

## Curriculum Vitae of Mihailo R. Jovanović

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### Appointments

**Professor of Electrical and Computer Engineering-Systems.**

University of Southern California, Jan. 2017 – present.

**Professor of Aerospace and Mechanical Engineering.**

(by courtesy)

University of Southern California, Aug. 2017 – present.

**Founding Director of the Center for Systems and Control.**

University of Southern California, Jan. 2017 – present.

**Adjunct Professor of Electrical and Computer Engineering.**

University of Minnesota, Jan. 2017 – present.

**Professor of Electrical and Computer Engineering.**

University of Minnesota, Aug. 2016 – Jan. 2017.

**Associate Professor of Electrical and Computer Engineering.**

University of Minnesota, Aug. 2011 – Aug. 2016.

**Assistant Professor of Electrical and Computer Engineering.**

University of Minnesota, Dec. 2004 – Aug. 2011.

**Graduate Faculty.**

Aerospace Engineering and Mechanics, University of Minnesota, Sept. 2015 – Jan. 2017.

Control Science and Dynamical Systems, University of Minnesota, Sept. 2005 – Jan. 2017.

**Postdoctoral Scholar.**

Department of Mechanics, Royal Institute of Technology, Stockholm, Sweden, Sept. 2004 – Dec. 2004.

Advisor: Professor Dan S. Henningson.

### Visiting Appointments

**Visiting Scientist.**

Simons Institute for the Theory of Computing, Aug. 2020 – Dec. 2020.

Theory of Reinforcement Learning.

**Long Term Visitor.**

Institute for Mathematics and Its Applications, Sept. 2015 – May 2016.

IMA Thematic Year on Control Theory and its Applications.

**Visiting Professor.**

Stanford University, Jan. 2012 – July 2012.

Center for Turbulence Research.

**Long Term Visitor.**

Institute for Mathematics and Its Applications, Sept. 2009 – June 2010.

IMA Thematic Year on Complex Fluids and Complex Flows.

**Visiting Scholar.**

Department of Automatic Control, Lund University, Feb. 2010.

Focus on Multi-Agent Coordination and Estimation.

## Education

**PhD in Mechanical Engineering.** University of California, Santa Barbara, 2004.

Thesis: *Modeling, analysis, and control of spatially distributed systems.*

Advisor: Professor Bassam Bamieh.

**MS in Control Engineering.** University of Belgrade, Serbia, 1998.

Thesis: *Practical tracking automatic control of axial piston hydraulic motors.*

**Dipl. Ing., Mechanical Engineering.** University of Belgrade, Serbia, 1995.

Graduated with First Class Honors, **GPA:** 9.53/10.00.

## Awards, Honors, and Recognitions

### Fellow Elections

- Fellow of IEEE (Institute of Electrical and Electronics Engineers), Class of 2019.  
*For contributions to modeling, optimization, and control of large-scale distributed systems.*
- Fellow of APS (American Physical Society), Class of 2017.  
*For profound contributions to stability and flow control, and the application of control-theoretic and optimization techniques to the analysis of wall-bounded shear flows, drag reduction, and viscoelastic fluids.*

### Early Career Awards

- National Science Foundation CAREER Award, 2007.
- Early Career Award, UMN Initiative for Renewable Energy and the Environment, 2010.

### Best Paper Awards

- George S. Axelby Outstanding Paper Award, IEEE Control Systems Society, 2013.
- Finalist, Best Student Paper Award, 2014 American Control Conference (as advisor).
- Finalist, Best Student Paper Award, 2007 American Control Conference (as advisor).

### Plenary and Keynote Presentations

- Plenary Speaker, 8th IFAC Workshop on Distributed Estimation and Control in Networked Systems (NecSys), 2019.
- Semi-plenary Speaker, 2016 European Control Conference.
- Keynote Speaker, 50th Anniversary Celebration, UCSB Mechanical Engineering, 2014.

### Other Recognitions

- Distinguished Alumnus Award (Inaugural Class), Dept. of Mechanical Engineering, UCSB, 2014.  
*In recognition of outstanding research contributions to fluid dynamics, control, and optimization.*
- UMN Institute on the Environment Fellow, 2016.
- UMN Informatics Institute Transdisciplinary Faculty Fellow, 2014.
- UMN Institute on the Environment Resident Fellow, 2012.

- Invited Participant (five times), Center for Turbulence Research Summer Program, Stanford University, 2006, 2010, 2012, 2014, 2016.
- Outstanding Reviewer, IEEE Transactions on Automatic Control, 2005.

### Student Awards

- The Nicolitch Trust Scholarship – “for a recipient with exemplary grades and a leadership potential”, 2002 – 2004.
- The Mechanical and Environmental Engineering Department Fellowship, UC Santa Barbara, 1998.
- The Best Student of the Class Award (a class of approximately 500 students) Department of Mechanical Engineering, University of Belgrade, 1995.
- The Dean’s List, appeared each year during undergraduate studies, 1991 – 1995.
- The Fund for an Open Society Grant, to participate at the FLUCOME’97 conference in Japan, 1997.
- The Ministry of Science & Technology of the Republic of Serbia Fellowship, Jan. 1996 – Jan. 1997.
- The Foundation for Development of Young Researchers of the Republic of Serbia Fellowship, Oct. 1995 – Oct. 1996.
- Energoprojekt Co. Fellowship, Oct. 1994 – Oct. 1995.

## Publications and Software

### Refereed Journal Articles: Appeared or Accepted

- [J1] M. R. Jovanović, “From bypass transition to flow control and data-driven turbulence modeling: An input-output viewpoint,” *Annu. Rev. Fluid Mech.*, vol. 53, no. 1, 2021, doi:10.1146/annurev-fluid-010719-060244; also arXiv:2003.10104.
- [J2] H. Mohammadi, M. Soltanolkotabi, and M. R. Jovanović, “On the linear convergence of random search for discrete-time LQR,” *IEEE Control Syst. Lett.*, vol. 5, no. 3, pp. 989–994, July 2021.
- [J3] S. Hassan-Moghaddam and M. R. Jovanović, “Proximal gradient flow and Douglas-Rachford splitting dynamics: global exponential stability via integral quadratic constraints,” *Automatica*, vol. 123, p. 109311, January 2021.
- [J4] W. Ran, A. Zare, and M. R. Jovanović, “Model-based design of riblets for turbulent drag reduction,” *J. Fluid Mech.*, 2020, doi:10.1017/jfm.2020.722; also arXiv:2002.01671.
- [J5] H. Mohammadi, M. Razaviyayn, and M. R. Jovanović, “Robustness of accelerated first-order algorithms for strongly convex optimization problems,” *IEEE Trans. Automat. Control*, 2020, doi:10.1109/TAC.2020.3008297; also arXiv:1905.11011.
- [J6] A. Zare, H. Mohammadi, N. K. Dhingra, T. T. Georgiou, and M. R. Jovanović, “Proximal algorithms for large-scale statistical modeling and sensor/actuator selection,” *IEEE Trans. Automat. Control*, vol. 65, no. 8, pp. 3441–3456, August 2020.
- [J7] A. Dwivedi, N. Hildebrand, J. W. Nichols, G. V. Candler, and M. R. Jovanović, “Transient growth analysis of oblique shock wave/boundary-layer interactions at Mach 5.92,” *Phys. Rev. Fluids*, vol. 5, no. 6, p. 063904 (20 pages), June 2020.

- [J8] A. Zare, T. T. Georgiou, and M. R. Jovanović, “Stochastic dynamical modeling of turbulent flows,” *Annu. Rev. Control Robot. Auton. Syst.*, vol. 3, pp. 195–219, May 2020.
- [J9] A. Dwivedi, G. S. Sidharth, J. W. Nichols, G. V. Candler, and M. R. Jovanović, “Reattachment vortices in hypersonic compression ramp flow: an input-output analysis,” *J. Fluid Mech.*, vol. 880, pp. 113–135, December 2019.
- [J10] W. Ran, A. Zare, M. J. P. Hack, and M. R. Jovanović, “Stochastic receptivity analysis of boundary layer flow,” *Phys. Rev. Fluids*, vol. 4, no. 9, p. 093901 (28 pages), September 2019.
- [J11] N. K. Dhingra, S. Z. Khong, and M. R. Jovanović, “The proximal augmented Lagrangian method for nonsmooth composite optimization,” *IEEE Trans. Automat. Control*, vol. 64, no. 7, pp. 2861–2868, July 2019.
- [J12] N. K. Dhingra, M. Colombino, and M. R. Jovanović, “Structured decentralized control of positive systems with applications to combination drug therapy and leader selection in directed networks,” *IEEE Trans. Control Netw. Syst.*, vol. 6, no. 1, pp. 352–362, March 2019.
- [J13] W. Ran, A. Zare, M. J. P. Hack, and M. R. Jovanović, “Modeling mode interactions in boundary layer flows via Parabolized Floquet Equations,” *Phys. Rev. Fluids*, vol. 4, no. 2, p. 023901 (22 pages), February 2019.
- [J14] G. Hariharan, M. R. Jovanović, and S. Kumar, “Amplification of localized body forces in channel flows of viscoelastic fluids,” *J. Non-Newtonian Fluid Mech.*, vol. 260, pp. 40–53, October 2018.
- [J15] S. Hassan-Moghaddam and M. R. Jovanović, “Topology design for stochastically-forced consensus networks,” *IEEE Trans. Control Netw. Syst.*, vol. 5, no. 3, pp. 1075–1086, September 2018.
- [J16] N. Hildebrand, A. Dwivedi, J. W. Nichols, M. R. Jovanović, and G. V. Candler, “Simulation and stability analysis of oblique shock wave/boundary layer interactions at Mach 5.92,” *Phys. Rev. Fluids*, vol. 3, no. 1, p. 013906 (23 pages), January 2018.
- [J17] X. Wu and M. R. Jovanović, “Sparsity-promoting optimal control of systems with symmetries, consensus and synchronization networks,” *Syst. Control Lett.*, vol. 103, pp. 1–8, May 2017.
- [J18] A. Zare, Y. Chen, M. R. Jovanović, and T. T. Georgiou, “Low-complexity modeling of partially available second-order statistics: theory and an efficient matrix completion algorithm,” *IEEE Trans. Automat. Control*, vol. 62, no. 3, pp. 1368–1383, March 2017.
- [J19] A. Zare, M. R. Jovanović, and T. T. Georgiou, “Colour of turbulence,” *J. Fluid Mech.*, vol. 812, pp. 636–680, February 2017.
- [J20] M. R. Jovanović and N. K. Dhingra, “Controller architectures: tradeoffs between performance and structure,” *Eur. J. Control*, vol. 30, pp. 76–91, July 2016.
- [J21] X. Wu, F. Dörfler, and M. R. Jovanović, “Input-output analysis and decentralized optimal control of inter-area oscillations in power systems,” *IEEE Trans. Power Syst.*, vol. 31, no. 3, pp. 2434–2444, May 2016.
- [J22] J. Jeun, J. W. Nichols, and M. R. Jovanović, “Input-output analysis of high-speed axisymmetric isothermal jet noise,” *Phys. Fluids*, vol. 28, no. 4, p. 047101 (20 pages), April 2016, (**Editor’s Pick**).
- [J23] V. L. Thomas, B. K. Lieu, M. R. Jovanović, B. F. Farrell, P. J. Ioannou, and D. F. Gayme, “Self-sustaining turbulence in a restricted nonlinear model of plane Couette flow,” *Phys. Fluids*, vol. 26, no. 10, p. 105112 (17 pages), October 2014.

