

# Stanford

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## Sanjay Lall

Professor of Electrical Engineering

### Bio

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#### BIO

Sanjay Lall is Professor of Electrical Engineering in the Information Systems Laboratory and Professor of Aeronautics and Astronautics at Stanford University. He received a B.A. degree in Mathematics with first-class honors in 1990 and a Ph.D. degree in Engineering in 1995, both from the University of Cambridge, England. His research group focuses on algorithms for control, optimization, and machine learning. Before joining Stanford he was a Research Fellow at the California Institute of Technology in the Department of Control and Dynamical Systems, and prior to that he was a NATO Research Fellow at Massachusetts Institute of Technology, in the Laboratory for Information and Decision Systems. He was also a visiting scholar at Lund Institute of Technology in the Department of Automatic Control. He has significant industrial experience applying advanced algorithms to problems including satellite systems, advanced audio systems, Formula 1 racing, the America's cup, cloud services monitoring, and integrated circuit diagnostic systems, in addition to several startup companies. Professor Lall has served as Associate Editor for the journal Automatica, on the steering and program committees of several international conferences, and as a reviewer for the National Science Foundation, DARPA, and the Air Force Office of Scientific Research. He is the author of over 130 peer-refereed publications.

#### ACADEMIC APPOINTMENTS

- Professor, Electrical Engineering
- Member, Bio-X
- Affiliate, Precourt Institute for Energy

#### HONORS AND AWARDS

- Fellow, IEEE (2015)
- O. Hugo Schuck Best Paper Award, American Control Conference (2013)
- George S. Axelby Outstanding Paper Award, IEEE (2007)
- Presidential Early Career Award for Scientists and Engineers, National Science Foundation (2007)
- CAREER Award, National Science Foundation (2006)

#### PROFESSIONAL EDUCATION

- PhD, Cambridge (1995)

#### LINKS

- <http://lall.stanford.edu>: <http://lall.stanford.edu>

## Teaching

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### COURSES

#### 2021-22

- Introduction to Linear Dynamical Systems: CME 263, EE 263 (Aut)
- Introduction to Machine Learning: EE 104 (Spr)

#### 2020-21

- Introduction to Linear Dynamical Systems: CME 263, EE 263 (Aut)
- Introduction to Machine Learning: EE 104 (Spr)

#### 2019-20

- Introduction to Linear Dynamical Systems: CME 263, EE 263 (Aut)
- Introduction to Machine Learning: EE 104 (Spr)

#### 2018-19

- Introduction to Machine Learning: EE 104 (Spr)

### STANFORD ADVISEES

#### Doctoral Dissertation Reader (AC)

Burak Bartan, Adam Dai

#### Master's Program Advisor

Meghana Bharadwaj, Yuxiao Chen, Rushil Goradia, Shashvat Jayakrishnan, Zhichao Sun

#### Doctoral (Program)

Vikranth Dwaracherla, Nick Landolfi

## Publications

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### PUBLICATIONS

- **Shape-Based Approach to Household Electric Load Curve Clustering and Prediction** *IEEE TRANSACTIONS ON SMART GRID*  
Teeraratkul, T., O'Neill, D., Lall, S.  
2018; 9 (5): 5196–5206
- **Sufficient Statistics for Optimal Decentralized Control in System of Systems**  
Nigam, N., Lall, S., Hovareshti, P., Ezra, K., Mockus, L., Tolani, D., Sloan, S., IEEE  
IEEE.2018: 92–95
- **Convexity of Decentralized Controller Synthesis** *IEEE TRANSACTIONS ON AUTOMATIC CONTROL*  
Lessard, L., Lall, S.  
2016; 61 (10): 3122–3127
- **Stability Analysis of Distributed Power Generation With Droop Inverters** *IEEE TRANSACTIONS ON POWER SYSTEMS*  
Chang, C., Gorinevsky, D., Lall, S.  
2015; 30 (6): 3295–3303
- **Optimal Control of Two-Player Systems With Output Feedback** *IEEE TRANSACTIONS ON AUTOMATIC CONTROL*  
Lessard, L., Lall, S.  
2015; 60 (8): 2129–2144
- **Explicit Solutions to Separable Problems in Optimal Cooperative Control** *IEEE TRANSACTIONS ON AUTOMATIC CONTROL*

