

MURTI V. SALAPAKA

(April 30, 2026)

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EDUCATION

Indian Institute of Technology, Madras	B.Tech.	Mechanical Engineering	1991
University of California, Santa Barbara	MS	Mechanical Engineering	1993
University of California, Santa Barbara	PhD	Mechanical Engineering	1997

ACADEMIC POSITIONS

1997-2003	Assistant Professor	Electrical and Computer Engineering Dept. Iowa State University
2001-2006	Chair	Control Systems Group Electrical and Computer Engineering Department Iowa State University
2002-2003	Litton's Industries Chair	Electrical and Computer Engineering Dept. Iowa State University
2003-2007	Associate Professor	Electrical Engineering Dept. Iowa State University
2007-2010	Associate Professor	Electrical and Computer Engineering Department University of Minnesota, Minneapolis
2010-present	Professor	Electrical and Computer Engineering Department University of Minnesota, Minneapolis
2013-present	Chair	Vincentine Hermes-Luh Chair in Electrical and Computer Engineering, University of Minnesota Minneapolis
2013-2014	Control Researcher	Google Inc. (via Adecco)
2015-present	Director of Graduate Studies	Electrical and Computer Engineering Department University of Minnesota, Twin-Cities

HONORS, RECOGNITIONS, AND OUTSTANDING ACHIEVEMENTS

- Dean's fellowship for outstanding graduate performance, University of California, Santa Barbara, 1992.
- CAREER Award, 1998, National Science Foundation.
- ISU, Young Engineering Faculty Research Award, 2001.
- Litton Chair, Electrical and Computer Engineering Department, 2002.
- Students Tathagatha De and Abu Sebastian's paper highlighted in Photonics magazine, 2005.
- Thermally Driven Non-contact Atomic Force Microscopy highlighted in Nature, September 22, 2005.
- Student, Deepak Sahoo's paper, selected runnersup at the American Control Conference, 2007.
- Keynote Lecture, "Control and Systems Approaches to Atomic Force Microscopy", International Federation of Automatic Control (IFAC), 17th IFAC World Congress, July 6-11, 2008, Seoul, Korea
- Student, Pranav Agarwal, awarded IBM PhD. fellowship (2009)

- Three papers judged as the best paper in sessions at the American Control Conference, 2011
- Paper judged as the best paper in the session at the American Control Conference, 2012
- Subhrajit Roychowdhury, (student) Doctoral Dissertation Fellowship, 2013-2014
- Plenary Lecture, “Real-time interrogation of material properties at the nanoscale”, New Trends and Challenges in Modeling and Control of Microsystems: From Theoretical Concepts to Implementation, μ Control'12, Besancon, France, May 31st-June 01, 2012.
- Expert Talk: “Real-time probe based quantitative determination of material properties at the nanoscale”, 5th Multifrequency AFM conference, Spain Madrid, June 16th-17th, 2014
- Award of Merit, "Systems Approach to Biomolecular Investigation", Shreyas Bhaban, Subhrajit Roychowdhury, Mingang Li, Thomas Hays and Murti Salapaka, 4th Global Conference for Nano Engineering for Medicine and Biology (NEMB), ASME Minneapolis, April 19 - 22, 2015
- Semi-plenary Lecture, “Reconstruction of interconnectedness in networks of dynamical systems based on passive observations”, Mathematical Theory of Networks and Systems, 2016.
- CPS Lecture: “Learning from Cells to Create Transportation Infrastructure at the Micron Scale”, November 2017
- Arpae Showcase Lecture, “Rapidly Viable Sustained Grid”, Washington, DC, March 14th, 2018
- Aelios Tech. (a Technology to Market effort). related recognitions
 - DOE Cleantech University Prize 2018, 1st Runners up , Midwest Region (<https://www.energy.gov/eere/technology-to-market/articles/aerospec-technologies-win-2018-clean-energy-trust-cleantech>)
 - DOE Cleantech University Prize 2018 Nationals Finalists
 - ACARA Challenge Gold Award Winner, 2018, Institute on the Environment, University of Minnesota (<https://cse.umn.edu/news-release/university-minnesota-announces-2018-acara-challenge-winners/>)
 - MIT Clean Energy Prize, 2018, Finalist (Energy in Developing Economies) link: <http://cep.mit.edu/2018-finalists/>
 - Caltech FLOW Challenge, 2018, Semifinalist
- IEEE Fellow, 2019
- Keynote Lecture, “Reconstruction of Interconnectedness in Networks of Dynamical Systems based on Passive Observations”, 7th International Conference of Control, Dynamic Systems, and Robotics (CDSR'20)