- [J24] F. Dörfler, M. R. Jovanović, M. Chertkov, and F. Bullo, “Sparsity-promoting optimal wide-area control of power networks,” *IEEE Trans. Power Syst.*, vol. 29, no. 5, pp. 2281–2291, September 2014.
- [J25] M. Fardad, F. Lin, and M. R. Jovanović, “Design of optimal sparse interconnection graphs for synchronization of oscillator networks,” *IEEE Trans. Automat. Control*, vol. 59, no. 9, pp. 2457–2462, September 2014.
- [J26] F. Lin, M. Fardad, and M. R. Jovanović, “Algorithms for leader selection in stochastically forced consensus networks,” *IEEE Trans. Automat. Control*, vol. 59, no. 7, pp. 1789–1802, July 2014.
- [J27] R. Moarref, M. R. Jovanović, J. A. Tropp, A. S. Sharma, and B. J. McKeon, “A low-order decomposition of turbulent channel flow via resolvent analysis and convex optimization,” *Phys. Fluids*, vol. 26, no. 5, p. 051701 (7 pages), May 2014.
- [J28] M. R. Jovanović, P. J. Schmid, and J. W. Nichols, “Sparsity-promoting dynamic mode decomposition,” *Phys. Fluids*, vol. 26, no. 2, p. 024103 (22 pages), February 2014, (**Editor’s Pick**).
- [J29] S. Y. Shafi, M. Arcak, M. R. Jovanović, and A. Packard, “Synchronization of diffusively-coupled limit cycle oscillators,” *Automatica*, vol. 49, no. 12, pp. 3613–3622, December 2013.
- [J30] B. K. Lieu and M. R. Jovanović, “Computation of frequency responses for linear time-invariant PDEs on a compact interval,” *J. Comput. Phys.*, vol. 250, pp. 246–269, October 2013.
- [J31] F. Lin, M. Fardad, and M. R. Jovanović, “Design of optimal sparse feedback gains via the alternating direction method of multipliers,” *IEEE Trans. Automat. Control*, vol. 58, no. 9, pp. 2426–2431, September 2013.
- [J32] B. K. Lieu, M. R. Jovanović, and S. Kumar, “Worst-case amplification of disturbances in inertialess Couette flow of viscoelastic fluids,” *J. Fluid Mech.*, vol. 723, pp. 232–263, May 2013.
- [J33] R. Moarref and M. R. Jovanović, “Model-based design of transverse wall oscillations for turbulent drag reduction,” *J. Fluid Mech.*, vol. 707, pp. 205–240, September 2012.
- [J34] F. Lin, M. Fardad, and M. R. Jovanović, “Optimal control of vehicular formations with nearest neighbor interactions,” *IEEE Trans. Automat. Control*, vol. 57, no. 9, pp. 2203–2218, September 2012.
- [J35] B. Bamieh, M. R. Jovanović, P. Mitra, and S. Patterson, “Coherence in large-scale networks: dimension dependent limitations of local feedback,” *IEEE Trans. Automat. Control*, vol. 57, no. 9, pp. 2235–2249, September 2012, (**2013 George S. Axelby Outstanding Paper Award**).
- [J36] F. Lin, M. Fardad, and M. R. Jovanović, “Augmented Lagrangian approach to design of structured optimal state feedback gains,” *IEEE Trans. Automat. Control*, vol. 56, no. 12, pp. 2923–2929, December 2011.
- [J37] M. R. Jovanović and S. Kumar, “Nonmodal amplification of stochastic disturbances in strongly elastic channel flows,” *J. Non-Newtonian Fluid Mech.*, vol. 166, no. 14-15, pp. 755–778, August 2011.
- [J38] M. Fardad and M. R. Jovanović, “Design of optimal controllers for spatially invariant systems with finite communication speed,” *Automatica*, vol. 47, no. 5, pp. 880–889, May 2011.
- [J39] R. Moarref and M. R. Jovanović, “Controlling the onset of turbulence by streamwise traveling waves. Part 1: Receptivity analysis,” *J. Fluid Mech.*, vol. 663, pp. 70–99, November 2010.

- [J40] B. K. Lieu, R. Moarref, and M. R. Jovanović, “Controlling the onset of turbulence by stream-wise traveling waves. Part 2: Direct numerical simulations,” *J. Fluid Mech.*, vol. 663, pp. 100–119, November 2010.
- [J41] M. R. Jovanović and S. Kumar, “Transient growth without inertia,” *Phys. Fluids*, vol. 22, no. 2, p. 023101 (19 pages), February 2010.
- [J42] M. R. Jovanović, “On the optimality of localized distributed controllers,” *Int. J. Systems, Control and Communications*, vol. 2, no. 1/2/3, pp. 82–99, 2010, special issue on Information Processing and Decision Making in Distributed Control Systems.
- [J43] F. Lin and M. R. Jovanović, “Least-squares approximation of structured covariances,” *IEEE Trans. Automat. Control*, vol. 54, no. 7, pp. 1643–1648, July 2009.
- [J44] N. Hoda, M. R. Jovanović, and S. Kumar, “Frequency responses of streamwise-constant perturbations in channel flows of Oldroyd-B fluids,” *J. Fluid Mech.*, vol. 625, pp. 411–434, April 2009.
- [J45] M. Fardad, M. R. Jovanović, and B. Bamieh, “Frequency analysis and norms of distributed spatially periodic systems,” *IEEE Trans. Automat. Control*, vol. 53, no. 10, pp. 2266–2279, November 2008.
- [J46] M. R. Jovanović and M. Fardad, “ $H_2$  norm of linear time-periodic systems: a perturbation analysis,” *Automatica*, vol. 44, no. 8, pp. 2090–2098, August 2008.
- [J47] M. R. Jovanović, J. M. Fowler, B. Bamieh, and R. D’Andrea, “On the peaking phenomenon in the control of vehicular platoons,” *Syst. Control Lett.*, vol. 57, no. 7, pp. 528–537, July 2008.
- [J48] N. Hoda, M. R. Jovanović, and S. Kumar, “Energy amplification in channel flows of viscoelastic fluids,” *J. Fluid Mech.*, vol. 601, pp. 407–424, April 2008.
- [J49] M. R. Jovanović, M. Arcaç, and E. D. Sontag, “A passivity-based approach to stability of spatially distributed systems with a cyclic interconnection structure,” *IEEE Trans. Automat. Control: Special Issue on Systems Biology*, vol. 53, pp. 75–86, January 2008.
- [J50] M. R. Jovanović, “Turbulence suppression in channel flows by small amplitude transverse wall oscillations,” *Phys. Fluids*, vol. 20, no. 1, p. 014101 (11 pages), January 2008.
- [J51] M. R. Jovanović and B. Bamieh, “Architecture induced by distributed backstepping design,” *IEEE Trans. Automat. Control*, vol. 52, no. 1, pp. 108–113, January 2007.
- [J52] M. R. Jovanović and B. Bamieh, “A formula for frequency responses of distributed systems with one spatial variable,” *Syst. Control Lett.*, vol. 55, no. 1, pp. 27–37, January 2006.
- [J53] M. R. Jovanović and B. Bamieh, “On the ill-posedness of certain vehicular platoon control problems,” *IEEE Trans. Automat. Control*, vol. 50, no. 9, pp. 1307–1321, September 2005.
- [J54] M. R. Jovanović and B. Bamieh, “Componentwise energy amplification in channel flows,” *J. Fluid Mech.*, vol. 534, pp. 145–183, July 2005.
- [J55] M. R. Jovanović and B. Bamieh, “Lyapunov-based distributed control of systems on lattices,” *IEEE Trans. Automat. Control*, vol. 50, no. 4, pp. 422–433, April 2005.
- [J56] D. Debeljković and M. R. Jovanović, “Non-Lyapunov stability consideration of linear descriptor systems operating under perturbing forces,” *Advances in Modeling and Analysis*, vol. 49, no. 1-2, pp. 1–8, 1997.

### Refereed Journal Articles: Under Review

- [JS1] D. Ding, X. Wei, Z. Yang, Z. Wang, and M. R. Jovanović, “Fast multi-agent temporal-difference learning via homotopy stochastic primal-dual optimization,” *IEEE Trans. Automat. Control*, 2020, submitted; also arXiv:1908.02805.
- [JS2] G. Hariharan, M. R. Jovanović, and S. Kumar, “Localized stress amplification in inertialess channel flows of viscoelastic fluids,” *J. Non-Newtonian Fluid Mech.*, 2020, submitted.
- [JS3] G. Hariharan, S. Kumar, and M. R. Jovanović, “Well-conditioned ultraspherical and spectral integration methods for resolvent analysis of channel flows of Newtonian and viscoelastic fluids,” *J. Comput. Phys.*, 2020, submitted; also arXiv:2005.04493.
- [JS4] H. Mohammadi, A. Zare, M. Soltanolkotabi, and M. R. Jovanović, “Convergence and sample complexity of gradient methods for the model-free linear quadratic regulator problem,” *IEEE Trans. Automat. Control*, 2019, conditionally accepted; also arXiv:1912.11899.
- [JS5] N. K. Dhingra, S. Z. Khong, and M. R. Jovanović, “A second order primal-dual method for nonsmooth convex composite optimization,” *IEEE Trans. Automat. Control*, 2017, conditionally accepted; also arXiv:1709.01610.

### Magazine Articles

- [M1] J. Cortes, M. Egerstedt, and M. R. Jovanović, “The inaugural CDC soccer cup,” *IEEE Control Syst. Mag.*, vol. 39, no. 3, pp. 17–39, June 2019.

### Special Issues

- [SI1] M. Chertkov, M. R. Jovanović, B. Lesieutre, S. Low, P. van Hentenryck, and L. Wehenkel, “Guest Editorial Special Issue on Analysis, Control, and Optimization of Energy Networks,” *IEEE Trans. Control Netw. Syst.*, vol. 6, no. 3, pp. 922–924, September 2019.

### Book Chapters and Encyclopedia Articles

- [B1] H. Mohammadi, M. Soltanolkotabi, and M. R. Jovanović, “Model-free linear quadratic regulator,” in *Handbook of Reinforcement Learning and Control*, K. G. Vamvoudakis, Y. Wan, F. Lewis, and D. Cansever, Eds. Springer International Publishing, 2021, doi:10.1007/978-3-030-60990-0.
- [B2] M. R. Jovanović, “Vehicular chains,” in *Encyclopedia of Systems and Control*, J. Baillieul and T. Samad, Eds. Springer-Verlag London, 2014, pp. 1–10, doi:10.1007/978-1-4471-5102-9\_221-1.

### Invited Conference Publications (Refereed)

- [I1] S. Samuelson, H. Mohammadi, and M. R. Jovanović, “On the transient growth of Nesterov’s accelerated method for strongly convex optimization problems,” in *Proceedings of the 59th IEEE Conference on Decision and Control*, Jeju Island, Republic of Korea, 2020, to appear.
- [I2] W. Ran, A. Zare, and M. R. Jovanović, “Frequency-response analysis of riblets for turbulent drag reduction,” in *Proceedings of the 24th International Symposium on Mathematical Theory of Network and Systems*, Cambridge, UK, 2020, submitted.
- [I3] W. Ran, A. Zare, M. J. P. Hack, and M. R. Jovanović, “Relating global and local stochastic receptivity analysis of boundary layer flows,” in *Proceedings of the 2019 American Control Conference*, Philadelphia, PA, 2019, pp. 3212–3217.

- [I4] S. Hassan-Moghaddam and M. R. Jovanović, “On the exponential convergence rate of proximal gradient flow algorithms,” in *Proceedings of the 57th IEEE Conference on Decision and Control*, Miami, FL, 2018, pp. 4246–4251.
- [I5] W. Ran, A. Zare, M. J. P. Hack, and M. R. Jovanović, “Low-complexity modeling of mode interactions in boundary layer flows,” in *Proceedings of the 2018 American Control Conference*, Milwaukee, WI, 2018, pp. 134–139.
- [I6] N. K. Dhingra, S. Z. Khong, and M. R. Jovanović, “A second order primal-dual algorithm for non-smooth convex composite optimization,” in *Proceedings of the 56th IEEE Conference on Decision and Control*, Melbourne, Australia, 2017, pp. 2868–2873.
- [I7] W. Ran, A. Zare, M. J. P. Hack, and M. R. Jovanović, “Low-complexity stochastic modeling of spatially-evolving flows,” in *Proceedings of the 2017 American Control Conference*, Seattle, WA, 2017, pp. 3815–3820.
- [I8] N. K. Dhingra, M. Colombino, and M. R. Jovanović, “Leader selection in directed networks,” in *Proceedings of the 55th IEEE Conference on Decision and Control*, Las Vegas, NV, 2016, pp. 2715–2720.
- [I9] M. Colombino, N. Dhingra, M. R. Jovanović, and R. S. Smith, “Convex reformulation of a robust optimal control problem for a class of positive systems,” in *Proceedings of the 55th IEEE Conference on Decision and Control*, Las Vegas, NV, 2016, pp. 5263–5268.
- [I10] J. Annoni, P. Seiler, and M. R. Jovanović, “Sparsity-promoting dynamic mode decomposition for systems with inputs,” in *Proceedings of the 55th IEEE Conference on Decision and Control*, Las Vegas, NV, 2016, pp. 6506–6511.
- [I11] N. K. Dhingra, X. Wu, and M. R. Jovanović, “Sparsity-promoting optimal control of systems with invariances and symmetries,” in *Proceedings of the 10th IFAC Symposium on Nonlinear Control Systems*, Monterey, CA, 2016, pp. 648–653.
- [I12] M. Colombino, N. K. Dhingra, M. R. Jovanović, A. Rantzer, and R. S. Smith, “On the optimal control problem for a class of monotone bilinear systems,” in *Proceedings of the 22nd International Symposium on Mathematical Theory of Network and Systems*, Minneapolis, MN, 2016, pp. 411–413.
- [I13] N. K. Dhingra and M. R. Jovanović, “A method of multipliers algorithm for sparsity-promoting optimal control,” in *Proceedings of the 2016 American Control Conference*, Boston, MA, 2016, pp. 1942–1947.
- [I14] N. K. Dhingra, M. R. Jovanović, and Z. Q. Luo, “An ADMM algorithm for optimal sensor and actuator selection,” in *Proceedings of the 53rd IEEE Conference on Decision and Control*, Los Angeles, CA, 2014, pp. 4039–4044.
- [I15] M. Fardad, X. Zhang, F. Lin, and M. R. Jovanović, “On the properties of optimal weak links in consensus networks,” in *Proceedings of the 53rd IEEE Conference on Decision and Control*, Los Angeles, CA, 2014, pp. 2124–2129.
- [I16] X. Wu, F. Dörfler, and M. R. Jovanović, “Analysis and design trade-offs for power network inter-area oscillations,” in *Proceedings of the 21st International Symposium on Mathematical Theory of Network and Systems*, Groningen, The Netherlands, 2014, pp. 657–663.
- [I17] A. Zare, M. R. Jovanović, and T. T. Georgiou, “Completion of partially known turbulent flow statistics,” in *Proceedings of the 2014 American Control Conference*, Portland, OR, 2014, pp. 1680–1685, **(Finalist, Best Student Paper Award)**.