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- Kim, J., Lall, S.  
2015; 60 (5): 1304-1319
- **Sufficient Statistics for Dynamic Teams**  
Wu, J., Lall, S., IEEE  
IEEE.2015: 5465-70
  - **Weak Sufficient Statistics for Team Decision Problems**  
Lemon, A., Lall, S., IEEE  
IEEE.2015: 5290-5295
  - **An Algebraic Approach to the Control of Decentralized Systems** *IEEE TRANSACTIONS ON CONTROL OF NETWORK SYSTEMS*  
Lessard, L., Lall, S.  
2014; 1 (4): 308-317
  - **Optimal Controller Synthesis for Decentralized Systems Over Graphs via Spectral Factorization** *IEEE TRANSACTIONS ON AUTOMATIC CONTROL*  
Swigart, J., Lall, S.  
2014; 59 (9): 2311-2323
  - **Dynamical and Voltage Profile Stability of Inverter-Connected Distributed Power Generation** *IEEE TRANSACTIONS ON SMART GRID*  
Chang, C., Gorinevsky, D., Lall, S.  
2014; 5 (4): 2093-2105
  - **A Theory of Sufficient Statistics for Teams**  
Wu, J., Lall, S., IEEE  
IEEE.2014: 2628-35
  - **Sufficient Statistics for Multi-Agent Decision Problems**  
Wu, J., Lall, S., IEEE  
IEEE.2014: 467-74
  - **Polynomial Level-Set Method for Polynomial System Reachable Set Estimation** *IEEE TRANSACTIONS ON AUTOMATIC CONTROL*  
Wang, T., Lall, S., West, M.  
2013; 58 (10): 2508-2521
  - **Polynomial level-set method for attractor estimation** *JOURNAL OF THE FRANKLIN INSTITUTE-ENGINEERING AND APPLIED MATHEMATICS*  
Wang, T., Lall, S., West, M.  
2012; 349 (9): 2783-2798
  - **Networked Markov Decision Processes With Delays** *IEEE TRANSACTIONS ON AUTOMATIC CONTROL*  
Adlakha, S., Lall, S., Goldsmith, A.  
2012; 57 (4): 1013-1018
  - **Decentralized Control via Grbner Bases and Variable Elimination** *IEEE TRANSACTIONS ON AUTOMATIC CONTROL*  
Shin, H. S., Lall, S.  
2012; 57 (4): 1030-1035
  - **Optimal Controller Synthesis for the Decentralized Two-Player Problem with Output Feedback** *American Control Conference (ACC)*  
Lessard, L., Lall, S.  
IEEE COMPUTER SOC.2012: 6314-6321
  - **Optimal Cooperative Control of Dynamically Decoupled Systems** *51st IEEE Annual Conference on Decision and Control (CDC)*  
Kim, J., Lall, S., Ryoo, C.  
IEEE.2012: 4852-4857
  - **Frequency Stability for Distributed Generation Connected through Grid-Tie Inverter** *IEEE International Conference on Power System Technology (POWERCON)*  
Glover, E., Chang, C., Gorinevsky, D., Lall, S.  
IEEE.2012