RESEARCH HIGHLIGHTS

CONTROL AND SYSTEM THEORY

- Devised controller synthesis methods where frequency domain, time-domain measures together with performance guarantees on noise rejection can be incorporated seamlessly. The methods devised are accompanied with provable guarantees.
- Devised controller synthesis methods to incorporate structural constraints that can, for example, be posed due to distributed information architectures.
- Released a Matlab based software (with collaborators) which can incorporate multi-objective constraints and structural constraints.
- Relaxed existing analysis results and lessened conservativeness of tests for stability and stability regions based on Lyapunov as well as frequency domain methodologies.
- Developed methods for determining topology of how dynamical processes are related from time-series data.
- Developed methods of identifying dynamical systems in a network with provable guarantees.
- Developed the first distributed stopping criteria for consensus type dynamics over networks

NANOTECHNOLOGY AND NANOSCIENCE

- Pioneered systems viewpoints to scanning probe microscopy that led to insights into the science of nano-interrogation.
- Reported a fundamental limits study where a 0.25Angstrom resolution was achieved. Demonstrated that it possible to maintain the probe within nanometer scale of the matter being studied for more than 30 minutes, using feedback control.
- Invented a new method of atomic force microscope-based imaging, the Transient Force Atomic Force Microscopy. Demonstrated that limitations perceived in resolution and bandwidth can be overcome. This method led to orders improvement in detection of features on material being investigated.
- Pioneered communication systems models and methods for probe based data storage with unprecedented areal densities.
- Reported the first real-time method for determining material properties, elasticity and dissipation, at the nanoscale compatible with topography imaging for soft-matter such as polymers and bio-material.
- Devised strategies for high bandwidth probe based nano-imaging including modern control strategies for nanopositioning.
- Doubled the force-resolution with which optical forces can trap particles using LMI based control design while being able to estimate motion of motor-proteins with better than 8nm resolution.

MOLECULAR BIOLOGY

- Reported a method for detection and estimation of events in single-molecule experiments using dynamic programming and released software (used by independent researchers for analyzing DNA). Released related software.
- Devised a semi-analytical method that significantly reduces the computational burden and is suitable for detection of rare events in the transport of cargo inside cells.
- Determined the mechanical characteristics, for the first time, of full-length utrophin, a molecule relevant to the study of Duchenne Muscular Dystrophy.

GRID OF THE FUTURE

FORMALLY INVITED LECTURES

1. Invited speaker, “Multiobjective Control Synthesis”, Mechanical Engineering Department, Indian Institute of Technology Madras, 1996.
2. Invited speaker, “Stability and sensitivity of periodic orbits in atomic force microscopy” University of California at Santa Barbara, CA, April 3 1998.
3. Invited speaker, “Multiobjective control synthesis”, Aerospace Department, Iowa State University, April 7 1998.
4. Invited speaker, “Stability and sensitivity of periodic orbits in atomic force microscopy”, University of Minnesota, Minneapolis, April 24, 1998.
5. Invited speaker, “Multiobjective H2/l1 control synthesis”, Siena, Italy, June 1998.
6. Invited speaker, “Analysis of periodic orbits in atomic force microscopy”, Mathematical Theory of Networks and Systems, University of Padua, Padua, Italy, July 6-10, 1998.
7. Invited Speaker, “Harmonic Balance tools for AFM”, Mechanical Engineering Department, University of California, Santa Barbara, March 2000.
8. Invited speaker, “Atomic Force Microscopes: A Case Study of MicroElectroMechanical Devices”, Mechanical Engineering Department, University of Illinois, Urbana Champaign, April 20, 2000.
9. Invited speaker, “Global solution to the l1 robust performance problem”, Electrical Engineering Department, University of Illinois, Urbana Champaign, April 21, 2000.
10. Invited Speaker “Ultrafast Tools For Nanotechnology”, DARPA-MOSAIC Workshop, Greenbelt Madison, August 21, 2001.
11. Invited Speaker, “Robust Synthesis in l1: A globally optimal solution”, Electrical Engineering Department, University of California at Los Angeles, January 26, 2001.
12. Invited Speaker, “Ultrafast Tools for Nanotechnology”, Asylum Research Inc., Goleta, California, September 13, 2001.