- [I18] B. K. Lieu and M. R. Jovanović, “Model-based analysis of polymer drag reduction in a turbulent channel flow,” in *Proceedings of the 2013 American Control Conference*, Washington, DC, 2013, pp. 485–490.
- [I19] F. Lin, M. Fardad, and M. R. Jovanović, “Identification of sparse communication graphs in consensus networks,” in *Proceedings of the 50th Annual Allerton Conference on Communication, Control, and Computing*, Monticello, IL, 2012, pp. 85–89.
- [I20] M. R. Jovanović and S. Kumar, “Transient response of velocity fluctuations in inertialess channel flows of viscoelastic fluids,” in *Proceedings of the 2010 American Control Conference*, Baltimore, MD, 2010, pp. 5682–5687.
- [I21] F. Lin, M. Fardad, and M. R. Jovanović, “Synthesis of  $H_2$  optimal static structured controllers: primal and dual formulations,” in *Proceedings of the 47th Annual Allerton Conference on Communication, Control, and Computing*, Monticello, IL, 2009, pp. 340–346.
- [I22] M. R. Jovanović and S. Kumar, “Variance amplification in channel flows of strongly elastic polymer solutions,” in *Proceedings of the 2009 American Control Conference*, Saint Louis, MO, 2009, pp. 842–847.
- [I23] S. Patterson, B. Bamieh, A. E. Abbadi, and M. R. Jovanović, “On the feasibility of large-scale automated highways,” in *First International Workshop on Computational Transportation Science*, Dublin, Ireland, 2008.
- [I24] N. Hoda, M. R. Jovanović, and S. Kumar, “Input-output analysis of the 2D/3C model in channel flows of viscoelastic fluids,” in *Proceedings of the 47th IEEE Conference on Decision and Control*, Cancun, Mexico, 2008, pp. 841–846.
- [I25] R. Moarref, M. Fardad, and M. R. Jovanović, “Perturbation analysis of eigenvalues of a class of self-adjoint operators,” in *Proceedings of the 2008 American Control Conference*, Seattle, WA, 2008, pp. 955–960.
- [I26] R. Moarref and M. R. Jovanović, “On using the streamwise traveling waves for variance suppression in channel flows,” in *Proceedings of the 2007 American Control Conference*, New York City, NY, 2007, pp. 2060–2065, (**Finalist, Best Student Paper Award**).
- [I27] M. R. Jovanović, “Turbulence suppression in channel flows by small amplitude transverse wall oscillations,” in *Proceedings of the 2006 American Control Conference*, Minneapolis, MN, 2006, pp. 1161–1166.
- [I28] R. Moarref and M. R. Jovanović, “Transition control using an array of streamwise vortices,” in *Proceedings of the 45th IEEE Conference on Decision and Control*, San Diego, CA, 2006, pp. 107–112.
- [I29] M. R. Jovanović, “On the optimality of localized distributed controllers,” in *Proceedings of the 2005 American Control Conference*, Portland, OR, 2005, pp. 4583–4588.

### Refereed Conference Publications

- [C1] D. Ding, X. Wei, Z. Yang, Z. Wang, and M. R. Jovanović, “Provably efficient safe exploration via primal-dual policy optimization,” in *24th International Conference on Artificial Intelligence and Statistics*, Virtual, 2021, submitted.

- [C2] D. Ding, J. Yuan, and M. R. Jovanović, “Discounted online Newton method for time-varying time series prediction,” in *Proceedings of the 2021 American Control Conference*, New Orleans, LA, 2021, submitted.
- [C3] D. Ding, X. Wei, H. Yu, and M. R. Jovanović, “Byzantine-resilient distributed learning under constraints,” in *Proceedings of the 2021 American Control Conference*, New Orleans, LA, 2021, submitted.
- [C4] D. Ding, K. Zhang, T. Başar, and M. R. Jovanović, “Natural policy gradient primal-dual method for constrained Markov decision processes,” in *Proceedings of the 34th Conference on Neural Information Processing Systems*, Vancouver, Canada, 2020, to appear.
- [C5] D. Ding and M. R. Jovanović, “Global exponential stability of primal-dual gradient flow dynamics based on the proximal augmented Lagrangian: A Lyapunov-based approach,” in *Proceedings of the 59th IEEE Conference on Decision and Control*, Jeju Island, Republic of Korea, 2020, to appear.
- [C6] S. Hassan-Moghaddam and M. R. Jovanović, “Global exponential stability of the Douglas-Rachford splitting dynamics,” in *Preprints of the 21th IFAC World Congress*, Berlin, Germany, 2020.
- [C7] H. Mohammadi, M. Soltanolkotabi, and M. R. Jovanović, “Random search for learning the linear quadratic regulator,” in *Proceedings of the 2020 American Control Conference*, Denver, CO, 2020, pp. 4798–4803.
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- [C11] W. Ran, A. Zare, M. J. P. Hack, and M. R. Jovanović, “Boundary layer receptivity analysis via the algebraic Lyapunov equation,” in *Proceedings of the 2020 AIAA SciTech Forum and Exposition*, Orlando, FL, 2020, p. 0109 (15 pages).
- [C12] D. Ding, X. Wei, Z. Yang, Z. Wang, and M. R. Jovanović, “Fast multi-agent temporal-difference learning via homotopy stochastic primal-dual method,” in *Optimization Foundations for Reinforcement Learning Workshop, 33rd Conference on Neural Information Processing Systems*, Vancouver, Canada, 2019.
- [C13] H. Mohammadi, A. Zare, M. Soltanolkotabi, and M. R. Jovanović, “Global exponential convergence of gradient methods over the nonconvex landscape of the linear quadratic regulator,” in *Proceedings of the 58th IEEE Conference on Decision and Control*, Nice, France, 2019, pp. 7474–7479.
- [C14] W. Ran, A. Zare, and M. R. Jovanović, “Drag reduction in turbulent channel flow over spatially periodic surfaces,” in *Proceedings of the 58th IEEE Conference on Decision and Control*, Nice, France, 2019, pp. 5918–5923.
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## Abstracts

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- [A37] F. Lin, M. Fardad, and M. R. Jovanović, “Leader selection in consensus networks,” in *51st Annual Allerton Conference on Communication, Control, and Computing*, Monticello, IL, October 2013.
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- [A43] F. Lin, M. Fardad, and M. R. Jovanović, “Sparsity-promoting optimal control of distributed systems,” in *2012 SIAM Annual Meeting*, Minneapolis, MN, July 2012.

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- [A51] R. Moarref and M. R. Jovanović, “Control of transition in Poiseuille flow using streamwise traveling waves. Part 1: Receptivity analysis,” in *Bulletin of the American Physical Society*, Minneapolis, MN, November 2009.
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- [A63] B. Bamieh, M. R. Jovanović, and M. Dahleh, “A model for the effect of riblets on wall bounded shear flow transition,” in *Bulletin of the American Physical Society Division of Fluid Dynamics Meeting*, New Orleans, LA, November 1999.

## Software

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## Presentations

### Plenary and Keynote Presentations

- [PK1] “Non-smooth composite optimization: A primal-dual method based on the proximal augmented Lagrangian,” *8th IFAC Workshop on Distributed Estimation and Control in Networked Systems*, Chicago, IL, September 2019.
- [PK2] “Controller architectures: tradeoffs between performance and complexity,” *2016 European Control Conference*, Aalborg, Denmark, July 2016.
- [PK3] “ME, Myself & UCSB,” *50th Anniversary Celebration, Mechanical Engineering Department, University of California at Santa Barbara*, Santa Barbara, CA, October 2014.

## Invited Presentations

- [IP1] “Convergence and sample complexity of gradient methods for the model-free linear quadratic regulator problem,” *Online Seminar on Mathematical Foundations of Data Science*, September 2020.
- [IP2] “Color of turbulence: stochastic dynamical modeling of turbulent flows,” *United Technologies Research Center*, Hartford, CT, June 2020.
- [IP3] “Non-smooth composite optimization: A primal-dual method based on the proximal augmented Lagrangian,” *Automatic Control Laboratory, Swiss Federal Institute of Technology*, Zurich, Switzerland, September 2019.
- [IP4] “First-order optimization algorithms: tradeoffs between robustness and acceleration,” *2019 AFOSR Dynamics and Control Annual Program Review*, Arlington, VA, August 2019.
- [IP5] “Low-complexity modeling and control of turbulent wall-bounded shear flows,” *2019 ARO/AFOSR Joint Program Review*, Colorado Springs, CO, July 2019.
- [IP6] “Modeling, dynamics, and control of wall-bounded shear flows,” *Department of Aerospace Engineering and Engineering Mechanics, University of Texas at Austin*, Austin, TX, May 2019.
- [IP7] “The proximal augmented Lagrangian method for non-smooth composite and distributed optimization,” *Workshop on Innovative Optimization and Control Methods for Highly Distributed Autonomous Systems, National Renewable Energy Laboratory*, Golden, CO, April 2019.
- [IP8] “Input-output analysis and sparsity-promoting optimal control of inter-area oscillations,” *2nd International Conference on Future Electric Power Systems and the Energy Transition*, Champéry, Switzerland, February 2019.
- [IP9] “The proximal augmented Lagrangian method for nonsmooth composite optimization,” *Coordinated Science Laboratory, University of Illinois at Urbana-Champaign*, Urbana-Champaign, IL, October 2018.
- [IP10] “Controller architectures: tradeoffs between performance and complexity,” *Department of Mechanical Engineering, University of California at Riverside*, Riverside, CA, October 2018.
- [IP11] “Optimal sensor and actuator selection in large-scale systems,” *2018 AFOSR Dynamics and Control Annual Program Review*, Arlington, VA, September 2018.
- [IP12] “A primal-dual method for nonsmooth composite and distributed optimization,” *Workshop on Modeling, Prediction, and Design for Complex Networks: A Multi-Disciplinary Perspective*, 2018 American Control Conference, Milwaukee, WI, June 2018.
- [IP13] “The proximal augmented Lagrangian method for nonsmooth and distributed optimization,” *Workshop on Interdisciplinary Approaches for Control of Large-Scale Complex Systems: Latest Development and Future Trends*, 2018 American Control Conference, Milwaukee, WI, June 2018.
- [IP14] “Color of turbulence: stochastic dynamical modeling of turbulent flows,” *Workshop on Research Challenges and Opportunities at the Interface of Machine Learning and Uncertainty Quantification*, University of Southern California, Los Angeles, CA, June 2018.
- [IP15] “A primal-dual method for non-smooth composite and distributed optimization,” *Information Theory and Applications Workshop*, San Diego, CA, February 2018.

- [IP16] “The proximal augmented Lagrangian method for nonsmooth composite optimization,” *Cymer Center for Control Systems and Dynamics, University of California at San Diego*, San Diego, CA, February 2018.
- [IP17] “The proximal augmented Lagrangian method for nonsmooth composite optimization,” *Center for Control, Dynamical Systems and Computation, University of California at Santa Barbara*, Santa Barbara, CA, February 2018.
- [IP18] “Controller architectures: tradeoffs between performance and complexity,” *Department of Electrical and Electronic Engineering, University of Melbourne*, Melbourne, Australia, December 2017.
- [IP19] “Color of turbulence,” *Fluid Mechanics Research Group Seminar, Department of Mechanical Engineering, University of Melbourne*, Melbourne, Australia, December 2017.
- [IP20] “Controlling the onset of turbulence by spatio-temporal oscillations: theory and techniques,” *NSF Acoustics Workshop: New Fundamentals and Applications*, Alexandria, VA, October 2017.
- [IP21] “Controller architectures: tradeoffs between performance and complexity,” *Workshop on Autonomous Energy Grids, National Renewable Energy Laboratory*, Golden, CO, September 2017.
- [IP22] “Optimal sensor and actuator selection in distributed systems,” *Workshop on Sensor Location in Distributed Parameter Systems, Institute for Mathematics and its Applications*, Minneapolis, MN, September 2017.
- [IP23] “A primal-dual method for nonsmooth composite optimization,” *2017 AFOSR Dynamics and Control Annual Program Review*, Arlington, VA, September 2017.
- [IP24] “The proximal augmented Lagrangian method for nonsmooth composite optimization,” *Workshop on Large-Scale and Distributed Optimization, Lund Center for Control of Complex Engineering Systems*, Lund, Sweden, June 2017.
- [IP25] “Controller architectures: tradeoffs between performance and complexity,” *Department of Mechanical and Aerospace Engineering, University of California at Irvine*, Irvine, CA, May 2017.
- [IP26] “Controller architectures: tradeoffs between performance and complexity,” *The Brain-Body Dynamics Lab, University of Southern California*, Los Angeles, CA, April 2017.
- [IP27] “Low-complexity modeling of partially available second-order statistics: theory and an efficient matrix completion algorithm,” *Workshop on Optimization and Inference for Physical Flows on Networks*, Banff, Canada, March 2017.
- [IP28] “Second-order method of multipliers for non-smooth composite optimization,” *Information Theory and Applications Workshop*, San Diego, CA, February 2017.
- [IP29] “Dynamics and control of wall-bounded shear flows,” *Department of Aerospace and Mechanical Engineering, University of Southern California*, Los Angeles, CA, January 2017.
- [IP30] “Color of turbulence,” *GALCIT Colloquium, California Institute of Technology*, Pasadena, CA, January 2017.
- [IP31] “Color of turbulence,” *Workshop on Recurrence, Self-Organization, and the Dynamics of Turbulence, Kavli Institute for Theoretical Physics*, Santa Barbara, CA, January 2017.
- [IP32] “Color of turbulence,” *A Third of a Century in Systems and Control: A Workshop Dedicated to Tryphon Georgiou’s 60th Birthday*, Las Vegas, NV, December 2016.



