

Dr. Khawla A. Alnajjar

Assistant Prof. at University of Sharjah, United Arab Emirates.

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Websites:

- University of Sharjah:

<http://www.sharjah.ac.ae/en/academics/Colleges/eng/dept/ecep/Pages>

- Google Sites:

<https://sites.google.com/site/khawlaalnajjar/>

- Google Scholar:

http://scholar.google.com/citations?user=uZvz_esAAAAJ&hl=en

-Scopus ID:

<https://www.scopus.com/authid/detail.uri?authorId=54894294500>

- Research Gate:

https://www.researchgate.net/profile/Khawla_Alnajjar

- ORCID number: 0000 – 0002 – 4218 – 9687

Education

- **Ph.D.** University of Canterbury, New Zealand - Jun 2015.
Major: Electrical and Electronic Engineering.
Thesis title: Receiver Design for Massive MIMO.
Advisor: Prof. Peter J. Smith.
Co-advisor: Dr. Graeme K. Woodward.
Thesis Examiners Committee: Dr. Michal Maithaiou and Dr. Kevin W Sowerby.
Oral Examination Chair: Prof. Maan Alkaisi.
- **EE (P.D)**. Columbia University in the City of New York - Feb 2013.
Major: Electrical Engineering.
Supervisors: Prof. Xiaodong Wang and Prof. Richard W. Longman.
- **MSc** Columbia University in the City of New York - Feb 2011.
Major: Electrical Engineering.
Supervisor: Prof. Xiaodong Wang.
- **BSc** United Arab Emirates University - Jan 2008.
Major: Electrical Engineering, Communication Engineering track.
Senior Thesis Advisor: Dr. Mohammed Abdel Hafez.

Work and Teaching Experience

- *University of Sharjah* (UAE) - Sep. 2016- current
Assistant Prof.

- *University of Sharjah* (UAE) - Sep. 2015- Aug. 2016
Visiting academic (Assistant Prof.).
- *Macquarie University* (Sydney, Australia) - Nov. 2014.
Visiting Scholar: Array design for massive MIMO.
- *Wireless Research Center, University of Canterbury* (Christchurch, New Zealand) May 2012 - August 2012.
Internship: LTE Interference Management using MIMO and SISO.
- *Columbia University* (New York, US) Feb 2012 - May 2012
LMT Arabic Tutorials.
- *Columbia University* (New York, US) August 2010 – Dec. 2012
Lab assistant and Grader in Signal and Systems.
Grader: Communication Theory and MIMO Wireless Communications.
- *AT&T Shannon lab* (New Jersey, US) Jun 2011 - April 2012.
Internship: Interference Alignment
- *Total* (Pau, France) May 2010 - August 2010.
Internship: Optimization Green Energy.
- *United Arab Emirates University* (Al Ain)- August 2008 Jan. 2013
National TA.
- *United Arab Emirates University* (Al Ain) Jan. 2008 - Sep. 2008
Academic Assistant in Freshman Lab, Intro. to Eng. Ethics, and Design, Calculus II I for Engineering.
- *Dassault Aviation* (Paris, France) Sep. 2006 - Dec. 2006
Internship: Validation of a new Test Bench Computer by running Photo Computer Box Test Program.
- *General Information Authority* (Abu Dhabi) Jun 2006 - July 2006
Internship: GIA Web site development support and update.

Honors, Selected Awards and Fundings

- Recipient of Young Emirati Researchers Prize (YERP) award, Ministry of Higher Education and National Research Foundation in UAE, in Jan. 2017, Amount: AED 30,000.
- Recipient the second best paper award from the IEEE International Symposium on Telecommunication technologies (ISTT), Malaysia, in Nov. 2016.
- Funded Targeted Project “Optimal Resource Management for Cloud-Based Fifth Generation Wireless Networks”, University of Sharjah, UAE, in 2016 and valid till 2018, Amount: AED 130,000.