13. Invited Speaker, "Multiobjective Robust Control: Theory and Applications," Mathematics Department, North Carolina State University, October 26, 2001.
14. Invited Speaker "System Tools Applied to Micro-Cantilever based Devices", Mohammed Dahleh Symposium, Feb 9, 2002, University Of California, Santa Barbara.
15. Invited Speaker: " H_∞ Loopshaping for Nanopositioning", Asylum Research, Santa Barbara, California, October 18, 2002.
16. Invited Poster: "Thermal Noise Based Control of Tip-Sample Separation" DARPA-MOSAIC meeting, Beverly Hills, Renaissance, Los Angeles, California, October 16, 2002.
17. Invited Speaker: "Systems Tools Applied to Micro-cantilever based Devices and Nanotechnology." Mechanical Engineering Department, University of Michigan at Ann Arbor, January 24, 2003.
18. Invited Speaker, NSF Workshop on Nanoscale Systems, Dynamics and Control," Control Theory Applied to Micro-cantilever Based Devices", Adams Mark Hotel, Denver Colorado, June 3, 2003.
19. Invited Speaker "High Bandwidth and Minimally Invasive Micro-cantilever Technology", NSF Workshop on Nanoscale Mechanical Engineering, 4201 Wilson Boulevard, Arlington, VA 22230, June 15-16, 2003.
20. Invited Speaker: "A short course- Microcantilever Technology: A systems approach" Universita degli studi di Firenze, Italy, July 23-24, 2003.
21. Invited: "Possible directions for coding in Transient Signal detection", Ecole Polytechnique Federale De Lausanne, Switzerland, July 27-29, 2003
22. Invited "Multi-objective Robust Control", SAMSI Workshop on Multi-scale Modeling, Raleigh, Durham, North Carolina, Jan 18, 2004.
23. Invited "Multi-objective Robust Control", SAMSI Workshop on Multi-scale Modeling, Raleigh, Durham, North Carolina, Jan 18, 2004.
24. Invited "High-Bandwidth, High Resolution Nano-Interrogation", Electrical Engineering Department, University of British Columbia, Vancouver, Feb. 19, 2004
25. Invited "High-Bandwidth, High Resolution Nano-Interrogation", Electrical and Mechanical Engineering Department, University of California at Santa Barbara, March 5, 2004.
26. Invited "High-Bandwidth, High Resolution Nano-Interrogation", Mechanical Engineering Department, University of California at Santa Diego, March 15, 2004
27. Invited Panelist "Writing a Winning NSF CAREER Proposal", American Control Conference, Boston, Massachusetts, July, 2nd, 2004.
28. Invited Talk, "Static Non-contact and Transient Signal Atomic Force Microscopy", "US-India Workshop on Nanotechnology: Issues in Interdisciplinary Research and Education" organized by National Nanotechnology Infrastructure Network, IISc. Bangalore and US-India Science and Technology Forum, sponsored by NSF, Aug. 12, Bangalore, India.
29. Invited Panelist, "US-India Workshop on Nanotechnology: Issues in Interdisciplinary Research and Education" organized by National Nanotechnology Infrastructure Network, IISc. Bangalore and US-India Science and Technology Forum, sponsored by NSF, Aug. 11-13, 2004, Bangalore, India.
30. Invited Talk, "High-Bandwidth, High Resolution Nano-Interrogation", Coordinated Sciences Lab, Electrical and Computer Engineering Department, University of Illinois at Urbana Champaign, Urbana, October 20, 2004.
31. Invited Talk, "Frequency Analysis of Dynamic Mode Atomic Force Microscopy and Static Non-contact AFM", Workshop on Advanced Dynamic AFM Methods, Tres Cantos, Spain, October 9th, 2005.
32. Invited Talk "High-Bandwidth, High Resolution Nano-Interrogation" National Institute of Measurements and Technologies, Gaithersburg, Maryland, January 21, 2005.
33. Invited Talk "Systems Approach to High Bandwidth Robust Nanopositioning and AFM Imaging" National Institute of Measurements and Technologies, Gaithersburg, Maryland, January 21, 2005.
34. Invited Talk "High-Bandwidth, High Resolution Nano-Interrogation", Electrical and Computer Engineering Department, University of Minnesota, Minneapolis, September 29, 2005.
35. Invited Talk, "Models for real-time use in AFM: A new paradigm", Frontiers in Scanning Probe Microscopy Workshop, Discovery Park, Purdue University, Oct. 4-6, 2006.
36. Invited Talk, "Systems and Control approaches to Nano-interrogation: Unraveling new temporal and spatial regimes", ECE Department, University of Minnesota, Minneapolis, Feb. 18, 2007