- [IP33] “Controller architectures: tradeoffs between performance and complexity,” *Workshop on Taxonomies of Interconnected Systems: Large-Scale Networks*, Las Vegas, NV, December 2016.
- [IP34] “Controller architectures: tradeoffs between performance and complexity,” *UTRC Invited Lectures on Control and Dynamical Systems*, Institute for Systems Research, University of Maryland, College Park, MD, November 2016.
- [IP35] “Controller architectures: tradeoffs between performance and complexity,” *CCI-MHI Joint Seminar Series on Cyber Physical Systems*, University of Southern California, Los Angeles, CA, October 2016.
- [IP36] “A second-order proximal method of multipliers algorithm for composite minimization,” *54th Annual Allerton Conference on Communication, Control, and Computing*, Monticello, IL, September 2016.
- [IP37] “Optimal structured decentralized control of positive systems,” *54th Annual Allerton Conference on Communication, Control, and Computing*, Monticello, IL, September 2016.
- [IP38] “Color of turbulence: stochastic dynamical modeling of turbulent flows,” *2016 AFOSR Dynamics and Control Annual Program Review*, Arlington, VA, August 2016.
- [IP39] “Controller architectures: tradeoffs between performance and complexity,” *United Technologies Research Center*, Hartford, CT, June 2016.
- [IP40] “Stochastic dynamical modeling: structured matrix completion of partially available statistics,” *Center for Control, Dynamical Systems and Computation*, University of California at Santa Barbara, Santa Barbara, CA, May 2016.
- [IP41] “Color of turbulence,” *McKeon Research Group, GALCIT, California Institute of Technology*, Pasadena, CA, May 2016.
- [IP42] “Color of turbulence,” *Department of Mechanical Engineering, University of Washington*, Seattle, WA, May 2016.
- [IP43] “Dynamics and control of wall-bounded shear flows,” *Department of Aerospace Engineering, University of Michigan*, Ann Arbor, MI, February 2016.
- [IP44] “Stochastic dynamical modeling: structured matrix completion of partially available statistics,” *Information Theory and Applications Workshop*, San Diego, CA, February 2016.
- [IP45] “Stochastic dynamical modeling: structured matrix completion of partially available statistics,” *Workshop on Optimization and Parsimonious Modeling, Institute for Mathematics and its Applications*, Minneapolis, MN, January 2016.
- [IP46] “Sparsity-promoting dynamic mode decomposition,” *UTRC DMD/Koopman Workshop, United Technologies Research Center*, Hartford, CT, November 2015.
- [IP47] “Dynamics and control of wall-bounded shear flows,” *Symposium on Active Drag Reduction, RWTH Aachen University*, Aachen, Germany, November 2015.
- [IP48] “Sparsity-promoting optimal control of distributed systems,” *Control Group Seminar, University of Oxford*, Oxford, England, November 2015.
- [IP49] “Analysis and control of linear dynamical systems in Chebfun,” *Numerical Analysis Group, University of Oxford*, Oxford, England, November 2015.

- [IP50] “Low-complexity modeling of partially available second-order statistics via matrix completion,” *Data Science Seminar, Institute for Mathematics and its Applications*, Minneapolis, MN, October 2015.
- [IP51] “Low-complexity modeling of partially available second-order statistics via matrix completion,” *Mini-Symposium on Control and Estimation of PDE Systems, 2015 SIAM Conference on Control and Its Applications*, Paris, France, July 2015.
- [IP52] “Low-complexity stochastic modeling of turbulent flows,” *Mini-Symposium on Machine Learning Methods to Control Complex Systems, 2015 SIAM Conference on Control and Its Applications*, Paris, France, July 2015.
- [IP53] “Sparsity-promoting optimal control of distributed systems,” *4th Midwest Workshop on Control and Game Theory*, Ames, IA, April 2015.
- [IP54] “Low-complexity stochastic modeling of turbulent flows,” *Mini-Symposium on Data-driven Methods for Complex Systems, 2015 SIAM Conference on Computational Science and Engineering*, Salt Lake City, UT, March 2015.
- [IP55] “Dynamics and control of distributed systems,” *Ming Hsieh Department of Electrical Engineering, University of Southern California*, Los Angeles, CA, March 2015.
- [IP56] “Dynamics and control of distributed systems: lessons, opportunities, and challenges,” *Workshop on Future Directions in Networks, Optimization, and Control, Ming Hsieh Department of Electrical Engineering, University of Southern California*, Los Angeles, CA, December 2014.
- [IP57] “Dynamics and control of wall-bounded shear flows,” *Department of Aerospace Engineering, Iowa State University*, Ames, IA, December 2014.
- [IP58] “Dynamics and control of distributed systems,” *Department of Mechanical and Process Engineering, Swiss Federal Institute of Technology*, Zurich, Switzerland, November 2014.
- [IP59] “Dynamics and control of wall-bounded shear flows,” *Workshop on Turbulence in Engineering Applications, Institute for Pure and Applied Mathematics*, Los Angeles, CA, November 2014.
- [IP60] “Sparsity-promoting optimal control of distributed systems,” *Workshop on Optimal Cooperation, Communication, and Learning in Decentralized Systems*, Banff, Canada, October 2014.
- [IP61] “Dynamics and control of large-scale networks,” *Computer Science and Engineering Colloquium, University of Minnesota*, Minneapolis, MN, September 2014.
- [IP62] “Dynamics and control of large-scale networks,” *Systems, Control, and Robotics Seminar, Texas A&M University*, College Station, TX, September 2014.
- [IP63] “Low-complexity stochastic modeling of turbulent flows,” *Aerospace Design Laboratory, Stanford University*, Stanford, CA, July 2014.
- [IP64] “Dynamics and control of large-scale networks,” *Communications, Networks and Systems Seminar, University of Southern California*, Los Angeles, CA, April 2014.
- [IP65] “Dynamics and control of wall-bounded shear flows,” *Center for Environmental and Applied Fluid Mechanics Seminar, Johns Hopkins University*, Baltimore, MD, March 2014.
- [IP66] “Sparsity-promoting optimal control of distributed systems,” *Institute for Systems Theory and Automatic Control, Universität Stuttgart*, Stuttgart, Germany, February 2014.

- [IP67] “Sparsity-promoting optimal control of distributed systems,” *Delft University of Technology*, Delft, Netherlands, February 2014.
- [IP68] “Dynamics and control of distributed systems,” *Aerospace Engineering and Mechanics Colloquium, University of Minnesota*, Minneapolis, MN, January 2014.
- [IP69] “Dynamics and control of wall-bounded shear flows,” *Future of Fluids – Celebrating 60 Years of AFOSR, 43rd AIAA Fluid Dynamics Conference and Exhibit*, San Diego, CA, June 2013.
- [IP70] “Sparsity-promoting optimal control of distributed systems,” *IMA Hot Topics Workshop: Mathematical and Computational Challenges in the Control, Optimization, and Design of Energy-Efficient Buildings, Institute for Mathematics and its Applications*, Minneapolis, MN, June 2013.
- [IP71] “Sparsity-promoting optimal control of distributed systems,” *Department of Cybernetics, Norwegian University of Science and Technology*, Trondheim, Norway, May 2013.
- [IP72] “Dynamics and control of distributed systems,” *Institute for Computational and Mathematical Engineering, Stanford University*, Stanford, CA, April 2013.
- [IP73] “Sparsity-promoting optimal control of distributed systems,” *Laboratory for Information and Decision Systems, Massachusetts Institute of Technology*, Boston, MA, November 2012.
- [IP74] “Dynamics and control of large-scale networks,” *Department of Aeronautics and Astronautics, Stanford University*, Stanford, CA, November 2012.
- [IP75] “Dynamics and control of wall-bounded shear flows,” *Department of Mechanical and Aerospace Engineering, Princeton University*, Princeton, NJ, October 2012.
- [IP76] “Sparsity-promoting optimal control of distributed systems,” *Center for Nonlinear Studies, Los Alamos National Laboratory*, Los Alamos, NM, June 2012.
- [IP77] “Dynamics and control of distributed systems,” *Farhat Research Group, Stanford University*, Stanford, CA, June 2012.
- [IP78] “Sparsity-promoting optimal control of distributed systems,” *Department of Mechanical and Aerospace Engineering, University of California at Los Angeles*, Los Angeles, CA, May 2012.
- [IP79] “Sparsity-promoting optimal control of distributed systems,” *Cymer Center for Control Systems and Dynamics, University of California at San Diego*, San Diego, CA, May 2012.
- [IP80] “Dynamics and control of wall-bounded shear flows,” *Department of Aeronautics and Astronautics, University of Washington*, Seattle, WA, April 2012.
- [IP81] “Sparsity-promoting optimal control of distributed systems,” *Ming Hsieh Department of Electrical Engineering, University of Southern California*, Los Angeles, CA, April 2012.
- [IP82] “Consensus and vehicular formation control problems,” *Aerospace Computing Laboratory, Stanford University*, Stanford, CA, March 2012.
- [IP83] “Sparsity-promoting optimal control of distributed systems,” *Center for Control, Dynamical Systems and Computation, University of California at Santa Barbara*, Santa Barbara, CA, March 2012.
- [IP84] “Sparse feedback synthesis via the alternating direction method of multipliers,” *Information Systems Laboratory Colloquium, Stanford University*, Stanford, CA, March 2012.
- [IP85] “Sparse feedback synthesis via the alternating direction method of multipliers,” *Networked Dynamical Systems Group, University of California at Berkeley*, Berkeley, CA, February 2012.

- [IP86] “Model-based design of transverse wall oscillations for turbulent drag reduction,” *Center for Turbulence Research Tea Seminar, Stanford University*, Stanford, CA, February 2012.
- [IP87] “Design of optimal sparse feedback gains via the alternating direction method of multipliers,” *Electrical and Computer Engineering Colloquium, University of Minnesota*, Minneapolis, MN, December 2011.
- [IP88] “Dynamics of inertialess flows of viscoelastic fluids: the role of uncertainty,” *Workshop on Complex Fluids and Flows in Industry and Nature, Pacific Institute for the Mathematical Sciences*, Vancouver, Canada, July 2011.
- [IP89] “Controlling the onset of turbulence by streamwise traveling waves,” *Rheology Research Seminar, University of Wisconsin*, Madison, WI, March 2011.
- [IP90] “Dynamics and control of wall-bounded shear flows,” *Linné Flow Centre, Royal Institute of Technology*, Stockholm, Sweden, February 2011.
- [IP91] “Design of structured optimal feedback gains for interconnected systems,” *The Maseeh Mathematics & Statistics Colloquium Series, Portland State University*, Portland, OR, December 2010.
- [IP92] “Dynamics and control of wall-bounded shear flows,” *Department of Aerospace and Ocean Engineering, Virginia Tech*, Blacksburg, VA, November 2010.
- [IP93] “Design of structured optimal feedback gains for interconnected systems,” *Delft University of Technology*, Delft, Netherlands, September 2010.
- [IP94] “Nonmodal amplification of disturbances in inertialess flows of viscoelastic fluids,” *Shaqfeh Research Group, Stanford University*, Stanford, CA, July 2010.
- [IP95] “Dynamics and control of wall-bounded shear flows,” *Department of Mechanical Engineering, Stanford University*, Stanford, CA, April 2010.
- [IP96] “Downstream traveling waves: an effective means for preventing transition to turbulence,” *Control and Dynamical Systems, California Institute of Technology*, Pasadena, CA, March 2010.
- [IP97] “Design of optimal structured controllers for large-scale interconnected systems,” *Engineering Neuroscience & Health Seminar Series, University of Southern California*, Los Angeles, CA, March 2010.
- [IP98] “Downstream traveling waves: an effective means for preventing transition to turbulence,” *Center for Control, Dynamical Systems and Computation, University of California at Santa Barbara*, Santa Barbara, CA, February 2010.
- [IP99] “Design of optimal structured feedback gains for interconnected systems with application to control of large-scale vehicular formations,” *Department of Automatic Control, Lund University*, Lund, Sweden, February 2010.
- [IP100] “Design of optimal structured controllers for large-scale interconnected systems,” *Electrical and Computer Engineering Colloquium, University of Minnesota*, Minneapolis, MN, February 2010.
- [IP101] “Downstream traveling waves: an effective means for preventing transition to turbulence,” *Department of Mechanical, Materials, and Aerospace Engineering, Illinois Institute of Technology*, Chicago, IL, November 2009.
- [IP102] “Downstream traveling waves: an effective means for preventing transition to turbulence,” *Control Science and Dynamical Systems Center, University of Minnesota*, Minneapolis, MN, November 2009.