- **Optimal Cooperative Control of Dynamically Decoupled Systems.**  
Kim, J., H., Lall, S., Ryoo, C., K.  
2012
- **Frequency Stability for Distributed Generation Connected through Grid-Tie Inverter.**  
Glover, E., Chang, C., C., Gorinevsky, D., Lall, S.  
2012
- **Separable Optimal Cooperative Control Problems** *American Control Conference (ACC)*  
Kim, J., Lall, S.  
IEEE COMPUTER SOC.2012: 5868–5873
- **Polynomial Method for PLL Controller Optimization** *SENSORS*  
Wang, T., Lall, S., Chiou, T.  
2011; 11 (7): 6575-6592
- **Synthesis for Optimal Two-Player Decentralized Control over TCP Erasure Channels with State Feedback** *50th IEEE Conference of Decision and Control (CDC)/European Control Conference (ECC)*  
Chang, C., Lall, S.  
IEEE.2011: 3824–3829
- **A State-Space Solution to the Two-Player Decentralized Optimal Control Problem.**  
Lessard, L., Lall, S.  
2011
- **Decentralized Control.** *Networked Control Systems. Lecture Notes in Control and Information Sciences*  
Swigart, J., Lall, S.  
2011; 406: 179--201
- **Optimal Controller Synthesis for a Decentralized Two-Player System with Partial Output Feedback** *American Control Conference (ACC)*  
Swigart, J., Lall, S.  
IEEE.2011: 317–323
- **An Explicit Solution for Optimal Two-Player Decentralized Control over TCP Erasure Channels with State Feedback** *American Control Conference (ACC)*  
Chang, C., Lall, S.  
IEEE.2011: 4717–4722
- **Decentralized Robust Control via Quadratically Invariant Model Projection** *American Control Conference (ACC)*  
Kim, J., Lall, S., Merrill, W., Behbahani, A.  
IEEE.2011: 527–532
- **Quadratic Invariance is Necessary and Sufficient for Convexity** *American Control Conference (ACC)*  
Lessard, L., Lall, S.  
IEEE.2011: 5360–5362
- **A Unifying Condition for Separable Two Player Optimal Control Problems** *50th IEEE Conference of Decision and Control (CDC)/European Control Conference (ECC)*  
Kim, J., Lall, S.  
IEEE.2011: 3818–3823
- **Coding Strategies for a Class of Decentralized Control Problems with Limited Communication** *50th IEEE Conference of Decision and Control (CDC)/European Control Conference (ECC)*  
Mirghaderi, R., Lall, S., Goldsmith, A.  
IEEE.2011: 4809–4816
- **Fast Algorithms for Resource Allocation in Wireless Cellular Networks** *IEEE-ACM TRANSACTIONS ON NETWORKING*  
Madan, R., Boyd, S. P., Lall, S.  
2010; 18 (3): 973-984
- **Optimal Synthesis and Explicit State-Space Solution for a Decentralized Two-Player Linear-Quadratic Regulator** *49th IEEE Conference on Decision and Control (CDC)*

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- Swigart, J., Lall, S.  
IEEE.2010: 132–137
- **Decentralized Control** *NETWORKED CONTROL SYSTEMS*  
Swigart, J., Lall, S., Bemporad, A., Heemels, M., Johansson, M.  
2010; 406: 179-201
  - **Distributed Engine Control Design Considerations.**  
Merrill, W., Kim, J., H., Lall, S., Majerus, S., Howe, D., Behbahani, A.  
2010
  - **Convexity of Optimal Control over Networks with Delays and Arbitrary Topology.** *International Journal of Systems, Control and Communications*  
Rotkowitz, M., Cogill, R., Lall, S.  
2010; 2 (1-3): 30–54
  - **An Exact Dynamic Programming Solution for a Decentralized Two-Player Markov Decision Process.**  
Wu, J., Lall, S.  
2010
  - **An Explicit Dynamic Programming Solution for a Decentralized Two-Player Optimal Linear-Quadratic Regulator.**  
Swigart, J., Lall, S.  
2010
  - **An Explicit State-Space Solution for a Decentralized Two-Player Optimal Linear-Quadratic Regulator** *American Control Conference*  
Swigart, J., Lall, S.  
IEEE.2010: 6385–6390
  - **Optimal Decentralized Control of Linear Systems via Groebner Bases and Variable Elimination** *American Control Conference*  
Shin, H. S., Lall, S.  
IEEE.2010: 5608–5613
  - **A Constant Factor Approximation Algorithm for Event-Based Sampling** *Symposium on Systems, Control and Signal Processing held in Honor of Yutaka Yamamoto*  
Cogill, R., Lall, S., Hespanha, J. P.  
SPRINGER-VERLAG BERLIN.2010: 51–60
  - **An Algebraic Framework for Quadratic Invariance** *49th IEEE Conference on Decision and Control (CDC)*  
Lessard, L., Lall, S.  
IEEE.2010: 2698–2703
  - **Nonlinear Youla Parametrization and Information Constraints for Decentralized Control** *American Control Conference*  
Wu, J., Lall, S.  
IEEE.2010: 5614–5619
  - **An Approximate Dynamic Programming Approach to the Dynamic Traveling Repairperson Problem** *49th IEEE Conference on Decision and Control (CDC)*  
Shin, H. S., Lall, S.  
IEEE.2010: 2286–2291
  - **A Dynamic Programming Algorithm for Decentralized Markov Decision Processes with a Broadcast Structure** *49th IEEE Conference on Decision and Control (CDC)*  
Wu, J., Lall, S.  
IEEE.2010: 6143–6148
  - **Internal Quadratic Invariance and Decentralized Control** *American Control Conference*  
Lessard, L., Lall, S.  
IEEE.2010: 5596–5601
  - **Hat Guessing Games and the Use of Coding for Decentralized Control** *49th IEEE Conference on Decision and Control (CDC)*  
Mirghaderi, R., Adlakha, S., Lall, S., Goldsmith, A.  
IEEE.2010: 979–985