37. Invited Talk, "Systems and Control approaches to Nano-interrogation: Unraveling new temporal and spatial regimes", ECE Department, University of Iowa, Iowa, March 29, 2007.
38. Invited Talk "Instrumentation for Biological Imaging and Manipulation at the Molecular Scale", Mechanical, Aerospace and Biological Engineering Department, University of Tennessee, March 06, 2008.
39. Invited Talk: "Instrumentation for biological imaging and manipulation at the molecular scale Design of Medical Devices Conference", Design of Medical Devices Conference, Minneapolis, Minnesota, April 2008.
40. Invited Talk: "Systems and Control approaches to Nano-interrogation: Unraveling new temporal and spatial regimes" Tech. Tune Up workshop, Minneapolis, Minnesota, June 2-4, 2008.
41. KEYNOTE LECTURE, "Control and Systems Approaches to Atomic Force Microscopy", International Federation of Automatic Control (IFAC), 17th IFAC World Congress, July 6-11, 2008, Seoul, Korea
42. Invited Talk, "Dynamic Mode, Probe Based High Density Data Storage: A collaborative effort with IBM, Zurich Research Labs", IEEE Multi-conference on systems and Control, September 4th, San Antonio, Texas, 2008
43. Invited Special Session Talk, "Emerging Research Areas and Methods for Integrated Nanosystems", American Control Conference, June 10th, St. Louis, 2009.
44. Invited Talk, "Instrumentation for Biological Imaging and Manipulation at the Molecular Scale", TCS Innovation Labs, July 7, 2009, Hyderabad India.
45. Invited Talk, "Instrumentation for biological imaging and manipulation at the molecular scale", Indian Institute of Information Technology, July 16, 2009, Hyderabad India.
46. Invitation, Workshop on Dynamics and Control of Micro and Nanoscale Systems, IBM Zurich Research labs, December 2009, Zurich, Switzerland.
47. Invited Talk, "Motor Proteins: Investigation and Modeling", Workshop: Application of Control Theory and Optimization Techniques in BioChemical Pathways, Satellite Workshop of the International Congress of Mathematicians, August 18th, 2010.
48. Invited Talk, "Motor Proteins: Investigation and Modeling", Electrical and Computer Engineering Department, University of Michigan, Ann Arbor, 15th October, 2010
49. Invited Talk, "Towards Quantitative Imaging in Dynamic Mode AFM", Scanning Probe Microscopy for Energy Applications, DOE Workshop, September 15th-17th, 2010.
50. Plenary Lecture "Real-time interrogation of material properties at the nanoscale", New Trends and Challenges in Modeling and Control of Microsystems: From Theoretical Concepts to Implementation, μ Control'12, Besancon, France, May 31st-June 01, 2012
51. Invited Talk, "Real Time Interrogation of Material Properties at the Nanoscale" 2nd Workshop on Dynamics and Control of Micro and Nanoscale Systems, Feb 24th, 2012.
52. Invited Talk, "Feedback Control: An Enabling Technology", Medtronic Inc., May 30th, 2013.
53. Invited Talk, "Control Theory and MicroGrids", Google Inc., June 1st, 2013.
54. Expert Talk: "Real-time probe based quantitative determination of material properties at the nanoscale", 5th Multifrequency AFM conference, Spain Madrid, June 16th-17th, 2014
55. Invited Talk, "Reconstruction of interconnectedness in networks of dynamical systems based on passive observations", Stanford, May 8th, 2014
56. Invited Talk: "Reconstruction of interconnectedness in networks of dynamical systems based on passive observations", University of California, Santa Barbara, April 18th, 2014.
57. Invited Talk, "Multifrequency and multimode based imaging in AFM: A systems theory enabled approach", Asylum Research (Oxford Instruments Company), April 17th, 2014.
58. Invited Talk: "Reconstruction of interconnectedness in networks of dynamical systems based on passive observations", Workshop "Robustness in Identification, Control... and Beyond!", Siena, Italy, September 25-26.
59. Invited talk, "Single molecule pulling experiments on utrophin constructs with AFM," Cytoskeleton Club, UMN, Nov 6th, 2015.
60. Invited Talk: "Manipulation and Interrogation of Matter at the Small Scale Enabled by a Controls and Systems Perspective", Mechanical Science and Engineering department, University of Illinois, Urbana Champaign, Urbana, Illinois, May 5th, 2016.