- [IP103] “Transition in inertialess flows of viscoelastic fluids: the role of uncertainty,” *Center for Integrated Nanosystems, University of Houston*, Houston, TX, November 2009.
- [IP104] “Transition in inertialess flows of viscoelastic fluids: the role of uncertainty,” *IMA Seminar on Complex Fluids and Complex Flows*, Minneapolis, MN, October 2009.
- [IP105] “Transition to elasticity-induced turbulence: a system-theoretic perspective,” *Control Frontiers Workshop – In honor of Petar Kokotović*, Santa Barbara, CA, May 2009.
- [IP106] “Dynamics and control of Newtonian and viscoelastic fluids: a system-theoretic perspective,” *Aerospace Engineering and Mechanics Colloquium, University of Minnesota*, Minneapolis, MN, March 2009.
- [IP107] “Dynamics and control of Newtonian and viscoelastic fluids: a system-theoretic perspective,” *St. Anthony Falls Laboratory*, Minneapolis, MN, February 2009.
- [IP108] “Dynamics and control of Newtonian and viscoelastic fluids: a system-theoretic perspective,” *Emerging Areas in Control Applications Seminar Series, Control Science and Dynamical Systems Center, University of Minnesota*, Minneapolis, MN, December 2008.
- [IP109] “Dynamics and control of Newtonian and viscoelastic fluids: a system-theoretic perspective,” *Cymer Center for Control Systems and Dynamics, University of California at San Diego*, San Diego, CA, October 2008.
- [IP110] “Nonmodal amplification of disturbances in channel flows of Newtonian and viscoelastic fluids: implications for transition and control,” *Control Seminar Series, University of Michigan*, Ann Arbor, MI, October 2008.
- [IP111] “Turbulence suppression in channel flows by small amplitude transverse wall oscillations,” *ISyE Seminar Series, Department of Mechanical and Industrial Engineering, University of Minnesota*, Minneapolis, MN, March 2008.
- [IP112] “Transition to turbulence in wall-bounded shear flows: a system-theoretic perspective,” *Department of Mechanical Engineering, University of Belgrade*, Belgrade, Serbia, June 2007.
- [IP113] “Large scale and structured distributed control problems,” *SPINCOM Seminar, Department of Electrical and Computer Engineering, University of Minnesota*, Minneapolis, MN, May 2007.
- [IP114] “Turbulence suppression in channel flows by small amplitude transverse wall oscillations,” *Department of Mechanical and Industrial Engineering, University of Illinois at Urbana-Champaign*, Urbana-Champaign, IL, April 2006.
- [IP115] “Input-output analysis of the Navier-Stokes equations: implications for transition and turbulence,” *Dynamical Systems Seminar, Department of Mathematics, University of Minnesota*, Minneapolis, MN, March 2006.
- [IP116] “Input-output analysis of the Navier-Stokes equations: implications for transition and turbulence,” *Microscale Flow and Transport Seminar, Department of Chemical Engineering and Materials Science, University of Minnesota*, Minneapolis, MN, February 2006.
- [IP117] “Turbulence suppression in channel flows by small amplitude transverse wall oscillations,” *Center for Control, Dynamical Systems and Computation, University of California at Santa Barbara*, Santa Barbara, CA, October 2005.

- [IP118] “On the optimality of localized distributed controllers,” *Mini-Symposium on Optimal and Robust Control Methods for Distributed and Structured Design, 6th SIAM Conference on Control and Its Applications*, New Orleans, LA, July 2005.
- [IP119] “Distributed control of systems on lattices,” *Honeywell Laboratories*, Minneapolis, MN, April 2005.
- [IP120] “Control of vehicular platoons: limitations and tradeoffs,” *Robotics Seminar, Department of Computer Science and Engineering, University of Minnesota*, Minneapolis, MN, January 2005.
- [IP121] “Distributed control of systems on lattices,” *Department of Mathematics, Royal Institute of Technology*, Stockholm, Sweden, December 2004.
- [IP122] “Input-output analysis of the linearized Navier-Stokes equations,” *Department of Automatic Control, Lund Institute of Technology*, Lund, Sweden, October 2004.
- [IP123] “Control of vehicular platoons: limitations and tradeoffs,” *Department of Signals, Sensors and Systems, Royal Institute of Technology*, Stockholm, Sweden, September 2004.
- [IP124] “Input-output analysis of the linearized Navier-Stokes equations,” *Department of Mechanics, Royal Institute of Technology*, Stockholm, Sweden, September 2004.
- [IP125] “Distributed control of systems on lattices,” *Department of Electrical and Computer Engineering, University of Minnesota*, Minneapolis, MN, April 2004.
- [IP126] “Distributed control of systems on lattices,” *Department of Electrical and Computer Engineering, Michigan State University*, East Lansing, MI, February 2004.
- [IP127] “Input-output analysis of the linearized Navier-Stokes equations,” *AMS–IMS–SIAM Joint Summer Conference on Hydrodynamic Stability and Flow Control*, Snowbird, UT, July 2003.
- [IP128] “Input-output analysis of the linearized Navier-Stokes equations,” *Center for Control Engineering and Computation, University of California at Santa Barbara*, Santa Barbara, CA, April 2003.

### **Tutorial and Outreach Presentations**

- [TP1] “Color of turbulence: stochastic dynamical modeling of turbulent flows,” *Brown Bag Tutorial on Color of Turbulence, Kavli Institute for Theoretical Physics*, Santa Barbara, CA, February 2017.
- [TP2] “Controller architectures: tradeoffs between performance and complexity,” *2017 Grid Science Winter School and Conference*, Santa Fe, NM, January 2017.
- [TP3] “Dynamics and control of distributed systems,” *University of Minnesota Libraries Mini Science Boot Camp*, Saint Paul, MN, August 2014.
- [TP4] “Sparsity-promoting optimal control of distributed systems,” *Tutorial session on Sparse and Low-Rank Representation Methods in Control, Estimation and System Identification, 2013 European Control Conference*, Zurich, Switzerland, July 2013.
- [TP5] “Dynamics and control of wall-bounded shear flows,” *Specialist’s Course on Flow Control, 51st AIAA Aerospace Sciences Meeting*, Grapevine, TX, January 2013.
- [TP6] “Dynamics and control of wall-bounded shear flows,” *2012 Summer Program, Center for Turbulence Research, Stanford University*, Stanford, CA, July 2012.

- [TP7] “Computation of frequency responses of PDEs in Chebfun,” *Mini-Symposium on Differential Equations in the Chebfun System, 2012 SIAM Annual Meeting*, Minneapolis, MN, July 2012.
- [TP8] “Controlling the onset of turbulence by streamwise traveling waves,” *Mini-Symposium on Advances in Control of Fluid Dynamics and Challenges Facing the US Defense Department’s Thrust on Unmanned Autonomous Systems, 2011 SIAM Conference on Control and Its Applications*, Baltimore, MD, July 2011.
- [TP9] “Amplification of stochastic disturbances in weakly inertial channel flows of viscoelastic fluids,” *Mini-Symposium on Estimation and Control of Distributed Parameter Systems, 2011 SIAM Conference on Control and Its Applications*, Baltimore, MD, July 2011.
- [TP10] “Large scale and structured distributed control problems,” *Excel Engineering 2009 Utility and Industrial Technical Conference*, Minneapolis, MN, January 2009.
- [TP11] “Dynamics and control of Newtonian and viscoelastic fluids: a system-theoretic perspective,” *Tech Tune-Up: Innovative and Disruptive Technologies, Department of Electrical and Computer Engineering, University of Minnesota*, Minneapolis, MN, June 2008.
- [TP12] “Control of vehicular formations: limitations and tradeoffs,” *NSF Workshop on Real Time Control of Hybrid Systems*, Budapest, Hungary, October 2007.
- [TP13] “On the optimality of localized distributed controllers,” *Workshop on Control, Estimation, and Optimization of Interconnected Systems: From Theory to Industrial Applications, joint 44th IEEE Conference on Decision and Control and European Control Conference 2005*, Seville, Spain, December 2005.
- [TP14] “Control of vehicular platoons: limitations and tradeoffs,” *Workshop on Control, Estimation, and Optimization of Interconnected Systems: From Theory to Industrial Applications, joint 44th IEEE Conference on Decision and Control and European Control Conference 2005*, Seville, Spain, December 2005.

## Contributed Presentations

- [CP1] “Learning the model-free linear quadratic regulator via random search,” *2nd Annual Conference on Learning for Dynamics and Control*, Berkeley, CA, June 2020.
- [CP2] “Global exponential convergence of gradient methods over the nonconvex landscape of the linear quadratic regulator,” *58th IEEE Conference on Decision and Control*, Nice, France, December 2019.
- [CP3] “Distributed robust statistical learning: Byzantine mirror descent,” *58th IEEE Conference on Decision and Control*, Nice, France, December 2019.
- [CP4] “Performance of noisy Nesterov’s accelerated method for strongly convex optimization problems,” *2019 American Control Conference*, Philadelphia, PA, July 2019.
- [CP5] “Receptivity analysis of flows over structured corrugated surfaces,” *71th Annual Meeting of the American Physical Society, Division of Fluid Dynamics*, Atlanta, GA, November 2018.
- [CP6] “A second order primal-dual algorithm for nonsmooth convex composite optimization,” *56th IEEE Conference on Decision and Control*, Melbourne, Australia, December 2017.
- [CP7] “Structured covariance completion via proximal algorithms,” *56th IEEE Conference on Decision and Control*, Melbourne, Australia, December 2017.

- [CP8] “Distributed design of optimal structured feedback gains,” *56th IEEE Conference on Decision and Control*, Melbourne, Australia, December 2017.
- [CP9] “Model-based design of drag-reducing spanwise wall oscillations,” *67th Annual Meeting of the American Physical Society, Division of Fluid Dynamics*, San Francisco, CA, November 2014.
- [CP10] “Analysis and design trade-offs for power network inter-area oscillations,” *21st International Symposium on Mathematical Theory of Network and Systems*, Groningen, The Netherlands, July 2014.
- [CP11] “An ADMM algorithm for matrix completion of partially known state covariances,” *52th IEEE Conference on Decision and Control and European Control Conference*, Florence, Italy, December 2013.
- [CP12] “Sparse quadratic regulator,” *2013 European Control Conference*, Zurich, Switzerland, July 2013.
- [CP13] “Sparsity-promoting wide-area control of power systems,” *2013 American Control Conference*, Washington, DC, June 2013.
- [CP14] “Model-based analysis of polymer drag reduction in a turbulent channel flow,” *2013 American Control Conference*, Washington, DC, June 2013.
- [CP15] “Sparsity-promoting dynamic mode decomposition,” *SIAM Conference on Application of Dynamical Systems*, Snowbird, UT, May 2013.
- [CP16] “The dynamic mode decomposition: extensions and variations,” *SIAM Conference on Application of Dynamical Systems*, Snowbird, UT, May 2013.
- [CP17] “Sparsity-promoting dynamic mode decomposition,” *65th Annual Meeting of the American Physical Society, Division of Fluid Dynamics*, San Diego, CA, November 2012.
- [CP18] “Identification of sparse communication graphs in consensus networks,” *50th Annual Allerton Conference on Communication, Control, and Computing*, Monticello, IL, October 2012.
- [CP19] “On the optimal synchronization of oscillator networks via sparse interconnection graphs,” *2012 American Control Conference*, Montréal, Canada, June 2012.
- [CP20] “Sparse feedback synthesis via the alternating direction method of multipliers,” *2012 American Control Conference*, Montréal, Canada, June 2012.
- [CP21] “Algorithms for leader selection in large dynamical networks: noise-free leaders,” *50th IEEE Conference on Decision and Control and European Control Conference*, Orlando, FL, December 2011.
- [CP22] “Dynamics of inertialess flows of viscoelastic fluids: the role of uncertainty,” *64th Annual Meeting of the American Physical Society, Division of Fluid Dynamics*, Baltimore, MD, November 2011.
- [CP23] “Worst-case amplification of disturbances in inertialess flows of viscoelastic fluids,” *18th IFAC World Congress*, Milano, Italy, September 2011.
- [CP24] “Reproducing second order statistics of turbulent flows using linearized Navier-Stokes equations with forcing,” *63rd Annual Meeting of the American Physical Society, Division of Fluid Dynamics*, Long Beach, CA, November 2010.
- [CP25] “Transient response of velocity fluctuations in inertialess channel flows of viscoelastic fluids,” *2010 American Control Conference*, Baltimore, MD, July 2010.