- **A Computational Approach for Decentralized Control of Turbine Engines** *49th IEEE Conference on Decision and Control (CDC)*  
Kim, J., Lall, S., Merrill, W., Behbahani, A.  
IEEE.2010: 346–351
- **Analysis of Polynomial Systems With Time Delays via the Sum of Squares Decomposition** *IEEE TRANSACTIONS ON AUTOMATIC CONTROL*  
Papachristodoulou, A., Peet, M. M., Lall, S.  
2009; 54 (5): 1058-1064
- **Spectral Factorization of Non-Classical Information Structures Under Feedback** *American Control Conference 2009*  
Swigart, J., Lall, S.  
IEEE.2009: 457–462
- **Model reduction, optimal prediction, and the Mori-Zwanzig representation of Markov chains** *Joint 48th IEEE Conference on Decision and Control (CDC)/ 28th Chinese Control Conference (CCC)*  
Beck, C. L., Lall, S., Liang, T., West, M.  
IEEE.2009: 3282–3287
- **Reduction of Decentralized Control Problems to Tractable Representations** *Joint 48th IEEE Conference on Decision and Control (CDC)/ 28th Chinese Control Conference (CCC)*  
Lessard, L., Lall, S.  
IEEE.2009: 1621–1626
- **A Graph-Theoretic Approach to Distributed Control over Networks** *Joint 48th IEEE Conference on Decision and Control (CDC)/ 28th Chinese Control Conference (CCC)*  
Swigart, J., Lall, S.  
IEEE.2009: 5409–5414
- **Reduction of Decentralized Control Problems to Tractable Representations.**  
Lessard, L., Lall, S.  
2009
- **Model reduction, optimal prediction, and the Mori-Zwanzig representation of Markov chains.**  
Beck, C., L., Lall, S., Liang, T., West, M.  
2009
- **A Graph-Theoretic Approach to Distributed Control over Networks.**  
Swigart, J., Lall, S.  
2009
- **Time-delayed Decentralized H-infinity Controller Design for Civil Structures: a Homotopy Method through Linear Matrix Inequalities** *American Control Conference 2009*  
Wang, Y., Law, K. H., Lall, S.  
IEEE.2009: 4549–4556
- **POSITIVE FORMS AND STABILITY OF LINEAR TIME-DELAY SYSTEMS** *SIAM JOURNAL ON CONTROL AND OPTIMIZATION*  
Peet, M. M., Papachristodoulou, A., Lall, S.  
2009; 47 (6): 3237-3258
- **Decentralized Team Decision Via Coding** *47th Annual Allerton Conference on Communication, Control, and Computing*  
Adlakha, S., Mirghaderi, S. R., Lall, S., Goldsmith, A.  
IEEE.2009: 151–151
- **Experimental validation of single-iteration multigrid wavefront reconstruction at the Palomar Observatory** *OPTICS LETTERS*  
Lessard, L., MacMynowski, D., West, M., Bouchez, A., Lall, S.  
2008; 33 (18): 2047-2049
- **Testing static equilibrium for legged robots** *IEEE TRANSACTIONS ON ROBOTICS*  
Bretl, T., Lall, S.  
2008; 24 (4): 794-807