61. Invited Talk: “Manipulation and Interrogation of Matter at the Small Scale: A Control Systems Perspective”, Indian Institute of Sciences, Aug 19th, 2016.
62. Invited Workshop, “Enabling the Grid of the Future”, Electrical Engineering Department, Indian Institute of Sciences, Aug-11-Aug 19th, 2016.
63. Invited Talk: “A Robust Distributed Framework for Flexible Power Grids”, Network Optimized Distributed Energy Systems (NODES), ARPA-E Workshop, Orlando, Florida, Feb., 2016
64. Invited Talk: “Manipulation and Interrogation of Matter at the Small Scale: A Control Systems Perspective”, Institute for Mathematics and its Applications, University of Minnesota, Twin-Cities, April 11th, 2016.
65. Semi-plenary Lecture, “Reconstruction of interconnectedness in networks of dynamical systems based on passive observations”, Mathematical Theory of Networks and Systems, July 12th, 2016.
66. Invited Talk: “Manipulation and Interrogation of Matter at the Small Scale: A Control Systems Perspective”, Center for Control Science and Technology, Erik Jonsson School of Engineering and Computer Science, University of Texas at Dallas, Oct.10th, 2016.
67. Invited Talk, “Fundamental Limits on Costs of Erasing Memory”, 55th Conference on Decision and Control, Las Vegas, USA, December, 12-14, 2016.
68. Invited Talk, “Manipulation and interrogation of matter at the small scale Enabled by Controls and Systems Perspective”, Boston University, March 31st, 2017.
69. Invited Talk, “Reconstruction of Interconnectedness in Networks of Dynamical Systems based on Passive Observation”, Los Alamos National Lab, Albuquerque, August 17th 2017
70. Invited Talk, “CPS: Synergy: Collaborative Research: Learning from Cells to Create Transportation Infrastructure at the Micron Scale”, Washington DC, November 13th, 2017
71. Invited Talk, “Analysis of Intracellular Transport by Team of Molecular Motors” S Bhaban, S Talukdar, D Materassi, M Salapaka, Fellowship, Complex Systems Society, Lake Como School of Advanced Studies, Como, Italy July 2017.
72. Invited Talk, “A Career in Research in ECE: Graduate School and implications”, MNSU, January 31st, 2018.
73. Invited Talk, “The Interplay of Energetics, Transport and Information Processing: Insights from Studies at Molecular and Nano Scale”, 7th Midwest Workshop on Control and Game Theory, Lansing, Michigan. April 28-29, 2018.
74. Invited Talk, “Rapidly Viable Sustained Grid”, ArpaE Energy Innovation Summit, Gaylord Convention Center, Washington DC, March 13-15, 2018.
75. Invited Talk, “Distributed Stopping Criterion For Ratio Consensus And Identification of Network Structure”, 57th Annual Allerton Conference on Communication, Control, and Computing, 2018
76. Invited Talk, “A Robust Distributed Framework for Flexible Power Grids Enabling the Grid Of the Future”, Advanced Grid Architectures to support scalable DER integration, 2019 IEEE PES General Meeting, Atlanta, Georgia, 2019
77. Invited Talk: “A Robust Distributed Framework for Flexible Power Grids: Enabling the Grid of the Future”, ArpaE NODES Program review, Pasadena, California, February 2019
78. Invited Talk: “A Robust Distributed Framework for Flexible Power Grids: Enabling the Grid of the Future”, ArpaE NODES Program Project Stakeholder Workshop and Demonstration, National Renewable Energy labs, Golden, Colorado, September, 2019
79. Keynote Lecture, “Reconstruction of Interconnectedness in Networks of Dynamical Systems based on Passive Observations”, 7th International Conference of Control, Dynamic Systems, and Robotics (CDSR’20)
80. Invited Talk “Rapidly Viable Sustained Grid”, ArpaE, New Orleans, February, 18-19, 2020
81. Invited Talk” Murti, Salapaka, University of Minnesota, “Reconstruction of Interconnectedness in Networks of Dynamical Systems Based on Passive and Partial Observations,”, University of Michigan, Ann Arbor, October 8th, 2021
82. Invited Talk, “Reconstruction of Interconnectedness in Networks of Dynamical Systems Based on Passive and Partial Observations,” Department of Information Engineering, University of Padova, Italy, September 2021.

83. Invited Talk: “Modeling, Estimation, and Control for Single Molecule Investigation” , Mechanical and Aerospace Engineering Department, Rutgers University, March 3rd, 2023.
84. “Modeling, Estimation, and Control for Single Molecule Investigation”, Tutorial Session, 7th IEEE Conference on Control Technology and Applications (CCTA) August, 2023
85. “Controlling Information Mixing and Optimality for Distributed Decision Making” Invited Talk: 2023, Edge Symposium, GE, September 2023
86. “Topology Reconstruction of Power Networks from Time-Series Data” Invited Talk: 2023, Edge Symposium, GE, September 2023
87. “Advanced Control of Power Systems”, Invited Talk, RTX (Raytheon), January 2023.
88. “Reconstruction of interconnectedness in networks of dynamical systems based on passive and partial observations: connections to Causation,” The 10th Midwest Workshop on Control and Game Theory (MWCGT) April 27th-28th,2024, Evanston IL
89. “Optimal Multi-Microgrid Service Guarantees with Diminishing Power Transfer Rates over Increasing Horizons”. The Seventh Workshop on Autonomous Energy Systems. Golden Colorado. September 5th, 2024
90. Invited Talk, “Cybersecure Power Grid via Online Change Detection”, PSERC Webinar, September 17th 2025
91. Invited Talk: “Resilient Decentralized Control For Networked Microgrids”, Power and Energy Society (PES) General Meeting, 2025
92. Invited Talk: “Machine Learning Enabling Single Molecule Physics” CSE DSI Gen AI workshop at UMN-TC, 2025

EDITORSHIPS OF JOURNALS OR OTHER LEARNED PUBLICATIONS

Associate Editor, Control Editorial Board (2004-2010)
 Associate Editor for IEEE Conference on Decision and Control (2004-2010)
 Associate Editor for American Control Conference (2004-2010)
 Associate Editor for the Control Systems Magazine, (2012-2016)
 Associate Editor at Large for American Control Conference, 2017
 Associate Editor, IEEE Transactions on Control of Network Systems, 2018-2023