- [CP26] “On the optimal design of structured feedback gains for interconnected systems,” *48th IEEE Conference on Decision and Control*, Shanghai, China, December 2009.
- [CP27] “Transient growth without inertia,” *62nd Annual Meeting of the American Physical Society, Division of Fluid Dynamics*, Minneapolis, MN, November 2009.
- [CP28] “Synthesis of  $H_2$  optimal static structured controllers: primal and dual formulations,” *47th Annual Allerton Conference on Communication, Control, and Computing*, Monticello, IL, September 2009.
- [CP29] “Variance amplification in channel flows of strongly elastic polymer solutions,” *2009 American Control Conference*, Saint Louis, MO, June 2009.
- [CP30] “Input-output analysis of the 2D/3C model in channel flows of viscoelastic fluids,” *47th IEEE Conference on Decision and Control*, Cancun, Mexico, December 2008.
- [CP31] “On the state-space design of optimal controllers for distributed systems with finite communication speed,” *47th IEEE Conference on Decision and Control*, Cancun, Mexico, December 2008.
- [CP32] “Nonmodal energy amplification in channel flows of viscoelastic fluids,” *61th Annual Meeting of the American Physical Society, Division of Fluid Dynamics*, San Antonio, TX, November 2008.
- [CP33] “Remarks on the stability of spatially distributed systems with a cyclic interconnection structure,” *2007 American Control Conference*, New York City, NY, July 2007.
- [CP34] “Control of transition in channel flows by a streamwise traveling wave,” *59th Annual Meeting of the American Physical Society, Division of Fluid Dynamics*, Tampa, FL, November 2006.
- [CP35] “New methods for modeling and control of shear flow turbulence,” *2006 AFOSR Joint Program Review*, Atlanta, GA, August 2006.
- [CP36] “Turbulence suppression in channel flows by streamwise traveling waves,” *2006 Center for Turbulence Research Summer Program*, Stanford University, CA, August 2006.
- [CP37] “Turbulence suppression in channel flows by small amplitude transverse wall oscillations,” *2006 American Control Conference*, Minneapolis, MN, June 2006.
- [CP38] “ $H_2$  norm of linear time-periodic systems: a perturbation analysis,” *2006 American Control Conference*, Minneapolis, MN, June 2006.
- [CP39] “Turbulence suppression in channel flows by small amplitude transverse wall oscillations,” *58th Annual Meeting of the American Physical Society, Division of Fluid Dynamics*, Chicago, IL, November 2005.
- [CP40] “On the optimality of localized distributed controllers,” *2005 American Control Conference*, Portland, OR, June 2005.
- [CP41] “Architecture induced by distributed backstepping design,” *43rd IEEE Conference on Decision and Control*, Paradise Island, Bahamas, December 2004.
- [CP42] “On the ill-posedness of certain vehicular platoon control problems,” *43rd IEEE Conference on Decision and Control*, Paradise Island, Bahamas, December 2004.
- [CP43] “Unstable modes versus non-normal modes in supercritical channel flows,” *2004 American Control Conference*, Boston, MA, June 2004.

- [CP44] "On avoiding saturation in the control of vehicular platoons," *2004 American Control Conference*, Boston, MA, June 2004.
- [CP45] "Control of vehicular platoons: limitations and tradeoffs," *8th Southern California Nonlinear Control Workshop*, Santa Barbara, CA, May 2004.
- [CP46] "Exact computation of frequency responses for a class of infinite dimensional systems," *42nd IEEE Conference on Decision and Control*, Maui, HI, December 2003.
- [CP47] "Lyapunov-based output-feedback distributed control of systems on lattices," *42nd IEEE Conference on Decision and Control*, Maui, HI, December 2003.
- [CP48] "Unstable modes versus non-normal modes in supercritical channel flows," *56th Annual Meeting of the American Physical Society, Division of Fluid Dynamics*, East Rutherford, NJ, November 2003.
- [CP49] "Parametric resonance in spatially distributed systems," *2003 American Control Conference*, Denver, CO, June 2003.
- [CP50] "Lyapunov-based state-feedback distributed control of systems on lattices," *2003 American Control Conference*, Denver, CO, June 2003.
- [CP51] "Frequency domain analysis of the linearized Navier-Stokes equations," *2003 American Control Conference*, Denver, CO, June 2003.
- [CP52] "Lyapunov-based distributed control of systems on lattices," *6th Southern California Nonlinear Control Workshop*, San Diego, CA, May 2003.
- [CP53] "The spatio-temporal frequency responses of the linearized Navier-Stokes equations," *55th Annual Meeting of the American Physical Society, Division of Fluid Dynamics*, Dallas, TX, November 2002.
- [CP54] "Input-output analysis of the linearized Navier-Stokes equations," *4th Southern California Nonlinear Control Workshop*, Santa Barbara, CA, May 2002.
- [CP55] "Nonlinear control of an electrohydraulic velocity servosystem," *2002 American Control Conference*, Anchorage, AL, May 2002.
- [CP56] "Modeling flow statistics using the linearized Navier-Stokes equations," *40th IEEE Conference on Decision and Control*, Orlando, FL, December 2001.
- [CP57] "Drag reduction/enhancement with riblets as parametric resonance," *54th Annual Meeting of the American Physical Society, Division of Fluid Dynamics*, San Diego, CA, November 2001.
- [CP58] "The spatio-temporal impulse response of the linearized Navier-Stokes equations," *2001 American Control Conference*, Arlington, VA, June 2001.
- [CP59] "PWM control of hydraulic cylinder and axial piston hydraulic motor," *5th Triennial International Symposium on Fluid Control, Measurement and Visualization*, Hayama, Japan, September 1997.
- [CP60] "Application of practical straight-line tracking in the process industry," *41th ETRAN Conference*, Zlatibor, Yugoslavia, June 1997.
- [CP61] "Application of practical exponential tracking in fluid transportation industry," *14th International Conference on Material Handling and Warehousing*, Belgrade, Yugoslavia, December 1996.

[CP62] “Stability of linear singular systems on finite time interval under perturbing forces,” *40th ETRAN Conference*, Budva, Yugoslavia, June 1996.

[CP63] “Time continuous control design for linear singular systems on finite time interval,” *40th ETRAN Conference*, Budva, Yugoslavia, June 1996.

## Teaching and Curriculum Development

### Teaching at the University of Southern California

- Graduate courses

EE 510: *Linear Algebra for Engineering* Spring 19

EE 585: *Linear Systems Theory* Fall 17, 18, 19

EE 587: *Nonlinear and Adaptive Control* Spring 18, 20

### Collaborative Efforts and Activities at the University of Southern California

Synchronization of Systems and Control Course Offerings in the Viterbi School of Engineering

Modernization of Control Systems Laboratory

### Teaching at the University of Minnesota

- Graduate courses

EE 8215: *Nonlinear Systems* Spring 13, 14, 16

EE 8235: *Modeling, Dynamics, and Control of Distributed Systems* Spring 07, 09; Fall 11

EE 8250: *Adaptive Control* Fall 07

EE 5940: *Wind Energy Essentials* Fall 10 – 13

EE 5235: *Robust Control System Design* Spring 08

EE 5231: *Linear Systems and Optimal Control* Fall 06, 08, 10, 12, 13

- Undergraduate courses

EE 4233: *State Space Control System Design* Spring 05, 06, 10, 11

EE 4237: *State Space Control Laboratory* Spring 05, 06

EE 4981/4982: *Senior Honors Project* Fall 09 – 13, 15; Spring 10 – 14, 16

EE 4951: *Senior Design Project* Spring 06, 08, 09, 16

EE 3015: *Signals and Systems* (Recitation Sessions) Fall 06 – 13, 16; Spring 10, 13, 16

EE 2002: *Introductory Circuits and Electronics Laboratory* Fall 09

### Curriculum Development at the University of Minnesota

EE 8235: *Modeling, Dynamics, and Control of Distributed Systems* (Graduate)

EE 8250: *Adaptive Control* (Graduate)

### Collaborative Efforts and Activities at the University of Minnesota

Synchronization of Systems and Control Course Offerings in the College of Science and Engineering  
 Modernization of Control Systems Laboratory  
 Development of Wind Energy Essentials Course

## Advising and Mentoring

### Graduate Student Activities

#### Doctoral Student Advisees (Past)

1. Anubhav Dwivedi, University of Minnesota, Aug. 2020.  
 (jointly with Graham Candler and Joseph Nichols)  
 Thesis: *Global input-output analysis of flow instabilities in high-speed compressible flows*  
 Now: *Post-doctoral Fellow, University of Southern California.*
2. Wei Ran, University of Southern California, Aug. 2020.  
 Thesis: *Modeling and analysis of parallel and spatially-evolving wall-bounded shear flows*  
 Now: *Assistant Research Scientist, China Aerodynamics Research and Development Center.*
3. Gokul Hariharan, University of Minnesota, April 2020. (jointly with Satish Kumar)  
 Thesis: *Transition to elastic turbulence in channel flows*  
 Now: *Post-doctoral Fellow, University of Southern California.*
4. Sepideh Hassan-Moghaddam, University of Southern California, Oct. 2019.  
 Thesis: *Analysis, design, and optimization of large-scale networks of dynamical systems*  
 Now: *Data and Applied Scientist, Microsoft.*
5. Neil Dhingra, University of Minnesota, Dec. 2017.  
 Thesis: *Optimization and control of large-scale networked systems*  
 Now: *Business and Program Leader, Orbit Logic.*
6. Armin Zare, University of Minnesota, Dec. 2016.  
 Thesis: *Low-complexity stochastic modeling of wall-bounded shear flows*  
 Now: *Assistant Professor, University of Texas, Dallas.*
7. Xiaofan Wu, University of Minnesota, Dec. 2016.  
 Thesis: *Sparsity-promoting optimal control of power networks*  
 Now: *Research Scientist, Autonomous Systems, Siemens Corporate Technology.*
8. Binh Lieu, University of Minnesota, Aug. 2014.  
 Thesis: *Dynamics and control of Newtonian and viscoelastic fluids*  
 Now: *Touch Hardware Engineer, Apple.*
9. Fu Lin, University of Minnesota, Dec. 2012.  
 Thesis: *Structure identification and optimal design of large-scale networks of dynamical systems*  
 Now: *Senior Research Engineer, Systems Department, United Technologies Research Center.*
10. Rashad Moarref, University of Minnesota, Dec. 2011.  
 Thesis: *Model-based control of transitional and turbulent wall-bounded shear flows*  
 Now: *Senior Backend Engineer, GumGum.*

#### Doctoral Student Advisees (Current)

### University of Southern California

1. Dongsheng Ding, ECE PhD Student, Sept. 2015 – present.  
Research Area: *Distributed optimization and multi-agent systems*
2. Hesameddin Mohammadi, ECE PhD Student, Aug. 2017 – present.  
Research Area: *Nonconvex control, inference, and optimization problems*
3. Samantha Samuelson, ECE PhD Student, Jan. 2019 – present.  
Research Area: *Reinforcement learning and data-driven optimal control*
4. Ibrahim Ozaslan, ECE PhD Student, Aug. 2020 – present.  
Research Area: *Optimization and data science.*

#### Doctoral Defense Committee Member (University of Southern California)

- |   |            |
|---|------------|
| 1. Andrew Chavarin, Aerospace and Mechanical Engineering    | Oct. 2020  |
| 2. Hristina Milojevic, Aerospace and Mechanical Engineering | Oct. 2020  |
| 3. Omid Sani, Electrical and Computer Engineering           | Aug. 2020  |
| 4. Daniel Hagen, Biomedical Engineering                     | June 2020  |
| 5. Ying Chen, Aerospace and Mechanical Engineering          | July 2019  |
| 6. Xiaohan Wei, Electrical and Computer Engineering         | June 2019  |
| 7. Maher Nouiehed, Industrial and Systems Engineering       | May 2019   |
| 8. Eduardo Pavez, Electrical and Computer Engineering       | April 2019 |
| 9. Sanmukh Rao Kuppannagari, Electrical Engineering         | June 2018  |

#### Doctoral Defense Committee Member (University of Minnesota)

- |  |            |
|--|------------|
| 1. Nathaniel Hildebrand, Aerospace Engineering and Mechanics     | Oct. 2018  |
| 2. Jinah Jeun, Aerospace Engineering and Mechanics               | May 2018   |
| 3. Joseph Brock, Aerospace Engineering and Mechanics             | Dec. 2016  |
| 4. Igor Melnyk, Computer Science and Engineering                 | June 2016  |
| 5. Yongxin Chen, Mechanical Engineering                          | May 2016   |
| 6. Jennifer Annoni, Aerospace Engineering and Mechanics          | May 2016   |
| 7. Derek Dinzl, Aerospace Engineering and Mechanics              | Feb. 2016  |
| 8. Julien Marck, Civil Engineering                               | Dec. 2015  |
| 9. Yongsoon Yoon, Mechanical Engineering                         | Sept. 2015 |
| 10. Joshua Vander Hook, Computer Science and Engineering         | Sept. 2015 |
| 11. Claudia Patricia Moreno, Aerospace Engineering and Mechanics | May 2015   |
| 12. Madeline Schrier, Mathematics                                | May 2015   |
| 13. Subhrajit Roychowdhury, Electrical and Computer Engineering  | April 2015 |
| 14. Paul Freeman, Aerospace Engineering and Mechanics            | Nov. 2014  |
| 15. Hamid Mokhtarzadeh, Aerospace Engineering and Mechanics      | Sept. 2014 |
| 16. Meisam Razaviyayn, Electrical and Computer Engineering       | May 2014   |
| 17. Govind Saraswat, Electrical and Computer Engineering         | Jan. 2014  |
| 18. Deepak Adhikari, Aerospace Engineering and Mechanics         | Dec. 2013  |
| 19. Venkat Durbha, Mechanical Engineering                        | Dec. 2013  |

