

Ahmad AlAmmouri

GRADUATE RESEARCH ASSISTANT · WIRELESS COMMUNICATIONS

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*"The scientist does not study nature because it is useful; he studies it because he delights in it, and he delights in it because it is beautiful."
H. Poincaré*

Education

The University of Texas at Austin

PHD IN ELECTRICAL ENGINEERING

- Advisors: Prof. Jeffrey Andrews and Prof. François Baccelli
- Thesis: Analysis of Cellular Networks: Densification and Data Traffic Dynamics
- GPA: 3.95/4.00
- Courses: Wireless Communications, Stochastic Geometry, Theory of Probability, Analysis and Design of Communications Networks (Queuing Theory), Probability and Stochastic Process II (Random Graphs), Wireless Communications Lab, and Probability and Stochastic Processes I.

*Austin, Texas
Aug. 2016 - Now*

King Abdullah University of Science and Technology (KAUST)

MS IN ELECTRICAL ENGINEERING

- Advisor: Prof. Mohamed-Slim Alouini
- Thesis: Full-Duplex Communications in Large-Scale Cellular Networks
- GPA: 4.00/4.00
- Courses: Numerical Optimization, Probability and Random Processes, Probability and Statistics, Digital Communication and Coding, Wireless Communications, Digital Signal Processing, Digital Communications Theory, Information Theory, and Programming Methodology and Abstraction.

*Thuwal, Saudi Arabia
Aug. 2014 - May 2016*

The University of Jordan

BS IN ELECTRICAL ENGINEERING

- Graduation Project: Distributed Opportunistic Spectrum Sharing in Cognitive Radio Networks
- GPA: 3.73/4.00, Valedictorian, Excellent with Honor

*Amman, Jordan
Aug. 2009 - Jan. 2014*

Research Experience

The University of Texas at Austin

GRADUATE RESEARCH ASSISTANT

- Part of the Wireless Communications and Networking Group (WNCG).
- Part of Simons Center for Mathematics of Networks.

*Austin, Texas
Aug. 2016 - Now*

National Institute for Research in Digital Science and Technology (INRIA)

VISITING RESEARCHER

- Project: Data Traffic Dynamics in Cellular Networks.

*Paris, France
Jan. 2020 - Jul. 2020*

National Institute for Research in Digital Science and Technology (INRIA)

VISITING RESEARCHER

- Project: Data Traffic Dynamics in Cellular Networks.

*Paris, France
Apr. 2019 - Jul. 2019*

Samsung Research America

RESEARCH INTERN

- Project: Beam Codebook Design for 5G Mobile Devices.

*Richardson, Texas
May 2018 - Aug. 2018*

Samsung Research America

RESEARCH INTERN

- Project: Integrated Access and Backhaul for 5G mmWaves Cellular Networks.

*Richardson, Texas
May 2017 - Aug. 2017*

King Abdullah University of Science and Technology (KAUST)

GRADUATE RESEARCH ASSISTANT

- Part of the Communications Theory Lab (CTL).

*Thuwal, Saudi Arabia
Aug. 2014 - May 2016*

IEEE Communications Society

TECHNICAL PROGRAM COMMITTEE MEMBER AND TECHNICAL REVIEWER

- A technical program committee (TPC) member for ICC 2018, WCSP 2018, ICC 2019, and ICC 2020. A reviewer for several conferences and IEEE transactions.