GRANTS AND CONTRACTS RECEIVED

1. Digital Instruments
 Equipment Grant
 Multimode Atomic Force Microscope (Installed in NanoDynamics Systems Lab; 1998)
 Investigator: **Murti V. Salapaka (PI)**
 Amount: \$176,000.00
2. National Science Foundation (ECS-9733802)
 Title: (**CAREER**) Modeling, dynamical analysis and control of microcantilever based devices
 Investigator: **Murti V. Salapaka (PI)**
 Amount: \$320,000.00
 Duration: May 1998-May 2003
3. National Science Foundation
 Title: Robust Real-Time System Resource Management Using Feedback
 Investigators: M. Govindarasu, **M. V. Salapaka**, A. K. Somani
 Amount: \$110,000.00
 Duration: Feb. 1, 2001-July 31, 2002.
4. DARPA: MOSAIC
 Title: Maintaining a constant tip-sample separation; subcontract from UCLA
 Investigators **Murti V. Salapaka (PI)**
 Amount: \$178,000 for April 1, 2002-September 30, 2003
5. Asylum Research
 Equipment Grant
 Molecular Force Probe (3D) (Installed in NanoDynamics Systems Lab; 2002)
 Investigator: **Murti V. Salapaka (PI)**

- Amount: \$150,000.00
6. National Science Foundation (CMS-0201516)
 Title: Model Development and Control Design of Broadband Nanopositioners
 Investigators: **Murti V. Salapaka (PI)** and Ralph Smith
 Amount: \$300,000.00
 Duration: May 2002- May 2005
 7. National Science Foundation (ECS-0300463)
 Collaborative Proposal: Integrated parameter and control design
 Investigators: **Murti V. Salapaka (PI)**
 Amount: \$208,713
 Duration: 04/2003-04/2006
 8. National Science Foundation (CMS-0301516)
 Title: Collaborative Proposal: Structured Control Design and Application to Microcantilever Based Imaging
 Investigators: **Murti V. Salapaka (PI)**
 Amount: \$100,000
 Duration: 09/2003-08/2006
 9. National Science Foundation (ECS-0330224)
 Title: Sensors: High Bandwidth and Minimally Invasive Micro-cantilever Sensing Based on Transient Dynamics and Thermal Noise Effects
 Investigators: **Murti V. Salapaka (PI)**
 Amount: \$299,686
 Duration: 09/2003-08/2006
 10. National Science Foundation (ECS-428042)
 Title: Sensors: Sensor Network Design for a secure national electric energy infrastructure
 Investigators: Vijay Vittal, A. Somani, G. Maniamran, **Murti V. Salapaka (co-PI)**, Zhengdao Wang
 Amount: \$400,000 (my share≈\$100,000)
 Duration: 08/2004-08/2007
 11. National Science Foundation (ECS- 0601571)
 Title: Model based Ultrafast high resolution nano-interrogation
 Investigators: **Murti V. Salapaka (PI)**
 Amount : \$209,961.00
 Duration: 04/2006-04/2009
 12. National Science Foundation (CMS-0626171)
 Title: Systems Approach to Dynamic Atomic Force Microscopy
 Investigators: **Murti V. Salapaka (PI)**
 Amount : \$199,387.00
 Duration: 09/2006-08/2009
 13. IBM Zurich Research Labs (#2006_015)
 Title: Joint study to investigate the application of dynamic mode for probe-based data storage system
 Investigators: **Murti V. Salapaka (PI)**
 Amount: \$30,000
 Duration: August 2006-2008
 14. National Science Foundation (ECS- 0802117))
 Title: Dynamic Mode, High Density, Probe Based Data Storage
 Investigators: **Murti V. Salapaka (PI)**
 Amount : \$200,000.00
 Duration: 06/2008-05/2011
 15. IBM Zurich Research Labs (#583940)
 Title: Analysis of Microcantilever with embedded thermal sensor
 Investigators: **Murti V. Salapaka (PI) and IBM**