20. Dimitrios Georgis, Chemical Engineering and Materials Science Nov. 2013
21. Lipeng Ning, Electrical and Computer Engineering Nov. 2013
22. Yungil Kim, Computer Science and Engineering Sept. 2013
23. Andrei Dorobantu, Aerospace Engineering and Mechanics Sept. 2013
24. Zhefeng Li, Aerospace Engineering and Mechanics June 2013
25. Joseph Mueller, Aerospace Engineering and Mechanics May 2013
26. Hao Jia, Mathematics April 2013
27. Ahmet Arda Ozdemir, Aerospace Engineering and Mechanics Jan. 2013
28. Luc Perneder, Civil Engineering Dec. 2012
29. Pradeep Kumar Gillella, Mechanical Engineering Oct. 2012
30. Tanuj Aggarwal, Electrical and Computer Engineering Dec. 2011
31. Brett Hemes, Computer Science and Engineering June 2011
32. Lu Li, Mathematics April 2011
33. Rohit Pandita, Aerospace Engineering and Mechanics Dec. 2010
34. Hullas Sehgal, Electrical and Computer Engineering Mar. 2010
35. Antoine Choffrut, Mathematics May 2009
36. Shahrouz Mir Takyar, Electrical and Computer Engineering Oct. 2008
37. Nazish Hoda, Chemical Engineering and Materials Science Apr. 2008
38. Michalis Kontovourkis, Mathematics May 2007
39. Gerald Mtatifikolo, Electrical and Computer Engineering May 2007
40. Michael Baldea, Chemical Engineering and Materials Science July 2006

#### Doctoral Defense Committee Member (External)

1. Bala Kameshwar Poolla, ETH Zürich, Switzerland Jan. 2019
2. Marcello Colombino, ETH Zürich, Switzerland July 2016
3. Haotian Zhang, University of Waterloo, Canada July 2016
4. Alexandre Depouhon, Université de Liège, Belgium June 2014
5. Daria Madjidian, Lund University, Lund, Sweden June 2014
6. Aleksandar Haber, Delft University of Technology, Delft, Netherlands Feb. 2014
7. James Ng, University of Alberta, Edmonton, Canada May 2013
8. Milan Milovanovic, Norwegian University of Science and Technology, Trondheim May 2013
9. Justin Rice, Delft University of Technology, Delft, Netherlands Sept. 2010

#### Master's Student Advisees

1. Prashanth Bharadwaj Sivaraman, MSEE Student, Sept. 2015 – July 2016.
2. Harshad Deshmane, MSEE Student, Sept. 2012 – July 2014.
3. Mayur Hanumant Borate, MSEE Student, Sept. 2012 – Dec. 2013.
4. Eric Dahlberg, MSEE Student, Sept. 2010 – May 2012.
5. Xiaofan Wu, MSEE Student, Sept. 2010 – May 2012.
6. Quresh Sutarwala, MSEE Student, Sept. 2010 – May 2012.
7. Harini Jambunathan, MSEE Student, Sept. 2009 – May 2011.

8. Meng Wang, MSEE Student, Sept. 2006 – Oct. 2010.
9. Jicheng Xia, MSEE Student, Sept. 2006 – Oct. 2010.
10. Matt Oehrlein, MSEE Student, Sept. 2008 – July 2010.
11. Sri Dhanush Kakara, MSEE Student, Sept. 2008 – May 2010.

### Post-doctoral Fellows Supervised

#### University of Southern California

1. Dr. Anubhav Dwivedi, Aug. 2020 – present.  
Focus: *Transition to turbulence in hypersonic flows*
2. Dr. Gokul Hariharan, April 2020 – present.  
Focus: *Theory and techniques for modeling and control of Newtonian and viscoelastic fluids*
3. Dr. Armin Zare, Feb. 2017 – July 2019.  
Now: *Assistant Professor, Mechanical Engineering, University of Texas, Dallas.*

#### University of Minnesota

4. Dr. Fu Lin, Jan. 2013 – Aug. 2013.  
Now: *Senior Research Engineer, Systems Department, United Technologies Research Center.*
5. Dr. Makan Fardad, Aug. 2006 – June 2008.  
Now: *Associate Professor, Electrical Engineering and Computer Science, Syracuse University.*

### Undergraduate Student Activities

#### Research Experience for Undergraduates Advising

1. Tianchen Ji, Xi'an Jiaotong University, Shaanxi, China, Summer 2018.
2. Sergio Castro, University of Minnesota, Summer 2015.
3. Thanh Phuc Huynh, University of Minnesota, Fall 2013.
4. David Zoltowski, Michigan State University, Summer 2013.
5. Jingyuan Miao, University of Minnesota, Summer 2011.
6. Jared Sieling, Gustavus Adolphus College, Summer 2007.

#### Undergraduate Honors Projects Directed

1. Jacob Nordman, Sept. 2015 – May 2016.
2. Tor Anderson, Sept. 2014 – May 2015.
3. Victor Purba, Sept. 2013 – May 2014.
4. Thanh Phuc Huynh, Sept. 2012 – May 2013.
5. Jingyuan Miao, Sept. 2011 – May 2012.
6. Brett Paulsen, Sept. 2010 – May 2011.
7. Eric Dahlberg, Sept. 2009 – May 2010.

### Visiting Scholars Hosted

1. Katie Fitch, PhD Student, Princeton University, Oct. 27 – 31, 2015.
2. Marcello Colombino, PhD Student, ETH Zürich, Oct. 1 – Nov. 26, 2015.
3. Nikolai Matni, PhD Student, Caltech, Oct. 4 – 10, 2014.

4. Prof. Peter J. Schmid, Laboratoire d'Hydrodynamique (LadHyX), Ecole Polytechnique, France, Aug. 25 – 28, 2013.
5. Prof. Luca Brandt, Royal Institute of Technology, Sweden, Jan. 27 – Feb. 3, 2009.

## Awards, Honors, and Recognition of my Students and Postdocs

### Makan Fardad

- National Science Foundation CAREER Award, 2018.

### Rashad Moarref

- Invited Participant, Center for Turbulence Research Summer Program, Stanford University, 2010.
- Best Presentation in Session Award, American Control Conference, Baltimore, MD, 2010.
- Student Participation Grant Award, NSF-CMMI Research and Innovation Conference, Atlanta, GA, 2010.
- Finalist, Best Student Paper Award, American Control Conference, New York City, NY, 2007.
- 3M Science and Technology Fellowship, 2007.
- Graduate Fellowship, Electrical and Computer Engineering, University of Minnesota, 2007.

### Fu Lin

- Travel Scholarship, Electrical and Computer Engineering, University of Minnesota, 2010.

### Binh Lieu

- Doctoral Dissertation Fellowship, University of Minnesota, 2011 – 2012.
- Finalist, Minnesota Architectural Foundation Thomas F. Ellerbe Scholarship, 2012.
- Invited Participant, Center for Turbulence Research Summer Program, Stanford University, 2012.
- Fellowship, E-CAero Workshop on “Fast Methods in Scientific Computing”, Montestigliano, Italy, 2012.
- Travel Scholarship, Electrical and Computer Engineering, University of Minnesota, 2012.
- Travel Scholarship, University of Minnesota College of Community Scholars, 2011.
- Finalist, Best Poster Presentation Award, Minnesota Supercomputing Institute 25th Anniversary Research Exhibition, 2010.

### Neil Dhingra

- Best Presentation in Session Award, American Control Conference, Boston, MA, 2016.
- Doctoral Dissertation Fellowship, University of Minnesota, 2015 – 2016.
- MnDRIVE Outreach Fellowship, University of Minnesota, 2014.
- Harriet G. Jenkins Pre-Doctoral Fellowship, NASA, 2011 – 2014.

### Armin Zare

- Doctoral Dissertation Fellowship, University of Minnesota, 2015 – 2016.



- Travel Scholarship, 2015 Research School on Fluid Dynamics: Topics in Turbulence, Burgers Program for Fluid Dynamics, University of Maryland, 2015.
- Invited Participant, Center for Turbulence Research Summer Program, Stanford University, 2014, 2016.
- Finalist, Best Student Paper Award, American Control Conference, Portland, OR, 2014.
- Travel Scholarship, Electrical and Computer Engineering, University of Minnesota, 2012.
- Graduate Fellowship, Electrical and Computer Engineering, University of Minnesota, 2010.

### **Xiaofan Wu**

- Travel Scholarship, Los Alamos National Laboratory's Grid Science Winter School and Conference, 2015.

### **Sepideh Hassan-Moghaddam**

- Rising Stars in EECS, 2018.
- Ming Hsieh Institute PhD Scholar, 2018-2019.
- 3M Science and Technology Fellowship, 2013.

### **Hesameddin Mohammadi**

- Ming Hsieh Institute PhD Scholar, 2020-2021.

### **David Zoltowski**

- The Churchill Scholarship, 2015.
- The Barry Goldwater Scholarship, 2014.

## **Professional Service Activities**

### **Guest Editor**

Special Issue on Analysis, Control and Optimization of Energy System Networks IEEE Transactions on Control of Network Systems	2018 – 2019
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### **Associate Editor**

IEEE Transactions on Control of Network Systems	2017 – 2020
SIAM Journal on Control and Optimization	2014 – 2017
20th IFAC World Congress	2020
Conference Editorial Board, IEEE Control Systems Society	2006 – 2010

### **Associate Editor at Large**

American Control Conference	2019
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### **External Affairs Committee Chair**

American Physical Society, Division of Fluid Dynamics	Jan. 2017 – Jan. 2018
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**External Affairs Committee Vice Chair**

American Physical Society, Division of Fluid Dynamics Jan. 2016 – Jan. 2017

**External Affairs Committee Member**

American Physical Society, Division of Fluid Dynamics Jan. 2015 – Jan. 2019

**Technical Committee Member**

Committee on Distributed Parameter Systems, IEEE Control Systems Society July 2012 – present

**Steering Committee Member**

Center for Turbulence Research, Stanford University Jan. – July 2012

**Organizing Committee Member**

22nd International Symposium on Mathematical Theory of Networks and Systems, 2016

62nd Annual Meeting of the American Physical Society, Division of Fluid Dynamics, 2009

**Program Vice-Chair**

55th IEEE Conference on Decision and Control, 2016

**Program Committee Member**

59th IEEE Conference on Decision and Control, 2020

57th IEEE Conference on Decision and Control, 2018

5th Midwest Workshop on Control and Game Theory, 2016

4th Midwest Workshop on Control and Game Theory, 2015

53rd IEEE Conference on Decision and Control, 2014

2010 American Control Conference

ConCom 2009, Workshop on Control over Communication Channels

2008 American Control Conference

2008 IEEE International Conference on Control Applications

2006 IEEE International Conference on Robotics and Automation

13th Mediterranean Conference on Control and Automation, 2005

**Workshop Organizer**

36th Southern California Control Workshop, University of Southern California, Los Angeles, CA, May 2019. (jointly with Ashutosh Nayyar and Ketan Savla; workshop web page: <http://csc.usc.edu/socal/s19/>)

Control, Estimation, and Optimization of Interconnected Systems: From Theory to Industrial Applications, joint 44th IEEE Conference on Decision and Control & European Control Conference, Seville, Spain, Dec. 2005. (jointly with Cedric Langbort; workshop web page: [www.umn.edu/~mihailo/cdc-ecc05.html](http://www.umn.edu/~mihailo/cdc-ecc05.html))

**CDC Soccer Cup Organizer**

58th IEEE Conference on Decision and Control, 2nd CDC Soccer Cup, Nice, France, December 2019. (jointly with Jorge Cortes and Magnus Egerstedt)

57th IEEE Conference on Decision and Control, Inaugural CDC Soccer Cup, Miami Beach, FL, December 2018. (jointly with Jorge Cortes and Magnus Egerstedt)

### Panelist

NSF Cyber-Physical Systems Panel, 2019.

NSF Energy, Power, Control, and Networks Panel, 2018.

NSF Civil, Mechanical and Manufacturing Innovation Panel, 2016.

NSF Civil, Mechanical and Manufacturing Innovation Panel, 2014.

NSF Energy, Power and Adaptive Systems Panel, 2013.

NSF Civil, Mechanical and Manufacturing Innovation Panel, 2011.

NSF Cyber-Physical Systems Panel, 2010.

NSF Civil, Mechanical and Manufacturing Innovation Panel, 2009.