- Recipient of the Distributed and Networked Systems Research Group Operating Grant number 150410, University of Sharjah, UAE, in 2015-present, Amount: AED 100,000 per annum,
- Recipient of Seed Research Grant No. 1602040224-P., University of Sharjah, UAE, in 2016 - 2018, Amount: AED 25,000.
- Recipient of Rashid Award for Scientific Excellence, UAE, in Nov. 2015, Amount: AED 30,000.
- Recipient the best paper award from the IEEE Conf. on Information and Communication Technology Research (ICTRC), UAE, in May 2015.
- Recipient Young Emirati Postgraduate Research Students Mobility Award (YEPRSMA), National Research Foundation in UAE, in Jun 2014, Amount: AED 27,000
- Recipient UAE Ministry of Higher Education (MOHE) Award, UAE, in July 2013.
- Recipient of a Intel Award, New Zealand, in May 2013.
- Recipient of a UC Doctoral Scholarship Award, New Zealand, in Feb 2013.
- Received UAEU grants for graduate studies from 2009-2012.
- Selected to study the French language in Fall 2008 at INSA de Lyon, France in Fall 2008-2009.
- Selected to study English and US culture at the English Language Institute in the University Of Alabama US in Summer 2008.
- Selected to contribute to engineering projects in the Third Engineering Students Gathering in Sultan Qaboos University in Oman in Spring 2008.
- Selected by the Electrical Engineering Collage at UAE University to take industrial training at Dassault Aviation, France in 2008.
- Recipient of Sheikha Fatima Bint Mubarak award in 2008.
- Recipient of CNNA1 certificate in Dec 2007.
- Electrical Engineering High Honour List almost every semester.
- Ranked fifteenth among local students in the UAE (Abu Dhabi) in High School Stage.
- Selected to attend the Olympic mathematical competition during secondary school.

Selected Publications

Book Chapters:

- R. W. Longman, **K. A. Alnajjar** and X. Ji, “ Comments on how a new engineering field develops: A case study from iterative learning and repetitive control”, in *Lecture Notes in Electrical Engineering 293*, Springer, April, 2014.

Journal Papers:

- A. Tager and M. Fadel and **K. A. Alnajjar**, “Resource Allocation under Sequential Resource Access”, **accepted in IEEE Transactions on Communications**, 2018.
- A. Jarndal and **K. A. Alnajjar**, “ MM-WaveWideband Propagation Model for Wireless Communications in Built-Up Environments”, *Elsevier Physical Communication*, Vol. 28, pp 97-107, Jun 2018.
- **K. A. Alnajjar**, P. J. Smith, P. Whiting and G. K. Woodward, “ Size and array shape for massive MIMO”, *IEEE Wireless Commun. Lett.*, vol. 4, Dec. 2015.
- **K. A. Alnajjar**, P. J. Smith and G. K. Woodward, “Co-located and distributed antenna systems: Deployment options for massive MIMO”, *IET Microwave, Antenna & Propagation*, 7pp, Aug. 2015.

Submitted Papers:

- **K. A. Alnajjar** and S. Abdallah and M. Saad and A. ElMoursy, ‘Low Complexity Receivers for Massive MIMO Cloud Radio Access Systems’, *Submitted to IEEE Wireless Communications Letters*, 2018.
- **K. A. Alnajjar** and M. El-Tarhuni, “Performance of Low Complexity Receivers for Massive MIMO Cloud Radio Access Systems”, *Submitted to Elsevier Physical Communication*, 2018.

Conference Proceeding Papers:

- **K. A. Alnajjar** and M. El-Tarhuni, “Performance Evaluation for Synchronous and Asynchronous Coded C-V-BLAST Massive MIMO NOMA System”, *accepted in Proc. IEEE conf. on Wireless and Optical Commun. (WOCC)*, May 2018.
- **K. A. Alnajjar**, “Analysis of PR-V-BLAST receiver for massive MIMO under correlated channel”, *in Proc. IEEE conf. on Electrical and Computing Technologies and Applications (ICECTA2017)*, Nov. 2017.
- **K. A. Alnajjar** and M. El-Tarhuni, “Joint C-V-BLAST and DS-NOMA for massive MIMO”, *in Proc. Springer conf. on 5G for Future Wireless Networks (5GWN)*, 2017.
- **K. A. Alnajjar** and S. Abdallah, “Performance of low complexity receivers for massive MIMO with channel estimation and correlation”, *IEEE International Symposium on Telecommunication technologies (ISTT)* , Nov. 2016. (**Second Best Paper Award**)
- **K. A. Alnajjar**, P. J. Smith, G. K. Woodward and D. A. Basnayaka, “Design and analysis of a reduced complexity MRC V-BLAST receiver for massive MIMO”, *in Proc. IEEE Conf. on Signal Processing advances in Wireless Communications (SPAWC)*, July 2016.
- **K. A. Alnajjar**, “Inverse approximation of linear receivers for massive MIMO”, *in Proc. IEEE Conf. on Information and Communication Technology Research (ICTRC)*, May 2015.
- **K. A. Alnajjar**, P. J. Smith and G. K. Woodward, “Low complexity V-BLAST for massive MIMO with adaptive modulation and power control”, *in Proc. IEEE Conf. on Information and Communication Technology Research (ICTRC)*, May 2015 (**Best Oral Paper Award**).