- Amount: \$20,000
Duration: August 2008-2009
16. National Science Foundation (CMMI- 0900113))
Title: Less Conservative Criteria for Analysis and Synthesis of Nonlinear Systems
Investigators: **Murti V. Salapaka (PI)**
Amount : \$249,900.00
Duration: 07/01/2009-06/30/2012
 17. National Science Foundation (CCF-1116971)
Title: CIF: Small: Collaborative Research: Signal processing for enabling high speed probe based nanoimaging
Investigators: **Murti V. Salapaka (PI)**
Amount : \$224,747
Duration: 07/01/2011-06/30/2014
 18. National Science Foundation (ECCS-1202411)
Title: Enabling Probe Based Nanointerrogation: A systems and controls approach
Investigators: **Murti V. Salapaka (PI) , Greg Haugstad (co-PI)**
Amount : \$434,138
Duration: 09/01/2012-08/31/2016
 19. Google Gift
Title “Topology estimation and control of electrical grids”.
Investigators: **Murti V. Salapaka**
Amount : \$150000
Duration: Unrestricted Gift
 20. National Science Foundation (CMMI- 1462862)
Title: Collaborative Research: Understanding Thermal-Noise-Based Mechanisms for Intracellular Motion, with Application to Engineered Systems
Investigators: **Murti V. Salapaka (PI),**
Amount : \$266,000
Duration: 06/15/2015-05/31/2018
 21. National Science Foundation (CNS 1544721)
Title: CPS: Synergy: Collaborative Research: Learning from cells to create transportation infrastructure at the micron scale
Investigators: **Murti V. Salapaka (Lead PI),** Srinivasa Salapaka (PI) Thomas Hays (co-PI), Tryphon Georgiou (co-PI)
Amount : \$900435.00 (UMN portion \$638,000.00)
Duration: 09/15/2015-08/31/2018
 22. Advanced Research projects Agency-Energy (AR0000701)
Title: A Robust Distributed Framework For Flexible Power Grids
Investigators: **UMN (Lead),** UIUC, UTK, NREL, Dynapower
Amount : \$3.28 M dollars
Duration: 09/16/2015-08/31/2019
 23. Renewable Development Fund (RDF)
Title: Research on Power Electronics and Control: Grid-Interface for Renewables, Storage, and Green Micro-Grids.
Investigators: Ned Mohan (PI), W. Robbins (co-PI), Murti Salapaka (co-PI), Sairaj Dhople (co-PI), Pete Seiler (co-PI).
Amount: \$ 717,360 dollars (my share is a student every year for three years).
Start Date: 05/16
 24. National Science Foundation (CMMI 1727096)
Title: Unveiling Dynamic Relations from Corrupted Data Streams
Investigators: Andrew Lamperski (PI), Murti Salapaka (co-PI)
Amount: \$557,139.00 (my share is 50%).
Start Date: 07/17

25. National Science Foundation (ECCS 1809194)
 Title: Energy Efficiency in Computing Logical Operations: Fundamental Limits with and Without Feedback
 Investigators: Murti Salapaka (PI)
 Amount: \$400,000.00
 Start Date: 08/2018
26. Advanced Research projects Agency-Energy (AR0000701)
 Title: A Robust Distributed Framework For Flexible Power Grids
 Investigators: **UMN (Lead)**, UIUC, UTK, NREL, Dynapower
 Amount : \$3.28 M dollars
 Duration: 09/16/2015-08/31/2019
27. Advanced Research projects Agency-Energy (AR0000701)
 Title: A Robust Distributed Framework For Flexible Power Grids
 Investigators: **UMN (Lead)**, UIUC, NREL
 Amount: 227,000.00
 Status: Granted (this is an extension of the original grant)
28. Advanced Research projects Agency-Energy (DE-AR0001016)
 Title: Rapidly Viable Sustained Grid
 Investigators: **UMN (Lead)**, UIUC, UTK, NREL, Dynapower, UAF
 Amount: \$4.3 M dollars
 Duration: August 15th, 2019-May 31st 2023
29. Muscular Dystrophy Association (MDA)
 Title: Mechanical Characterization of Dystrophin and Utrophin
 Investigators: James Ervasti (PI), Murti Salapaka (co-PI)
 Amount: \$300,000.00
 Start Date: 08/2019
30. National Science Foundation (ECCS 2030096)
 Title: RAPID: COVID-19 Transmission Network Reconstruction from Time-Series Data
 Investigators: Murti Salapaka (PI)
 Amount: \$160,736.00
 Duration:06/15/2020-05/31/2021
31. National Institute of Health
 Title: Cytoskeletal Interactions of Dystrophin
 Investigators: James Ervasti (PI)
 Amount: \$425,000 (\$85,000/year approximately for five years)
 Duration: 9/2020-9/2026
32. National Science Foundation (ECCS 2412435)
 Title: Provably Correct Reconstruction of Dynamical Networks from Finite, Non-Ideal Data Streams
 Investigators: A. Lamperski (PI), Murti Salapaka (co-PI)
 Amount: \$522,014.00
 Duration:08/2023-08/2026(for three years)
33. Department of Energy (DECR0000040)
 Title: CyDERMS (Phase 1): Center for Cybersecurity and Resiliency of DERs and Microgrids-integrated Distribution Systems
 Investigators: Murti Salapaka (PI)
 Amount: \$320,000.00 dollars
 Duration:05/2024-05/2026(for two years with a Phase two which has \$80000.00 based on go/no go)

GRANT REVIEW PANELS (E.G., FOR GOVERNMENTAL AGENCIES, EDUCATIONAL INSTITUTIONS)