- **Structured semidefinite programs for the control of symmetric systems** *AUTOMATICA*  
Cogill, R., Lall, S., Parrilo, P. A.  
2008; 44 (5): 1411-1417
- **Warm-started wavefront reconstruction for adaptive optics** *JOURNAL OF THE OPTICAL SOCIETY OF AMERICA A-OPTICS IMAGE SCIENCE AND VISION*  
Lessard, L., West, M., MacMynowski, D., Lall, S.  
2008; 25 (5): 1147-1155
- **Information State for Markov Decision Processes with Network Delays** *47th IEEE Conference on Decision and Control*  
Adlakha, S., Lall, S., Goldsmith, A.  
IEEE.2008: 3840–3847
- **Dynamic Programming with Non-Classical Information Structures.** *Mathematical Theory of Networks and Systems*  
Swigart, J., Lall, S.  
2008
- **POSITIVE FORMS AND STABILITY OF LINEAR TIME-DELAY SYSTEMS** *SIAM JOURNAL ON CONTROL AND OPTIMIZATION*  
Peet, M. M., Papachristodoulou, A., Lall, S.  
2008; 47 (6): 3237-3258
- **Stochastic Multiscale Approaches to Consensus Problems** *47th IEEE Conference on Decision and Control*  
Kim, J., West, M., Lall, S., Scholte, E., Banaszuk, A.  
IEEE.2008: 5551–5557
- **Nonlinear Phase-Locked Loop Design using Semidefinite Programming** *16th Mediterranean Conference on Control and Automation*  
Wang, T., Chiou, T., Lall, S.  
IEEE.2008: 1047–1052
- **A Bayesian Network Approach to Control of Networked Markov Decision Processes** *46th Annual Allerton Conference on Communication, Control and Computing*  
Adlakha, S., Lall, S., Goldsmith, A.  
IEEE.2008: 446–451
- **Modeling and optimization of transmission schemes in energy-constrained wireless sensor networks** *IEEE-ACM TRANSACTIONS ON NETWORKING*  
Madan, R., Cui, S., Lall, S., Goldsmith, A. J.  
2007; 15 (6): 1359-1372
- **Cross-layer energy and delay optimization in. small-scale sensor networks** *IEEE TRANSACTIONS ON WIRELESS COMMUNICATIONS*  
Cui, S., Madan, R., Goldsmith, A. J., Lall, S.  
2007; 6 (10): 3688-3699
- **Global stability analysis of a nonlinear model of Internet congestion control with delay** *IEEE TRANSACTIONS ON AUTOMATIC CONTROL*  
Peet, M., Lall, S.  
2007; 52 (3): 553-559
- **Optimal control of distributed Markov decision processes with network delays** *46th IEEE Conference on Decision and Control*  
Adlakha, S., Madan, R., Lall, S., Goldsmith, A.  
IEEE.2007: 4804–4810
- **A Constant Factor Approximation Algorithm for Event-Based Sampling.**  
Cogill, R., Lall, S., Hespanha, J.  
2007
- **Affine controller parameterization for decentralized control over Banach spaces** *IEEE TRANSACTIONS ON AUTOMATIC CONTROL*  
Rotkowitz, M., Lall, S.  
2006; 51 (9): 1497-1500
- **Distributed algorithms for maximum lifetime routing in wireless sensor networks** *IEEE GLOBECOM 2004*  
Madan, R., Lall, S.

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IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC.2006: 2185–93

- **An energy-optimal algorithm for neighbor discovery in wireless sensor networks** *2nd Workshop on Modeling and Optimization in Mobile, Ad Hoc and Wireless Networks*  
Madan, R., Lall, S.  
SPRINGER.2006: 317–26
- **Discrete variational Hamiltonian mechanics** *JOURNAL OF PHYSICS A-MATHEMATICAL AND GENERAL*  
Lall, S., West, M.  
2006; 39 (19): 5509-5519
- **A characterization of convex problems in decentralized control** *IEEE TRANSACTIONS ON AUTOMATIC CONTROL*  
Rotkowitz, M., Lall, S.  
2006; 51 (2): 274-286
- **An approximation algorithm for the discrete team decision problem** *SIAM JOURNAL ON CONTROL AND OPTIMIZATION*  
Cogill, R., Lall, S.  
2006; 45 (4): 1359-1368
- **Convexification of Optimal Decentralized Control Without a Stabilizing Controller.**  
Rotkowitz, M., Lall, S.  
2006
- **A Constant Factor Approximation Algorithm for Event-Based Sampling.**  
Cogill, R., Lall, S., Hespanha, J.  
2006
- **A space-time diffusion scheme for peer-to-peer least-squares estimation** *5th International Conference on Informational Processing in Sensor Networks*  
Xiao, L., Boyd, S., Lall, S.  
ASSOC COMPUTING MACHINERY.2006: 168–176
- **An approximate dynamic programming approach to decentralized control of stochastic systems** *Workshop on Control of Uncertain Systems*  
Cogill, R., Rotkowitz, M., Van Roy, B., Lall, S.  
SPRINGER-VERLAG BERLIN.2006: 243–256
- **Backlog analysis of maximal matching switching with speedup** *45th IEEE Conference on Decision and Control*  
Cogill, R., Lall, S.  
IEEE.2006: 1876–1881
- **Suboptimality bounds in stochastic control: A queueing example** *American Control Conference 2006*  
Cogill, R., Lall, S.  
IEEE.2006: 1642–1647
- **Positive forms and stability of linear time-delay systems** *45th IEEE Conference on Decision and Control*  
Peet, M., Papachristodoulou, A., Lall, S.  
IEEE.2006: 187–193
- **A fast and adaptive test of static equilibrium for legged robots** *IEEE International Conference on Robotics and Automation (ICRA)*  
Bretl, T., Lall, S.  
IEEE.2006: 1109–1116
- **Degree bounds for polynomial verification of the matrix cube problem** *45th IEEE Conference on Decision and Control*  
Chen, B., Lall, S.  
IEEE.2006: 4405–4410
- **A characterization of convex problems in decentralized control** *IEEE TRANSACTIONS ON AUTOMATIC CONTROL*  
Rotkowitz, M., Lall, S.  
2005; 50 (12): 1984-1996
- **A simple condition for the convexity of optimal control over networks with delays** *44th IEEE Conference on Decision Control/European Control Conference (CCD-ECC)*



