RAHMAN DOOST-MOHAMMADY

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

RESEARCH INTEREST

5G/6G Networks, 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.

PROFESSIONAL EXPERIENCE

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 Organization for Applied Scientific Research (TNO), Delft, 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-'23).

- Wireless Technologies Design, 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. Q. An, C. Dick, S. Segarra, A. Sabharwal, **R. Doost-Mohammady**, *"A Deep Reinforcement Learning-Based Resource Scheduler for Massive MIMO Networks"*, IEEE Transactions on Machine Learning in Communications and Networking, vol. 1, September 2023.

2. N. Zilberstien, C. Dick, **R. Doost-Mohammady**, A. Sabharwal, S. Segarra, *"Annealed Langevin Dynamics for Massive MIMO Detection"*, IEEE Transactions on Wireless Communications, vol. 22, no. 6, June 2023.

3. **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.

4. **R. Doost-Mohammady**, O. Bejarano, A. Sabharwal, *"Good Times for Wireless Research"*, Computer Networks, Vol. 188, April 2021.

5. **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.

6. **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.

7. **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.

8. 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.

9. 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. Q. An, M. Zafari, C. Dick, S. Segarra, A. Sabharwal, **R. Doost-Mohammady**, *"Machine Learning-Based Feedback-Free Adaptive MCS Selection for Massive Multi-User MIMO"*, IEEE Asilomar Conf. on Signals, Systems, and Computers (to appear), November 2023.

2. Z. Liu, K. Dasala, D. Mu, **R. Doost-Mohammady**, E. Knightly, *"M3A: Multipath Multicarrier Misinformation to Adversaries"*, in Proc. of ACM MobiCom, October 2023.

3. N. Zilberstein, C. Dick, **R. Doost-Mohammady**, A. Sabharwal, and S. Segarra, *"Accelerated Massive MIMO Detector Based on Annealed Underdamped Langevin Dynamics"*, in Proc. of IEEE ICASSP, June 2023.

4. N. Zilberstein, C. Dick, **R. Doost-Mohammady**, A. Sabharwal, and S. Segarra, *"Detection by Sampling: Massive MIMO Detector based on Langevin Dynamics"*, in Proc. of European Signal Process. Conf. (EUSIPCO), August 2022.

5. N. Zilberstein, C. Dick, **R. Doost-Mohammady**, A. Sabharwal, and S. Segarra, *"Robust MIMO Detection using Hypernetworks with Learned Regularizers"*, in Proc. of European Signal Process. Conf. (EUSIPCO), August 2022.

6. **R. Doost-Mohammady**, M. Zafari, A. Sabharwal, *"Robustness of Distributed Multi-User Beamforming: An Experimental Evaluation"*, in Proc. of IEEE SAM, June 2022.

7. 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.

8. **R. Doost-Mohammady**, O. Bejarano, A. Sabharwal, *'Good Times for Wireless Research"*, in Proc. of ACM WiNTECH Workshop, September 2020.

9. 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.

10. **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.

11. 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.

12. 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.

13. 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.

14. 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.

15. **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.

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

17. 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.

18. **R. Doost**, 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.

19. **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.

20. 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 CIRC Award (Co-PI) July 2024 – June 2029

- Title: "Houdini: Design and Development of a Open-Access very Diverse Spectrum Platform for Wireless Networking, Imaging and Sensing".
- PI: Ashutosh Sabharwal (Rice).
- Total Budget: $4.5M.

NTIA Public Wireless Supply Chain Innovation Fund Award (PI) Jan 2024 – Dec 2029

- Title: "ETHOS: Multi-dimensional Approach to ML-Enabled RAN Software Testing".
- Total Budget: $1.9M.

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

- Title: "DDSS-RAN: Distributed, Dynamic Spectrum Sensing Massive MIMO RAN Enhancement".
- PI: Ashutosh Sabharwal (Rice). Project in Collaboration with Skylark Wireless.
- Total Budget: $3M.

NSF CCRI Award (Co-PI) Oct 2020 – Sep 2024

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

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 AI Institute Planing 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.

UNIVERSITY SERVICE

Graduate Admission Committee Member Jan 2020 – Aug 2022

- ECE Department, Rice University, Houston, TX.

PROFESSIONAL SERVICE

Review Panels

- NSF CNS Core Medium, April 2023.

Technical Program Committee Member

- TPC member, ACM CoNEXT, 2021, 2024.
- TPC member, IEEE DCOSS, 2021, 2022.
- TPC member, ACM WiNTECH, 2020, 2021.
- TPC member, IEEE PIMRC, 2020, 2023.
- 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
- IEEE Journal on Selected Areas in Communications

INVITED TALKS

- "Toward Scalable Software-defined Massive MIMO Wireless Networks", Iowa State University, ECpE Department, Dec 2022.
- "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.

STUDENT ADVISEMENT

MS/PhD

- Qing An
- Mehdi Zafari (MS'24)

MECE

- Michael Angino (MECE'23)
- Jialing Lyu (MECE '22)
- Isabella Obermeier (MECE '22)

- Ankit Narasiman (MECE '21)

Undergraduate

- Josue Casco-Rodriguez, Dustin Belsha, Jake Lei, Sarah Han, Roy Philips, Keming Zhang (2020)
- Mahmoud Al-Madi, Daniel DeGrasse, Tristan Mansfield, Oscar Reynozo (2021)
- Sergio Lavao, Noah Giles, Uros Males, Mila Bokan (2023)