

Curriculum Vitae

Abdulrahman Kalbat

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Contact Information

Title: Assistant Professor in the Electrical Engineering Department

School: United Arab Emirates University, Abu Dhabi, UAE

Appointment Start Date: February 2016

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Google Scholar: <http://scholar.google.com/citations?user=dJGmS-4AAAAJ&hl=en>

EDUCATION

Visiting Scholar in Industrial Engineering and Operations Research University of California, Berkeley	Sep. 2015 – Feb. 2016
Ph.D in Electrical Engineering Columbia University Advisor: Prof. Javad Lavaei Thesis: Distributed and Large-Scale Optimization	Jan 2014 – Dec. 2015
M.S. in Electrical Engineering Columbia University	Aug. 2012 – Dec. 2013
B.S. in Electrical Engineering United Arab Emirates University, Al Ain, Abu Dhabi. UAE	Aug. 2006 – Jun. 2011

WORK AND RESEARCH EXPERIENCE

United Arab Emirates University , Abu Dhabi, UAE. Assistant Professor in the Electrical Engineering Department	From Feb. 2016
United Arab Emirates University , Abu Dhabi, UAE. Teaching Assistant in the Electrical Engineering Department	Dec. 2011 – Feb. 2016
NASA Ames Research Center , Moffett Field, California. Visiting Scientist in the Intelligent Systems Division Mentor: Scott Poll Co-Mentor: Dr. Bhaskar Saha	Jun. 2011 – Aug. 2011
Dubai Electricity and Water Authority , Dubai, UAE. Summer Trainee in the Transmission Maintenance Department	Jun. 2010 – Aug. 2010
Technobothnia Technology Research Center , Vaasa, Finland. Industrial Trainee in the Electricity, Energy and Automation Technology Lab Mentor: Dr. Smail Menani	Jan. 2010 – May 2010

RESEARCH AREAS

- Distributed and Large-Scale Optimization
- Optimal Distributed Control
- Optimal Power Flow
- High Performance Computing
- Smart Grid Applications

PUBLICATIONS

Unpublished Paper:

- [1] **Abdulrahman Kalbat** and Javad Lavaei, “A Fast Distributed Algorithm for Decomposable Semidefinite Programs,” Under submission to *Mathematical Programming Computation*.

Refereed Journal Paper:

- [1] Ghazal Fazelnia, Ramtin Madani, **Abdulrahman Kalbat**, and Javad Lavaei, “Convex Relaxation for Optimal Distributed Control Problem,” conditionally accepted as a full paper for *IEEE Transactions on Automatic Control*, 2015.

Refereed Conference Papers:

- [1] **Abdulrahman Kalbat** and Javad Lavaei, “A Fast Distributed Algorithm for Decomposable Semidefinite Programs,” in *54th IEEE Conference on Decision and Control*, Osaka, Japan, Dec. 15–18, 2015, pp. 1–8.
- [2] Ramtin Madani, **Abdulrahman Kalbat**, and Javad Lavaei, “ADMM for Sparse Semidefinite Programming with Applications to Optimal Power Flow Problem,” in *54th IEEE Conference on Decision and Control*, Osaka, Japan, Dec. 15–18, 2015, pp. 1–8.
- [3] **Abdulrahman Kalbat**, Ramtin Madani, Ghazal Fazelnia, and Javad Lavaei, “Efficient Convex Relaxation for Stochastic Optimal Distributed Control Problem,” in *52nd Annual Allerton Conference on Communication, Control, and Computing (Allerton)*, 2014, pp. 589–596.
- [4] **Abdulrahman Kalbat**, “Linear Quadratic Gaussian (LQG) Control of Wind Turbines,” in *IEEE 3rd Int. Conf. on Electric Power and Energy Conversion Systems*, Istanbul, Turkey, Oct. 2–4, 2013, pp. 1–5.
- [5] **Abdulrahman Kalbat**, “PSCAD Simulation of Grid-Tied Photovoltaic Systems and Total Harmonic Distortion Analysis,” in *IEEE 3rd Int. Conf. on Electric Power and Energy Conversion Systems*, Istanbul, Turkey, Oct. 2–4, 2013, pp. 1–6.

