshop, June 2020.
7. **R. Doost-Mohammady**, O. Bejarano, L. Zhong, J.R. Cavallaro, E. Knightly, Z.M. Mao, W. Li, X. Chen, A. Sabharwal, *"RENEW: Programmable and Observable Massive MIMO Networks"*, in Proc. IEEE Asilomar Conf. on Signals, Systems, and Computers, October 2018.
8. C. Shepard, **R. Doost-Mohammady**, R. E. Guerra, L. Zhong, *"ArgosNet: A Multi-Cell Many-Antenna MU-MIMO Platform"*, in Proc. IEEE Asilomar Conf. on Signals, Systems, and Computers, November 2017.
9. C. Shepard, **R. Doost-Mohammady**, R. E. Guerra, L. Zhong, *"ArgosV3: An Efficient Many-Antenna Platform"*, Extended Abstract for demonstration in Proc. ACM Int. Conf. Mobile Computing and Networking (MobiCom), October 2017.

10. T. Kennouche, **R. Doost-Mohammady**, L. Favalli, K.R. Chowdhury, *"Accurate physical to Network LTE simulation framework*," IEEE Conference on Computer Communications Workshops (INFOCOM WKSHPS), April, 2016.

11. R.G. Cid-Fuentes, M.Y. Naderi, **R. Doost-Mohammady**, K.R. Chowdhury, A. Cabellos-Aparicio, E. Alarcón, *"Leveraging deliberately generated interferences for multi-sensor wireless RF power transmission*," in Proc. of IEEE Globecom, San Diego, December 2015.

12. **R. Doost-Mohammady**, 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.

13. **R. Doost-Mohammady**, K. Chowdhury, *"Enhacing Wirelss Medical Telemetry Through Dynamic Spectrum Access"*, in Proc. of IEEE ICC, Ottawa, Canada, June 2012 **(Best Paper Award)**.

14. K. Chowdhury, M. Di Felice, **R. Doost-Mohammady**, W. Meleis, L. Bononi, *"Cooperation and Communication in Cognitive Radio Networks based on TV Spectrum Experiments"*, Proc. of IEEE WoWMoM, Lucca, Italy, June 2011.

15. **R. Doost-Mohammady**, K. Chowdhury, M. De Felice, *"Routing and Link Layer Protocol Design for Sensor Networks with Wireless Energy Transfer"*, Proc. of IEEE Globecom, Miami, FL, December 2010.

16. **R. Doost-Mohammady**, P. Pawełczak, J.C.M. Janssen, H. Segers, *"Physical Layer Bootstrapping Protocol for Cognitive Radio Networks"*, Proc. of IEEE CCNC, Las Vegas, NV, January 2010.

17. S. B. Raghunathan, M. van den Oever, **R. Doost-Mohammady**, P. Pawelczak, I. Budiarjo, M. Heskamp, Q. Zhang, A. Kokkeler, H. Nikookar, Z. Qin, R. Hekmat, and L. P. Lighart, *"Dynamic Spectrum Access AAF Platform"*, IEEE DySPAN 2008 Demonstration Session, 11-14 Oct. 2008, Chicago, IL, USA.

Theses

1. **R. Doost-Mohammady**, *"Opportunistic spectrum access: protocols, analysis and applications*," Northeastern University, 2015.

2. **R. Doost-Mohammady**, *"Cognitive Radio Design: An SDR Approach*," Delft University of Technology, 2009.

CURRENT RESEARCH FUNDING

NSF Award (Co-PI) Oct 2020 – Sep 2023

- Title: "3DML: A Platform for Data, Design and Deployed Validation of Machine Learning for Wireless".
- PI: Yingyan Lin (Rice).
- Total Budget: $1.5M.

National Spectrum Consortium (NSC) Award (Co-PI) May 2021 – Sep 2024

- Title: "3DML: A Platform for Data, Design and Deployed Validation of Machine Learning for Wireless".
- PI: Ashutosh Sabharwal (Rice). Project in Collaboration with Skylark Wireless.
- Total Budget: $3M.

PAST RESEARCH FUNDING

Facebook Research Award (Co-PI) July 2020 – June 2021

- Title: "MagmaML: Towards Automated Management for Low-resource 5G Cellular Network Deployments".
- PI: Ashutosh Sabharwal (Rice).
- Total Budget: $50K.

NSF Award (Co-PI) Aug 2020 – July 2022

- Title: "AI Institute: Planning: AI-enabled Secure and Responsive Smart Manufacturing".
- In Collaboration with Notre Dame.

- Total Budget: $500K.

INVITED TALKS

- "MagmaML: Towards Automated Management for Low-resource 5G Cellular Network Deployments", Facebook Magma Summit, Feb 2021.
- "POWDER-RENEW: A shared software-defined massive MIMO platform", IEEE Communications Theory Workshop, May 25, 2019.
- "POWDER-RENEW: Programmable and Observable Massive MIMO", Joint ETSI-OSA Workshop, Dec 13, 2018.
- "Cognitive Radio-enabled wireless medical telemetry service", New England Software Defined Radio Workshop (NEWSDR), May 11, 2012.

ACADEMIC SERVICE

Technical Program Committee Member

- TPC member, ACM CoNEXT, 2021.
- TPC member, IEEE DCOSS, 2021, 2022.
- TPC member, ACM WiNTECH, 2020, 2021.
- TPC member, IEEE PIMRC, 2020.
- TPC member, ACM Open Wireless Workshop, 2020.

Demo and Poster Chair

- ACM WiNTECH (Co-Chair), 2020.

Reviewer

- IEEE Transactions on Wireless Communications
- IEEE Transactions on Vehicular Technology
- IEEE/ACM Transactions on Networking
- IEEE Transactions on Mobile Computing

STUDENT ADVISEMENT

MS/PhD

- Qing An
- Mehdi Zafari (Co-Advised with Ashutosh Sabharwal)
- Jialing Lyu (MECE)
- Michael Angino (MECE)
- Isabella Obermeier (MECE)
- Ankit Narasiman (MECE '21)

Undergraduate

- Daniel DeGrasse
- Roy Philips
- Tristan Mansfield
- Keming Zhang
- Dustin Belsha
- Keng Min Lin
- Mahmoud Al-Madi
- Josue Casco-Rodriguez
- Sarah Han
- Davyd Fridman
- Aedan Cullen