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Rotkowitz, M., Cogill, R., Lall, S.  
IEEE.2005: 6686–6691

- **Cross-Layer Design for Lifetime Maximization in Interference-Limited Wireless Sensor Networks.**  
Madan, R., Cui, S., Lall, S., Goldsmith, A.  
2005
- **A Distributed Algorithm with Linear Convergence for Maximum Lifetime Routing in Wireless Networks.**  
Madan, R., Luo, Z.-Q., Lall, S.  
2005
- **Mixed Integer-Linear Programming for Link Scheduling in Interference-Limited Networks.**  
Madan, R., Cui, S., Lall, S., Goldsmith, A., J.  
2005
- **Polynomial level-set methods for nonlinear dynamical systems analysis.**  
Wang, T., Lall, S., West, M.  
2005
- **Multi-step motion planning for free-climbing robots** *6th International Workshop on Algorithmic Foundations of Robotics*  
Bretl, T., Lall, S., Latombe, J. C., Rock, S.  
SPRINGER-VERLAG BERLIN.2005: 59–74
- **Joint routing, MAC, and link layer optimization in sensor networks with energy constraints** *IEEE International Conference on Communications (ICC 2005)*  
Cui, S. G., Madan, R., Goldsmith, A., Lall, S.  
IEEE.2005: 725–729
- **Tractable fitting with convex polynomials via sum-of-squares** *44th IEEE Conference on Decision Control/European Control Conference (CCD-ECC)*  
Magnani, A., Lall, S., Boyd, S.  
IEEE.2005: 1672–1677
- **A scheme for robust distributed sensor fusion based on average consensus** *4th International Symposium on Information Processing in Sensor Networks*  
Xiao, L., Boyd, S., Lall, S.  
IEEE.2005: 63–70
- **Energy-delay tradeoffs for data collection in TDMA-based sensor networks** *IEEE International Conference on Communications (ICC 2005)*  
Cui, S. G., Madan, R., Goldsmith, A., Lall, S.  
IEEE.2005: 3278–3284
- **Decentralized stochastic decision problems and polynomial optimization** *American Control Conference 2005 (ACC)*  
Cogill, R., Lall, S.  
IEEE.2005: 2709–2714
- **Cross-layer design for lifetime maximization in interference-limited wireless sensor networks** *24th Annual Joint Conference of the IEEE Computer and Communications Societies*  
Madan, R., Cui, S. G., Lall, S., Goldsmith, A.  
IEEE COMPUTER SOC.2005: 1964–1975
- **Constructing Lyapunov-Krasovskii functionals for linear time delay systems** *American Control Conference 2005 (ACC)*  
Papachristodoulou, A., Peet, M., Lall, S.  
IEEE.2005: 2845–2850
- **Control design for topology-independent stability of interconnected systems** *American Control Conference*  
Cogill, R., Lall, S.  
IEEE.2004: 3717–3722
- **Cross-layer Energy Minimization in TDMA-based Sensor Networks.**  
Cui, S., Madan, R., Goldsmith, A., Lall, S.  
2004