TALKS

- **IEEE Conference on Decision and Control (CDC)**, December 2015
 - Talk 1: “A Fast Distributed Algorithm for Decomposable Semidefinite Programs”
 - Talk 2: “ADMM for Sparse Semidefinite Programming with Applications to Optimal Power Flow Problem”
 - Talk 3: “Transformation of Optimal Centralized Controllers Into Near-Global Static Distributed Controllers”
 - Talk 4: “Inverse Function Theorem for Polynomial Equations using Semidefinite Programming”
- **Modeling and Optimization: Theory and Applications (MOPTA)**, July 2015
 - “A Fast Distributed Algorithm for Sparse Semidefinite Programs”
- **International Symposium on Mathematical Programming (ISMP)**, July 2015
 - “Alternating Direction Method of Multipliers for Sparse Semidefinite Programs”

AWARDS AND HONORS

- **UAE Embassy and UAE University Scholarship** Dec. 2011 - Feb. 2016
- **UAE NASA Research Fellow** Jun. 2011 - Present
- **Middle East Oil and Gas Show**, Manama, Bahrain. Sep. 2011
1st place in case study competition
- **Int. Conf. on Sustainable Systems and Environment**, Sharjah, UAE. Mar. 2011
3rd place in students posters competition
- **Electrical Engineering Society Football Cup**, Abu Dhabi, UAE. Dec. 2010
Silver Medal
- **Community Service Competition in IEEE UAE Student Day**, Abu Dhabi, UAE. May 2010
1st place
- **National Physics Olympiad**, Dubai, UAE. 2004, 2005, 2006
Ranked 1st in Dubai Qualifications
- **National Geology Olympiad**, Dubai, UAE. 2006
Ranked 2nd nationwide

SOFTWARE

A Fast Distributed Algorithm for Decomposable Semidefinite Programs: This is a high-performance C++ code to implement a fast and distributed numerical algorithm for solving an arbitrary decomposable multi-agent semidefinite program (SDP). This is a work in progress.

PROFESSIONAL ACTIVITIES

Reviewer:

- IEEE Transactions on Smart Grid
- IEEE Transactions on Control Systems Technology
- IET Generation, Transmission and Distribution
- Systems Science and Control Engineering An Open Access Journal
- IEEE Conference on Decision and Control
- European Control Conference
- American Control Conference
- IEEE International Conference on Electric Power and Energy Conversion Systems

Session Chair:

- Co-chair of the session "Computational Methods II" in IEEE Conference on Decision and Control 2015 (Osaka, Japan)
- Co-chair of the session "Optimization II" in IEEE Conference on Decision and Control 2015 (Osaka, Japan)

Mentoring Experience:

- Saaketh Krosuri, High school student, Summer 2014
- Sai Karthik Reddy Ginni, Columbia University (Master student), Spring 2015

Leadership Experience:

- Columbia University Renewable Energy Society (CURES), School Liaison for the EE Dept., 2013
- Young Future Energy Leaders (YFEL), member, program by MASDAR Institute of Science and Technology, 2012
- UAE NASA Research Fellows Alumni Organization, President of Brand and Image, 2011 – Present
- IEEE UAE University Student Branch, Publicity (2010), Vice Chair (2009), Technical Support (2007)

Professional Affiliations:

1. Institute of Electrical and Electronics Engineers (IEEE).
 - Power and Energy Society (PES)
 - Control and Systems Society (CSS)
2. The Institute for Operations Research and the Management Sciences (INFORMS).

SKILLS

Programming Languages: C++, C, Java, Visual Basic and Assembly language

Linear Algebra Routines and Libraries: LAPACK, BLAS, Armadillo and Eigen

Parallel Programming: OpenMP

Mathematical Programming Tools: CVX, MOSEK, SeDuMi, SDPT3, OpenSolver and Oracle Crystal Ball

Tools: LATEX, TikZ and MS Office.

Engineering Tools: Matlab, PSCAD (Power Systems CAD), HOMER (Hybrid Optimization Model for Electric Renewables) and BCVTB (Building Controls Virtual Test Bed)

PERSONAL INFORMATION

Year of Birth: 1988

Citizenship: United Arab Emirates

Languages: Arabic (native), English (fluent), Finnish (basic)

Erdős Number = 4 (Abdulahman Kalbat → Javad Lavaei → Stephen Boyd → Persi Diaconis → Paul Erdős)