Mohammadreza Doostmohammadian

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Education

PhD, Electrical and Computer Engineering, 2011-present
Tufts University, Medford, MA

M.Sc., Mechanical Engineering (Control and Robotics), 2010
Sharif University of Technology, Tehran, Iran

B.Sc., Mechanical Engineering, 2007
Sharif University of Technology, Tehran, Iran

Current Affiliation

Graduate Research Assistant at *Signal Processing and RoboTic Networks (SPaRTN) Lab*, under supervision of Prof. Usman Khan.

Research

General interest: robotics, control, estimation, and filtering in the context of distributed algorithms and multi-agent systems.
Current research: Networked estimator/observer design, Distributed monitoring and surveillance, Distributed task allocation, Filtering over networks, Shortest path problem.

- Concepts: Consensus protocols, Automatic control, Kalman filtering, Observability/controllability, Structured systems theory, Theory of complex networks, Randomized strategies and Markov chains.
- Applications: Sensor networks, Power grid monitoring, Control and estimation in social and economical networks, Security of cyber-physical systems.

Previous research: Design and kinematic analysis of mechanisms, Parallel robots, Cable robots, Experimental Modal Analysis.

Awards & Honors

- IEEE CSS Conference Travel award for developing countries, July 2009.
- Ranked 19th in the nationwide MSc degree entrance exam in mechanical engineering (among about 15,000 participants), Iran, 2007.
- Ranked 132nd in the nationwide university entrance exam (among about 400,000 participants), Iran, 2002.

Teaching

- Feedback Control Systems: Tufts University. Fall-2013
- Statics: Sharif University of Technology. Fall-2008/Spring-2009
- Dynamics: Sharif University of Technology Spring-2009

Computer Skills

- **Programming:** Matlab, C++, Pascal
- **Softwares:** Simulink(Matlab), Gephi, LTSpice, CATIA, SolidWorks, Ansys

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Publication

- Journals

M. Doostmohammadian and U. A. Khan, A graph-theoretic formulation for distributed inference in social networks, *IEEE Journal of Selected Topics in Signal Processing: Signal Processing for Social Networks*, under review.

M. Doostmohammadian and U. A. Khan, On the genericity properties in distributed estimation: Topology design and sensor placement, *IEEE Journal of Selected Topics in Signal Processing: Adaptation and Learning over Complex Networks*, vol. 7, no. 2, April 2013.
H. Sayyaadi, and **M. Doostmohammadian**, Finite-Time Consensus via Agents Subject to bounded Control Actuations in Directed/Undirected Network topologies, *Scientia Iranica*, vol. 18, no. 1, Feb. 2011, pp. 75-85.

• Peer-Reviewed Conferences

M. Doostmohammadian, S. Pourazarm, and U. A. Khan, Distributed Algorithm for Shortest Path Problem in Undirected Graphs via Randomized Strategy, in *11th IEEE International Conference on Networking, Sensing and Control*, Miami, FL, 2014, under review.
M. Doostmohammadian and U. A. Khan, Necessary conditions for distributed observability of complex networks, in *American Control Conference*, Portland, OR, 2014, under review.
M. Doostmohammadian and U. A. Khan, On the distributed estimation of rank-deficient dynamical systems: A generic approach, in *38th International Conference on Acoustics, Speech, and Signal Processing*, Vancouver, Canada, Jun. 2013, pp.4140-4145.
M. Doostmohammadian and U. A. Khan, Topology Design in Networked Estimation: A Generic Approach, in *American Control Conference*, Washington, DC, Jun. 2013, pp.4140-4145.
M. Doostmohammadian and U. A. Khan, Communication strategies to ensure generic networked observability in multi-agent systems, in *45th Annual Asilomar Conference on Signals, Systems, and Computers*, Pacific Grove, CA, Nov. 2011, pp. 1865-1868.
U. A. Khan and **M. Doostmohammadian**, A sensor placement and network design paradigm for future smart grids, in *4th International Workshop on Computational Advances in Multi-Sensor Adaptive Processing*, San Juan, Puerto Rico, Dec. 2011, pp. 137-140.
M. Doostmohammadian, H. Sayyaadi, and M. Moarref, A Novel Consensus Protocol Using Facility Location Algorithms, in *3rd IEEE Multi Conference on Systems and Control*, Saint-Petersburg, Russia, Jul. 2009, pp. 914-919.
M. Doostmohammadian, and H. Sayyaadi, Finite-Time Consensus in Directed/Undirected Networks,, in *ASME Conference on Engineering System Design and Analysis*, Istanbul, Turkey, pp. 1-6, July 2010.
M. Aliei, **M. Doostmohammadian**, and M. R. Movahhedi, Investigating Effects of Stress Variation on Hysteresis Damping of Steel Using Modal Analysis, in *ISME2009 Conference*, Tehran, Iran.

• Talks/Presentations

– On the necessary conditions for distributed observability, in 51st Allerton Conference on Communication, Control, and Computing, Monticello, IL, Oct. 2013.
– Measurement-induced topology design in distributed estimation, in Information Theory and Applications Workshop, San Diego, CA, Feb. 2013.
– Measurement-induced topology design in distributed estimation, in Workshop on Signal Processing Advances in Sensor Networks, part of Cyber-Physical Systems week (CPS2013), Philladelphia, Apr. 2013.

Professional Activities

Reviewer for: IEEE Transactions on Automatic Control, IEEE Transactions on Robotics, Automatica, IEEE Signal Processing Letters, IEEE Conference on Decision and Control, American Control Conference.