- **Constructing Lyapunov Functions for Nonlinear Delay-Differential Equations using Semidefinite Programming.**  
Peet, M., Lall, S.  
2004
- **An Energy-Optimal Algorithm for Neighbor Discovery in Wireless Sensor Networks.**  
Madan, R., Lall, S.  
2004
- **An Approximate Dynamic Programming Approach to Decentralized Control of Stochastic Systems**  
Cogill, R., Rotkowitz, M., Roy, B., Van, Lall, S.  
2004
- **A Distributed Algorithm for Maximum Lifetime Routing in Ad Hoc Wireless Networks.**  
Madan, R., Lall, S.  
2004
- **Multi-Step Motion Planning for Free-Climbing Robots.**  
Bretl, T., Lall, S., Latombe, J., C., Rock, S.  
2004
- **Decentralized Stochastic Decision Problems and Polynomial Optimization.**  
Cogill, R., Lall, S.  
2004
- **Distributed algorithms for maximum lifetime routing in wireless sensor networks** *IEEE Global Telecommunications Conference (GLOBECOM 04)*  
Madan, R., Lall, S.  
IEEE.2004: 748–753
- **Decentralized control subject to communication and propagation delays** *43rd IEEE Conference on Decision and Control*  
Rotkowitz, M., Lall, S.  
IEEE.2004: 4990–4997
- **Control of distributed discrete-time systems on graphs** *American Control Conference*  
Chen, B. D., Lall, S.  
IEEE.2004: 2251–2256
- **On global stability of Internet congestion control** *43rd IEEE Conference on Decision and Control*  
Peet, M., Lall, S.  
IEEE.2004: 1035–1041
- **Topology independent controller design for networked systems** *43rd IEEE Conference on Decision and Control*  
Cogill, R., Lall, S.  
IEEE.2004: 1788–1793
- **On computation of optimal controllers subject to quadratically invariant sparsity constraints** *American Control Conference*  
Rotkowitz, M., Lall, S.  
IEEE.2004: 5659–5664
- **Structure-preserving model reduction for mechanical systems** *Conference on Complexity and Nonlinearity in Physical Systems held in Honor of Alan Newell*  
Lall, S., Krysl, P., Marsden, J. E.  
ELSEVIER SCIENCE BV.2003: 304–18
- **Error-bounds for balanced model-reduction of linear time-varying systems** *IEEE TRANSACTIONS ON AUTOMATIC CONTROL*  
Lall, S., Beck, C.  
2003; 48 (6): 946-956
- **Decentralized control of unstable systems and quadratically invariant information constraints** *42nd IEEE Conference on Decision and Control*  
Rotkowitz, M., Lall, S.  
IEEE.2003: 2865–2871

- **On Structured Semidefinite Programs for the Control of Symmetric Systems.**  
Cogill, R., Lall, S., Parrilo, P., A.  
2003
- **Semidefinite programming relaxations and algebraic optimization in control** *7th European Control Conference*  
Parrilo, P. A., Lall, S.  
LAVOISIER.2003: 307–21
- **Dissipation inequalities for distributed systems on graphs** *42nd IEEE Conference on Decision and Control*  
Chen, B. D., Lall, S.  
IEEE.2003: 3084–3090
- **A subspace approach to balanced truncation for model reduction of nonlinear control systems** *INTERNATIONAL JOURNAL OF ROBUST AND NONLINEAR CONTROL*  
Lall, S., Marsden, J. E., Glavaski, S.  
2002; 12 (6): 519-535
- **Decentralized control information structures preserved under feedback** *41st IEEE Conference on Decision and Control*  
Rotkowitz, M., Lall, S.  
IEEE.2002: 569–575
- **An LMI solution to the robust synthesis problem for multi-rate sampled-data systems** *AUTOMATICA*  
Lall, S., Dullerud, G.  
2001; 37 (12): 1909-1922
- **Dimensional model reduction in non-linear finite element dynamics of solids and structures** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING*  
Krysl, P., Lall, S., Marsden, J. E.  
2001; 51 (4): 479-504
- **Dimensional Model Reduction in Non-Linear Finite Element Dynamics of Solids and Structures.** *International Journal for Numerical Methods in Engineering*  
Krysl, P., Lall, S., Marsden, J., E.  
2001; 51 (4): 479--504
- **A new approach for analysis and synthesis of time-varying systems** *IEEE TRANSACTIONS ON AUTOMATIC CONTROL*  
Dullerud, G. E., Lall, S.  
1999; 44 (8): 1486-1497
- **Asynchronous hybrid systems with jumps - analysis and synthesis methods** *SYSTEMS & CONTROL LETTERS*  
Dullerud, G. E., Lall, S.  
1999; 37 (2): 61-69
- **Empirical Model Reduction of Controlled Nonlinear Systems.**  
Lall, S., Marsden, J., E., Glavaski, S.  
1999
- **Model Reduction of Complex Systems in the Linear-Fractional Framework.**  
Lall, S., Beck, C.  
1999
- **Model Reduction for Analysis of Cascading Failures in Power Systems.**  
Parrilo, P., A., Lall, S., Paganini, F., Verghes, G., C., Lesieutre, B., C., Marsden, J., E.  
1999
- **Asynchronous Hybrid Systems with Jumps -- Analysis and Synthesis Methods.** *Systems and Control Letters*  
Dullerud, G., Lall, S.  
1999; 37 (2): 61--69
- **A New Approach for Analysis and Synthesis of Time-Varying Systems.** *IEEE Transactions on Automatic Control*  
Dullerud, G., Lall, S.