NSF Emerging Frontiers in Research and Innovation Panel, 2009.

### Referee

Advanced Research Projects Agency-Energy;  
 Air Force Office of Scientific Research;  
 National Science Foundation;  
 UK's Engineering and Physical Sciences Research Council;  
 Qatar National Research Fund;  
 IEEE Transactions on Automatic Control;  
 IEEE Transactions on Control Systems Technology;  
 IEEE Transactions on Control of Network Systems;  
 SIAM Journal on Control and Optimization;  
 Automatica;  
 Systems and Control Letters;  
 International Journal of Control;  
 International Journal of Robust and Nonlinear Control;  
 European Journal of Control;  
 Control Engineering Practice;  
 Journal of Computational Physics;  
 SIAM Journal on Scientific Computing;  
 SIAM Journal on Matrix Analysis and Applications;  
 IEEE Transactions on Signal Processing;  
 IEEE Transactions on Circuits and Systems;  
 Physical Review Letters;  
 Journal of Fluid Mechanics;  
 Physical Review Fluids;  
 Physics of Fluids;  
 AIAA Journal;  
 Journal of Statistical Physics;  
 Journal of Atmospheric Sciences;

Applied Mechanics Reviews;  
 Computational Statistics and Data Analysis;  
 Experiments in Fluids;  
 International Journal of Heat and Fluid Flow;  
 ASME Journal of Dynamic Systems, Measurement and Control;  
 Journal of Vibration and Control;  
 Vehicle System Dynamics;  
 Optimal Control Applications and Methods;  
 IEEE Conference on Decision and Control;  
 American Control Conference;  
 Annual Conference on Neural Information Processing Systems;  
 IFAC World Congress;  
 IFAC Symposium on Nonlinear Control Systems (NOLCOS);  
 IFAC Workshop on Distributed Estimation and Control in Networked Systems (NecSys);  
 International Symposium on Mathematical Theory of Networks and Systems;  
 European Control Conference;  
 Mediterranean Conference on Control and Automation;  
 IEEE International Conference on Robotics and Automation;  
 IEEE Multi-Conference on Systems and Control;  
 IEEE International Workshop on Signal Processing Advances in Wireless Communications.

### **Competition Judge**

Student Poster Competition, General/Stability Category, 65th Annual Meeting of the American Physical Society Division of Fluid Dynamics, 2012

### **Conference Session Chair**

"CFD: Data-driven Methods", 72nd Annual Meeting of the American Physical Society Division of Fluid Dynamics, 2019

"Optimization Algorithms II", 2019 American Control Conference

"Optimization III", 2018 American Control Conference

"Optimization", 2017 Information Theory and Applications Workshop

"Network Analysis and Control II", 54rd IEEE Conference on Decision and Control, 2015

"Optimization Algorithms II", 2015 American Control Conference

"Flow Control – General", 67th Annual Meeting of the American Physical Society Division of Fluid Dynamics, 2014

"Optimization III", 52th IEEE Conference on Decision and Control, 2013

"Optimization I", 51th IEEE Conference on Decision and Control, 2012

"Control Applications II", 51th IEEE Conference on Decision and Control, 2012

"Turbulent Boundary Layers III: Theory", 65th Annual Meeting of the American Physical Society Division of Fluid Dynamics, 2012

"Optimal Control I", 2012 American Control Conference

"Optimal Control IV", 2011 American Control Conference

"Distributed Parameter Systems II", 2010 American Control Conference

"Estimation and Control of Distributed Parameter Systems II", 2010 American Control Conference

"Nanopositioning", 2009 American Control Conference

"Optimization Theory and Applications", 2008 American Control Conference

"Distributed Parameter Systems IV", 43rd IEEE Conference on Decision and Control, 2004

### Conference Session Co-chair

"Optimization Algorithms IV", 57th IEEE Conference on Decision and Control, 2018

"Modeling and Control of Power Flow for Transient Thermal Systems", Semi-plenary Session, 55th IEEE Conference on Decision and Control, 2016

"Smart Cities As Cyber-Social-Physical Systems", Semi-plenary Session, 55th IEEE Conference on Decision and Control, 2016

"Power Networks and Systems", 2016 American Control Conference

"Optimal Control III", 2015 American Control Conference

"Topics in Decentralized and Distributed Control", 53rd IEEE Conference on Decision and Control, 2014

"Power Network Dynamics and Control", 21st International Symposium on Mathematical Theory of Network and Systems, 2014

"Optimization I", 52th IEEE Conference on Decision and Control, 2013

"Optimization II", 2013 American Control Conference

"Distributed Parameter Systems", 2012 American Control Conference

"Agents and autonomous systems IV", 50th IEEE Conference on Decision and Control, 2011

"Model reduction and control of distributed process systems", 2006 American Control Conference

"Distributed parameter systems III", 2006 American Control Conference

"Control and Optimization of Distributed Processes", 2005 American Control Conference

"Distributed Parameter Systems III", 42nd IEEE Conference on Decision and Control, 2003

## University Service Activities

### Leadership Positions at the University of Southern California

**Founding Director of the Center for Systems and Control.** Viterbi School of Engineering, University of Southern California, Jan. 2017 - present.

**Member of the MHI Advisory Council.** Ming Hsieh Institute, Viterbi School of Engineering, University of Southern California, Jan. 2018 - present.

**Chair of the Faculty Recruiting Subcommittee.** Ming Hsieh Department of Electrical Engineering, University of Southern California, Spring 2018.

**Member of the Appointments, Promotions, and Tenure Executive Committee.** Viterbi School of Engineering, University of Southern California, Aug. 2017 - Aug. 2018.

### Committees at the University of Southern California

**Research Committee.** Viterbi School of Engineering, University of Southern California, Aug. 2019 - present.

**Faculty Recruiting Committee.** Ming Hsieh Department of Electrical and Computer Engineering, University of Southern California, Spring 2020.

**Appointments, Promotions, and Tenure Committee.** Viterbi School of Engineering, University of Southern California, Aug. 2017 - Aug. 2019.

**Committee for Selection of MHI PhD Scholars.** Ming Hsieh Institute, University of Southern California, Sept. 2017.

**Academic Progress Review Committee Member.** Ming Hsieh Department of Electrical Engineering, University of Southern California, Spring 2017.

**Fellowship Committee Member.** Ming Hsieh Department of Electrical Engineering, University of Southern California, Jan. 2017.

### Seminar Organizer at the University of Southern California

**Center for Systems and Control Seminar Series** Aug. 2017 – present.  
<http://csc.usc.edu/seminars/>

### Leadership Positions at the University of Minnesota

**Chair of the Faculty Recruiting Committee.** Department of Electrical and Computer Engineering, University of Minnesota, Aug. 2013 - Aug. 2014.

**Director of Graduate Studies.** PhD Program in Control Science and Dynamical Systems, University of Minnesota, Aug. 2009 – present.

### Committees at the University of Minnesota

**Advisory Committee.** Minnesota Discovery, Research and Innovation Economy (MnDRIVE) Initiative, College of Science and Engineering, University of Minnesota, Sept. 2013 - Jan. 2017.

**Faculty Recruiting Committee.** Department of Electrical and Computer Engineering, University of Minnesota, Aug. 2015 - Aug. 2016.

**Postdoctoral Search Committee.** Institute for Mathematics and its Applications, Jan. 2015.

**Doctoral Fellowship Committee.** University of Minnesota Informatics Institute, Fall 2014.

**Faculty Recruiting Committee.** Minnesota Discovery, Research and Innovation Economy (MnDRIVE) Initiative, College of Science and Engineering, University of Minnesota, Sept. 2013 - Aug. 2014.

**Research Associate Recruiting Committee.** Digital Technology Center, University of Minnesota, Oct. 2013 - Aug. 2014.

**Post-Tenure Review Committee.** Department of Electrical and Computer Engineering, University of Minnesota, Sept. 2013 - present.

**Faculty Recruiting Committee.** Department of Electrical and Computer Engineering, University of Minnesota, Aug. 2011 - Aug. 2013.

**Graduate Committee.** Department of Electrical and Computer Engineering, University of Minnesota, Sept. 2006 - Aug. 2011.

**Consultative Committee.** Department of Electrical and Computer Engineering, University of Minnesota, Sept. 2007 - Aug. 2008; Sept. 2010 - Aug. 2011; Sept. 2011 - Aug. 2012.

### Seminar Coordinator at the University of Minnesota

**MnDRIVE Seminar Series in Control and Robotics** Jan. 2014 – Jan. 2017.  
<http://www.ece.umn.edu/users/mihailo/seminars/>

**Control Science and Dynamical Systems Center Seminar Series** Sept. 2005 – Jan. 2017.  
 (jointly with Murti Salapaka, since Sept. 2008)

## Grants and Contracts

### Current Funding

- "Low-complexity stochastic modeling and control of turbulent flows", *Air Force Office of Scientific Research*, June 15, 2018 – June 14, 2021, PI, \$577,009.
- "The proximal augmented Lagrangian method for distributed and embedded nonsmooth composite optimization", *National Science Foundation*, Aug. 15, 2018 – July 31, 2021, PI, \$360,000.
- "The effect of random roughness on turbulent boundary layers, from first principles", *Office of Naval Research*, Jan. 1, 2017 – Dec. 31, 2021, Co-PI, (Krishnan Mahesh, PI), \$908,751.
- "Distributionally robust control and incentives with safety and risk constraints", *National Science Foundation*, March 15, 2019 – July 31, 2021, PI, \$318,910.

### Past Funding

- "CPS-Synergy – Collaborative research: Dynamic methods of traffic control that impact quality of life in smart cities", *National Science Foundation*, Sept. 15, 2015 – Aug. 31, 2020, Co-PI, (Nikolaos Papanikolopoulos, PI; Brian Scott, John Hourdos, and Stephen Guy, Co-PIs), \$1.2M.
- "Collaborative research: The onset of turbulence in viscoelastic wall-bounded shear flows", *National Science Foundation*, June 15, 2015 – May 31, 2020, PI (Satish Kumar, Co-PI; collaborative research with Johns Hopkins University), \$209,988.
- "Theory and techniques for modeling and control of turbulent shear flows", *Air Force Office of Scientific Research*, Nov. 1, 2015 – Oct. 31, 2019, PI, \$449,945.
- "Sparsity-promoting optimal design of large-scale networks of dynamical systems", *National Science Foundation*, Aug. 15, 2014 – July 31, 2018, PI, \$389,673.
- "Low-complexity stochastic modeling and control of turbulent shear flows", *National Science Foundation*, Aug. 1, 2014 – July 31, 2018, PI (Tryphon Georgiou, Co-PI), \$320,000.
- "Analysis and simulations of the structure and dynamics of transitional shock/boundary layer interactions", *Office of Naval Research*, June 1, 2015 – May 31, 2018, Co-PI, (Graham Candler, PI; Joseph W. Nichols, Co-PI), \$1.063M.
- "Low-complexity stochastic modeling of turbulent flows: coping with big data sets in strongly-coupled dynamical systems", *University of Minnesota Informatics Institute Transdisciplinary Faculty Fellowship*, July 1, 2014 – June 30, 2016, PI, \$75,000.

- "Collaborative Research: Algorithms for design of structured distributed controllers with application to large-scale vehicular formations", *National Science Foundation*, Aug. 15, 2009 – July 31, 2013, PI, \$325,000.
- "CAREER: Enabling methods for modeling and control of transitional and turbulent wall-bounded shear flows", *National Science Foundation*, Mar. 1, 2007 – Feb. 28, 2013, PI, \$400,000.
- "MnDRIVE Seminar Series in Control and Robotics", *University of Minnesota*, Feb. 1, 2014 – Jan. 30, 2016, \$30,000.
- "Improving efficiency of wind turbines by means of model-based flow control", *University of Minnesota Initiative for Renewable Energy and the Environment*, July 1, 2010 – June 30, 2013, PI, \$135,000.
- "An industry/academe consortium for achieving 20% energy from wind by 2030 through cutting-edge research and workforce training", *Department of Energy*, Feb. 1, 2010 – Dec. 31, 2012, Co-PI, \$7.9M.
- "Institute on the Environment Resident Fellowship", *University of Minnesota*, Aug. 2012, PI, \$10,000.
- "Optimization of algal lipid production for human nutrition and bioenergy", *University of Minnesota Futures Grant Program*, July 1, 2009 – June 30, 2011, Co-PI, \$200,000.
- "Advancing transportation research via sensing, control, and visualization", *University of Minnesota Center for Transportation Studies*, Co-PI, March 1, 2011 – June 30, 2011, \$25,000.
- "Transition to elastic turbulence with application to mixing enhancement in microfluidic devices", *University of Minnesota Digital Technology Center*, July 1, 2009 – June 30, 2010, PI, \$61,657.
- "Design of scalable control strategies for large-scale automated highways", *University of Minnesota Grant-in-Aid Program*, Jan. 1, 2009 – June 30, 2010, PI, \$29,346.
- "Model-based sensorless flow control", *University of Minnesota Grant-in-Aid Program*, Jan. 1, 2006 – June 30, 2007, PI, \$23,083.