Aug. 2016 - Now

Honors & Awards

- 2020 **Student Leadership Award**, awarded by the Wireless Networking and Communications Group (WNCG) at UT Austin.
- 2019 **Chateaubriand Fellow**, awarded by the Embassy of France in the United States.
- 2019 **Professional Development Award**, awarded by the ECE department at UT Austin.
- 2018 **Exemplary Reviewer**, IEEE Transactions on Wireless Communications.
- 2018 **Samsung Research America President's Award**, awarded to all team members working on the project "Designing Beam Codebooks for mmWaves Mobile Devices".
- 2017 **Exemplary Reviewer**, IEEE Transactions on Wireless Communications.
- 2017 **Exemplary Reviewer**, IEEE Transactions on Communications.
- 2016 **Best Poster Award**, KAUST-NSF Research Conference on Electronic Materials, Devices and Systems for a Sustainable Future.
- 2014-2016 **King Abdullah University of Science and Technology Fellowship**, awarded to only one student from Jordan in the class of 2016.
- 2014 **The University of Jordan Award for Scientific Excellence**, top of Electrical Engineering class of 2014.
- 2011-2014 **The Jordanian Ministry of Education Scholarship**, awarded to students with excellent academic records.
- 2009-2011 **The University of Jordan Scholarship for Scientific Excellence**, top of the Electrical Engineering class.

Projects

Data Traffic Dynamics in Cellular Networks

SIMONS CENTER FOR MATHEMATICS OF NETWORKS

- Collaborators: Prof. J. Andrews and Prof. F. Baccelli.

Austin, Texas

Ongoing

Deep Learning in Cellular Networks: Handovers and Scheduling

THE UNIVERSITY OF TEXAS AT AUSTIN AND ARIZONA STATE UNIVERSITY

- Collaborators: F. Mismar, Prof. A. Alkhateeb, Prof. B. Evans, and Prof. J. Andrews.

Austin, Texas

Jan. 2019 - Dec. 2019

Densification Limits of Cellular Networks

WIRELESS NETWORKING AND COMMUNICATIONS GROUP

- Collaborators: Prof. J. Andrews and Prof. F. Baccelli.

Austin, Texas

Jan. 2017 - Feb. 2020

Designing Beam Codebooks for mmWave Mobile Devices

SAMSUNG RESEARCH AMERICA

- Collaborators: Dr. J. Mo, Dr. M. Kulkarni, Dr. B. Ng, Dr. J. Zhang, and Prof. J. Andrews.

Richardson, Texas

May 2018 - Jan. 2019

Integrated Access and Backhaul in mmWave Cellular Networks

SAMSUNG RESEARCH AMERICA

- Collaborators: Dr. J. Mo, Dr. B. Ng, and Dr. J. Zhang.

Richardson, Texas

May 2017 - Oct. 2017

Full-duplex Communications in Cellular Networks

KING ABDULLAH UNIVERSITY OF SCIENCE AND TECHNOLOGY (KAUST)

- Collaborators: Prof. M-S. Alouini, Prof. H. ElSawy, and Dr. O. Amin.

Thuwal, Saudi Arabia

Jan. 2015 - May 2016

Publications

[B] Book. [J] Journal paper. [C] Conference paper.

SUBMITTED/ACCEPTED:

[B1] J. G. Andrews, A. K. Gupta, **A. AlAmmouri**, and H. S. Dhillon, "A Primer on Cellular Network Analysis Using Stochastic Geometry", to be published in the 4th quarter of 2020.

[J11] **A. AlAmmouri**, J. G. Andrews, and F. Baccelli, "Area Spectral Efficiency and SINR Scaling Laws in Multi-Antenna Cellular Networks", submitted to IEEE Transactions on Wireless Communications, Feb. 2020.

[J10] F. Mismar, **A. AlAmmouri**, A. Alkhateeb, J. G. Andrews, and B. Evans, "Deep Learning Predictive Band Switching in Wireless Networks", submitted to IEEE Transactions on Wireless Communications, Sep. 2019.

[J9] **A. AlAmmouri**, J. G. Andrews, and F. Baccelli, “Stability and Metastability of Traffic Dynamics in Uplink Random Access Networks”, submitted to IEEE Transactions on Information Theory, May 2019.

PUBLISHED:

[J8] **A. AlAmmouri**, M. Gupta, F. Baccelli, and J. G. Andrews, “Escaping the Densification Plateau in Cellular Networks Through mmWave Beamforming”, IEEE Wireless Communications Letters, Jun. 2020.

[J7] J. Mo, B. L. Ng, P. Huang, M. Kulkarni, **A. AlAmmouri**, J. C. Zhang, S. Chang, J. Lee, and W.-J. Choi, “Beam Codebook Design for 5G mmWave Terminals”, IEEE Access, Jul. 2019.