- **K. A. Alnajjar**, P. J. Smith and G. K. Woodward, “Performance of massive MIMO V-BLAST with channel correlation and imperfect CSI”, in *Proc. IEEE Conf. on Australian Telecommunication Networks and Applications Conference (ATNAC)*, Nov. 2014.
- **K. A. Alnajjar**, P. J. Smith and G. K. Woodward, “Low complexity V-BLAST for massive MIMO”, in *Proc. IEEE Conf. on Australian Communications Theory Workshop (AusCTW)*, Feb. 2014.
- R. W. Longman, **K. A. Alnajjar** and X. Ji, “Comments on how a new engineering field develops: A case study from iterative learning and repetitive control”, in *Proc. Springer Conf. on Intelligent Technologies and Engineering systems (ICITES)*, Dec. 2013.
- **K. A. Alnajjar**, N. Pau and G. K. Woodward. “Aligned precoder in Long Term Evolution using SISO and MIMO”, in *Proc. IEEE Conf. on Information Sciences and Systems (CISS)*, March. 2013.
- **K. A. Alnajjar**, V. Aggarwal, V. A. Vaishampayan, and Xiaodong Wang. “Aligned precoder designs for interference channels based on chordal distance”, in *Proc. IEEE Conf. on Information Sciences and Systems (CISS)*, March, 2012.
- **K. A. Alnajjar**, and I. Kalet. “Phase modulation by a Gaussian random process-the power spectral density”, in *Proc. IEEE Conf. on Microwaves, Communications, Antennas and Electronics Systems (COMCAS)*, 2011.

Selected Invited Talks and Seminars

- “Analysis of PR-V-BLAST receiver for massive MIMO under correlated channel”, RISE Seminar, University of Sharjah, United Arab Emirates, Feb. 2018.
- “Innovation in Electrical Engineering”, UAE Innovation Week 2016, Expo Centre Sharjah, Sharjah, United Arab Emirates, Nov. 2016.
- “Research areas in Electrical Engineering, Communications Track”, University of Sharjah, United Arab Emirates, Nov. 2016.
- “Design and analysis of a reduced complexity MRC V-BLAST receiver for massive MIMO”, University of Sharjah, United Arab Emirates, Oct. 2016.
- “Recent research outcomes in massive MIMO receiver design”, seminar in American University of Sharjah, Sharjah, United Arab Emirates, Jan. 2015.
- “Recent results in massive MIMO receiver design”, seminar in University of Sharjah, Sharjah, United Arab Emirates, Jan. 2015.
- “Power control with low complexity V-BLAST for massive MIMO with adaptive modulation”, IEEE New Zealand, Wireless Workshop, Christchurch, New Zealand, Sep. 2014.
- “Massive MIMO receiver design, Thesis in 3”, Christchurch, New Zealand, August. 2014.
- “Technical work: Receiver design for massive MIMO; and personal experience (studying abroad and challenges)”, Seminar in Khalifa University, Abu Dhabi, United Arab Emirates, May. 2014.

- “Low complexity V-BLAST for massive MIMO”, Seminar in University of Sharjah, Sharjah, United Arab Emirates, May. 2014.
- “Performance of massive MIMO with channel correlation and imperfect CSI”, IEEE ICTRF2014-GERS2014 symposium, Abu Dhabi, United Arab Emirates, May. 2014.
- “Receiver design for massive MIMO, WRC Seminar”, Christchurch, New Zealand, May. 2014.
- “Deployment scenarios in massive MIMO, UC SHOWcase”, Christchurch, New Zealand, Nov. 2013.
- “What is the best deployment for massive MIMO?”, IEEE New Zealand Wireless Workshop, Wellington, New Zealand, Sep. 2013.