---

1999; 44 (8): 1486--1497

- **Convex L<sub>2</sub> Synthesis for Multidimensional Systems.** *CDC*  
D'Andrea, R., Dullerud, G., Lall, S.  
1998: 1883--1888
- **Guaranteed error bounds for model reduction of linear time-varying systems** *American Control Conference*  
Lall, S., Beck, C., Dullerud, G.  
IEEE.1998: 634--638
- **Convex l(2) synthesis for multidimensional systems** *37th IEEE Conference on Decision and Control*  
D'Andrea, R., Dullerud, G. E., Lall, S.  
IEEE.1998: 1883--1888
- **Control of spatially varying distributed systems** *37th IEEE Conference on Decision and Control*  
Dullerud, G. E., D'Andrea, R., Lall, S. G.  
IEEE.1998: 1889--1893
- **Guaranteed Error Bounds for Model Reduction of Linear Time-Varying Systems.**  
Lall, S., Beck, C., Dullerud, G.  
1998
- **Control of Spatially-Varying Distributed Systems.**  
Dullerud, G., D'Andrea, R., Lall, S.  
1998
- **H-infinity Synthesis for Multi-Rate Hybrid Systems.**  
Lall, S., Dullerud, G.  
1997
- **H-infinity synthesis for hybrid systems with jumps** *1997 American Control Conference*  
Dullerud, G. E., Lall, S. G.  
IEEE.1997: 1672--1676
- **H-infinity synthesis for multi-rate hybrid systems** *36th IEEE Conference on Decision and Control*  
Lall, S. G., Dullerud, G. E.  
IEEE.1997: 2035--2040
- **Analysis and synthesis tools for time-varying systems** *36th IEEE Conference on Decision and Control*  
Dullerud, G. E., Lall, S. G.  
IEEE.1997: 4543--4548
- **H-infinity synthesis for hybrid systems with jumps.**  
Dullerud, G., Lall, S.  
1997
- **Localized Optimal Control of Spatiotemporal Chaos.**  
Grigoriev, R., Lall, S., Dullerud, G.  
1997
- **Analysis and Synthesis Tools for Time-Varying Systems.**  
Dullerud, G., Lall, S.  
1997
- **Quasi-Decentralised Control.**  
Utidjian, H., Maciejowski, J., M., Lall, S.  
1995
- **Robust Performance and Adaptation Using Receding Horizon H-infinity Control of Time Varying Systems.**  
Lall, S., Glover, K.

1995

- **Riccati Differential Inequalities: Suboptimal H-infinity Controllers for Finite Horizon Time-Varying Systems.**

Lall, S., Glover, K.

1995

- **Optimal Discretization of a Continuous-Time Controller.**

Utidjian, H., Maciejowski, J., M., Lall, S.

1995

- **Robust Control Synthesis in the Time Domain.** *Cambridge University*

Lall, S.

1995

- **A Game Theoretic Approach to Moving Horizon Control.** *Advances in Model-Based Predictive Control*

Lall, S., Glover, K.

1994: 131--144

- **Layout Reconstruction of Complex Silicon Chips.** *IEEE Journal of Solid State Circuits*

Blythe, S., Fraboni, B., Lall, S., Ahmed, H., de Riu, U.

1993; 28 (2): 138--145