[J6] **A. AlAmmouri**, J. Mo, , B. L. Ng, J. C. Zhang, and J. G. Andrews, “Hand Grip Impact on 5G mmWave Mobile Devices”, IEEE Access, May 2019.

[J5] **A. AlAmmouri**, J. G. Andrews, and F. Baccelli, “A Unified Asymptotic Analysis of Area Spectral Efficiency in Ultradense Cellular Networks”, IEEE Transactions on Information Theory, Jun. 2018.

[J4] **A. AlAmmouri**, J. G. Andrews, and F. Baccelli, “SINR and Throughput of Dense Cellular Networks with Stretched Exponential Path Loss”, IEEE Transactions on Wireless Communications, Nov. 2017.

[J3] **A. AlAmmouri**, H. ElSawy, and M. -S. Alouini, “Flexible Design for α -Duplex Communications. in Multi-tier Cellular Networks”, IEEE Transactions on Communications, Jun. 2016.

[J2] **A. AlAmmouri**, H. ElSawy, O. Amin, and M. -S. Alouini, “In-Band α -Duplex Scheme for Cellular Networks: A Stochastic Geometry Approach”, IEEE Transactions on Wireless Communications, Jul. 2016.

[J1] M. Hawa, **A. AlAmmouri**, A. Alhiary, and N. Alhamad, “Distributed Opportunistic Spectrum Sharing in Cognitive Radio Networks”, International Journal of Communication Systems, May 2016.

[C10] **A. AlAmmouri**, J. G. Andrews, and F. Baccelli, “Scaling Laws of Dense Multi-Antenna Cellular Networks”, in Proc. of IEEE Asilomar, Oct. 2020.

[C9] **A. AlAmmouri**, J. Mo, , B. L. Ng, J. C. Zhang, and J. G. Andrews, “Grip-Aware Analog mmWave Beam Codebook Adaptation for 5G Mobile Handsets”, in Proc. of IEEE GLOBECOM, Dec. 2019.

[C8] **A. AlAmmouri**, J. G. Andrews, and F. Baccelli, “Stability of Wireless Random Access Systems”, in Proc. of IEEE Allerton, Sep. 2019.

[C7] **A. AlAmmouri**, J. G. Andrews, and F. Baccelli, “Asymptotic Analysis of Area Spectral Efficiency in Dense Cellular Networks”, in Proc. of IEEE ISIT, Jun. 2018.

[C6] **A. AlAmmouri**, J. G. Andrews, and F. Baccelli, “Analysis of Dense Cellular Networks with Stretched Exponential Path Loss”, in Proc. of IEEE Asilomar, Oct. 2017.

[C5] H. ElSawy, **A. AlAmmouri**, O. Amin, and M. -S. Alouini, “Can Uplink Transmissions Survive in Full-Duplex Cellular Environments?”, in Proc. of IEEE EW, May 2016.

[C4] **A. AlAmmouri**, H. ElSawy, A. Sultan, M. D. Renzo, and M. -S. Alouini, “Modeling Cellular Networks in Fading Environments with Dominant Specular Components”, in Proc. of IEEE ICC, May 2016.

[C3] **A. AlAmmouri**, H. ElSawy, and M. -S. Alouini, “Harvesting Full-Duplex Rate Gains in Cellular Networks with Half-Duplex User Terminals”, in Proc. of IEEE ICC, May 2016.

[C2] **A. AlAmmouri**, H. ElSawy, O. Amin, and M. -S. Alouini, “In-Band Full-Duplex Commun. for Cellular Networks with Partial Uplink/Downlink Overlap”, in Proc. of IEEE GLOBECOM, Dec. 2015.

[C1] **A. AlAmmouri**, H. ElSawy, and M.-S. Alouini, “Load-Aware Modeling for Uplink Cellular Networks in a Multi-Channel Environment”, in Proc. of IEEE PIMRC, Sep. 2014.