Languages Arabic (native) English (fluent)
 French (Intermediate) Turkish (basic)
 Dari (basic)

Computer/Programming Skills MS Unix / Lunix
 MatLab PSpice / Orcad
 C /C++ Lab view
 AutoCAD Circuit Maker
 MultiSim Visual basic
 Movie Maker Adobe Audition
 latex Cisco packet tracer

Scholarly Activities

- A session chair, International Conference on Electrical and Computing Technologies and Applications, (ICECTA2017), 2017.
- A Coordinator of Innovation and Entrepreneurship Course, University of Sharjah, 2017 - present.
- A liaison officer for in Peer Education Program for Engineering College, 2017- present.
- A principal investigator of the University of Sharjah Seed project in 2016 - present.
- Member of Research Group, Distributed and Networked Systems (DNS), University of Sharjah, 2015 - present.
- Co-Investigator of the University of Sharjah Targeted Project “Optimal resource management for cloud-based fifth generation wireless networks” in 2016 - present.
- *Conference Reviewer* for:
 IEEE PIMRC 2018
 2018 International Conference on Signals and Systems (ICSigSys).
 ICMSAO’17.
 IEEE WCNC 2017.
 UAEGSRC 2017.
 UAEGSRC 2016.
 IEEE ICC 2014 WCS.

- *Journal Reviewer* for:
IEEE Wireless Comm Letters.
IEEE Transactions on Wireless. Communications.
IEEE Transactions on Communications.
Almadar Journal of Communication, IT, and Applications (AJCITA).
Journal of Circuits, Systems, and Computers.

Administrative Responsibilities

- Achievement & Publicity, Community Service, and Exhibitions Committee, University of Sharjah, since Fall 2017.
- Graduate Research & Research Committee, University of Sharjah, since Fall 2017.
- Student Disciplinary Committee, University of Sharjah, since Spring 2017.
- Student Activities Committee in Women in Electrical Engineering (WIE) in University of Sharjah, since Fall 2015.
- Chairing and examining Senior Design Projects at University of Sharjah, since Fall 2015.

Undergraduate Student Supervision

I have supervised senior design/graduation projects at University of Sharjah. Here are the list of projects:

- Smart speech generation device for medical purposes, Spring 2018.
- Smart device for the blind, Spring 2017- Fall 2017.
- Attendance system based on biometrics and RFID, Fall 2016-Spring 2017.
- Mini smart airport trolley, Fall 2016- Spring 2017.
- Vehicle collision avoidance, Fall 2015- Spring 2016.
- Portable attendance system using smart card, Fall 2015- Spring 2016.
- Queuing application, Fall 2015- Spring 2016.

Research Interests

My research interests include Wireless Communications, Information and Coding Theory, Mobile Networks, Computer Communication, Networks, Digital Control Systems, Control Theory, Power Systems Stability and Control, Advanced Digital Signal Processing, Stochastic Models in Information, Random Signals and Noise.

Teaching Interests

- *Undergraduate Courses:*
A broad set of courses in the area of communications, in addition to any courses related to signals, probability, mathematics, power systems, circuits, electronics and control.

- *Graduate Courses:*

A number of standard communication courses such as Communication Theory, Digital Communication, Algebraic Coding, Wireless and Mobile Communication, MIMO systems and advanced topics related to this area.

Courses Taught (at University of Sharjah)

- 0402340: Engineering Computer and Linear Algebra, Spring 2017.
- 04023471: Telecommunication Systems1 Lab, (Spring 2017, Spring 2018).
- 0403300: Professional & Social Issues in Engineering, (Spring 2017, Fall 2017, Spring 2018).
- 0402241: Random Signal Theory (Spring 2016, Fall 2016, Fall 2017, Spring 2018).
- 0402240: Signals and Systems (Fall 2015, Spring 2016)
- 0402341: Multimedia Technology Lab (Fall 2015, Spring 2016, Fall 2016, Spring 2017)
- 0402343: Random Signal & Systems (Fall 2015, Fall 2017, Spring 2018).
- 0402493: Senior Seminar in Electrical and Electronics Engineering (Fall 2015)

Teaching and Evaluation and Recognition

- My average overall student evaluation for all courses taught at the University of Sharjah is very good.
- Here is a sample of student evaluation:
the doctor of this course is very cute and well prepared and she is one of the rare doctors who try to add happiness to the boring regular classes. Although the timing of the class was very bad it was at 2:00 pm to 3:15 pm but she was able to make it more effective. she told us that she wanted to make the class joyful and she did by letting some of the male and female students participate on the stage and solve some of the problems on the board and then we clap for them if they solved correctly. I hope for her all the happiness and May Allah bless her. I hope that Dr. Khawla will teach this course for ever no comment All thing was perfect.

Membership societies

- IEEE Member (2003- 2017)
- Member of UAE Society of Engineers (2006-2008)
- Member of Cisco Networking Academy Program (2008)
- Member of Watani (2007-2008)

References

Provided upon Request.