Mehran Mesbahi

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Areas of Expertise
Networked distributed systems, dynamic networks, control theory, optimization theory and algorithms, autonomous vehicles

Education
California State University, B.S., Engineering (Summa Cum Laude), 1989
University of Southern California, M.S., Electrical Engineering, 1991
University of Southern California, M.S., Mathematics, 1995
University of Southern California, Ph.D., Electrical Engineering, 1996

Current Position
Professor, Aeronautics and Astronautics, University of Washington, 2010 – present
Adjunct Professor, Mathematics, University of Washington, 2010 – present

Previous Appointments
(1997-1998) Lecturer, Electrical Engineering, University of Southern California
(1998-1999) Lecturer, Control and Dynamical Systems, California Institute of Technology
(1996-2000) Member of Technical Staff, Jet Propulsion Laboratory, California Institute of Technology
(2000-2002) Assistant Professor, Aerospace Engineering & Mechanics, University of Minnesota
(2002-2005) Assistant Professor, Aeronautics and Astronautics, University of Washington
(2005-2010) Associate Professor, Aeronautics and Astronautics, University of Washington

Five Representative Publications:
1. D. Zelazo and M. Mesbahi. Graph theoretic analysis and synthesis of relative sensing networks, *IEEE Transactions on Automatic Control*, 56 (5): 971-982, 2011.
2. M. Mesbahi and M. Egerstedt, *Graph Theoretic Methods in Multiagent Networks,* Princeton University Press, 2010.
3. Rahmani, M. Ji, M. Mesbahi, and M. Egerstedt. Controllability of multi-agent systems from a graph theoretic perspective, *SIAM Journal on Control and Optimization,* 48 (1): 162-186, 2009.
4. Y. Hatano, M. Mesbahi. Agreement over random networks, *IEEE Transactions on Automatic Control*, (50) 11: 1867-1872, 2005.
5. A. Das, M. Mesbahi. *Distributed* parameter estimation in sensor networks*, IEEE Conference on Sensor, Mesh, and Ad Hoc Communications and Networks*, 2006.

Five Other Publications:
1. M. Mesbahi. On state-dependent dynamic graphs and their controllability properties, *IEEE Transactions on Automatic Control*, (50) 3: 387- 392, 2005.
2. A. Das and M. Mesbahi. On K-node survivable power efficient topologies in wireless networks with sectored antennas, *IEEE International Conference on Computer Communications*, 2005.

3. J. Sandhu, M. Mesbahi, T. Tsukamaki. Cuts and flows in relative sensing and control of spatially distributed systems*, IEEE Transactions on Automatic Control* (in-press).
4. Y. Kim and M. Mesbahi. On maximizing the second smallest eigenvalue of a state-dependent graph Laplacian, *IEEE Transactions on Automatic Control*, (51) 1: 116-120, 2006.
5. Y. Kim, M. Mesbahi, F. Y. Hadaegh, Multiple-spacecraft reconfigurations through collision avoidance, bouncing, and stalemates, *Journal of Optimization Theory and its Applications*, (122) 2: 323-343, 2004.

Synergistic Activities

- NSF CAREER Award: Distributed Space Systems Control via Graph-Driven Hybrid Systems and Matrix Inequalities (PI), 2/15/2001-9/30/2007
- Has supervised ten female M.S. students to completion at the University of Washington
- Has developed the following four courses at University of Washington:
    - Optimization and Systems Sciences
    - Networked Dynamic Systems
    - Robust Control
    - Advanced Spacecraft Dynamics and Control
- Associate Editor for IEEE Transactions on Control Systems Technology

Awards and Honors

- Aeronautics and Astronautics Professor of the Year (2009, 2010)
- UW College of Engineering Innovator Award, 2008
- Aeronautics and Astronautics Professor of the Year (2004, 2005, 2006)
- University of Washington Distinguished Teaching Award, 2005
- NASA Space Act Award, 2004
- NSF CAREER Award, 2001
- Shuttle Radar Topography Mission Award, JPL, Caltech, 2000
- Achievement Award for the Cassini Program, NASA, 1998
- Cassini Attitude and Articulation Control Subsystem Award, JPL, Caltech, 1997

Collaborators (past 48 months)

M. Egerstedt (Georgia Tech), Jeff Shamma (Georgia Tech), Robert Nowak (Wisconsin), D. Grunbaum (Washington), A. Rahmani (Georgia Tech), M. Campbell (Cornell), K. Morgansen (Washington), A. Das (UW Applied Physics)

Gradudate Advisors:

Ph.D.: Prof. George Papavassilopoulos, currently at the National Technical University of Athens

Graduate students advised:

Past: Yoonsoo Kim (Ph.D. AA), A. Rahmani (Ph.D. AA), D. Zelazo (Ph.D. AA), Kunihiko Kosuge (M.S. AA), J. Sandhu (M.S. AA), A. Nguyen (M.S. AA) M. Holzinger (M.S. AA) Y. Hatano (M.S. AA), A. Matthew (M.S. AA), A. Heritier (M.S. AA), Min-Zu Tsai (M.S., 2005), Michael Frostad (M.S., 2006) Y. Shao (M.S., UMN AEM)
Current: C. Gonzalez (Ph.D. AA), A. Chapman (Ph.D. AA), M. Nabi (Ph.D. AA), U. Lee (Ph.D. AA), P. Panyakeow (Ph.D. AA), K. Hughes (M.S. AA), B. Heemstra (M.S. AA), S. Vasisht (M.S. AA)

Postdoctoral students advised:

Past: Dr. A. Das (now at Applied Physics Lab, University of Washington), D. Chakrabortty (currently at North Carolina State University, Dr. D. Zelazo (currently at the University of Stuttgart)
Current: Dr. Ran Dai