1. NSF CAREER Panel for the ECS division (dates withheld)
2. NSF Panel for CMS division
3. Other NSF Panels

POLICY, ADVISORY OR CORPORATE PANELS OR BOARDS

1. Workshop on Nanotechnology, Denver 2003 for NSF
2. ASME panel on nanotechnology. Washington DC, November 2003
3. Invited Panelist, "US-India Workshop on Nanotechnology: Issues in Interdisciplinary Research and Education" organized by National Nanotechnology Infrastructure Network, IISc. Bangalore and US-India Science and Technology Forum, sponsored by NSF, Aug. 11-13,2004, Bangalore, India
4. Committee member to select Hugo Schuck Best paper awards at the American Control Conference, 2004 and 2005
5. Committee member to select Best paper awards at the Control and Decision Conference, 2008
6. Committee member to select Best paper awards at the Control and Decision Conference, 2010
7. Control System Society (CSS) Liaison Representative at Nanotech Council (2008-2012)
8. Registration Chair, American Control Conference, 2014
9. Program Chair, Mathematical Theory of Networks and Systems, 2016

PUBLICATIONS AND CREATIVE WORKS

Doctoral thesis title

Multi-objective Control Synthesis

Chapters in Books

1. M. Khammash^(a), **M.V. Salapaka**, Tim Vanvoorhis, "Robust Synthesis in L₁: A globally optimal Solution" in the book "*Robustness in Identification and Control*, LNCIS, 245, Springer, New York 1999, pp. 318-328.
2. **M.V. Salapaka**^(c), M. Khammash, "Multi-objective MIMO Optimal Control " in the book *Robustness in Identification and Control*, LNCIS, 245, Springer, New York 1999, pp. 306-317.
3. A. Sebastian^(s), S. Salapaka, **M.V. Salapaka**, "Systems Tools for Applied to Microcantilever Based Devices," Multidisciplinary Research in Control: The Mohammed Dahleh Symposium 2002. Eds. L. Giarre' and B. Bamieh, Lecture Notes in Control and Information Sciences N. 289, Springer-Verlag, Berlin, 2003, ISBN 3-540-00917-5
4. S. Salapaka, M. V. Salapaka, "Atomic force Microscopy: Principles and Systems Viewpoint Enabled Methods" in the book *Feedback control of MEMS to Atoms*, Springer, 2012.
5. S Ghosal, M Salapaka, "Model Detection Using Innovations Squared Mismatch Method: Application to Probe Based Data Storage System", *Advances in Robotics and Automatic Control: Reviews*, 2018
6. Salapaka M.V. (2020) L1 Optimal Control. In: Baillieul J., Samad T. (eds) *Encyclopedia of Systems and Control*. Springer, London. https://doi.org/10.1007/978-1-4471-5102-9_100057-1
7. Salapaka M.V. (2020) Control of Optical Tweezers. In: Baillieul J., Samad T. (eds) *Encyclopedia of Systems and Control*. Springer, London. https://doi.org/10.1007/978-1-4471-5102-9_100046-1

Monographs

1. **Murti V. Salapaka**, M. Dahleh, *Multiple Objective Control Synthesis*, LNCIS, Vol. 252, Springer-Verlag, New York 2000, 200 pages.

Articles in Journals

(Published and accepted)

1. V. Ramakrishna^(sa), **M. V. Salapaka**, M. Dahleh, H. Rabitz, and A. Pierce, "Controllability of molecular systems", *Physical Review A*, V51, no. 2:pp. 960-966, Feb 1995.
2. **M. V. Salapaka**^(c), P. Voulgaris, and M. Dahleh, "Controller design to optimize a composite performance measure", *Journal of Optimization Theory and Applications*, V91, no. 1:pp. 91-113, October 1996.
3. **M. V. Salapaka**^(c), P. Voulgaris, and M. Dahleh, "SISO controller design to minimize a positive combination of the l1 and the H2 norms", *Automatica*, V33, no. 3:pp. 387--391, March 1997.
4. **Murti V. Salapaka**, Mohammed Dahleh, and Petros Voulgaris, "Mixed Objective Control Synthesis: Optimal l1/H2 Control" *SIAM J. Control Optim.* 35, 1672 (1997)
5. **M. V. Salapaka**^(c), H. S. Bergh, J. Lai, A. Majumdar, and E. McFarland, "Multimode noise analysis of cantilevers for scanning probe microscopy", *Journal of Applied Physics*, 81, no. 6:pp. 2480-2487, March 1997.
6. **M. V. Salapaka**^(c), M. Dahleh, and P. Voulgaris, "Mimo optimal control design: the interplay of the H2 and the l1 norms", *IEEE Transactions on Automatic Control*, V43, no. 10:pp.1374-1388, October 1998.
7. M. Ashhab^(sc), **M. V. Salapaka**, M. Dahleh, and I. Mezic, "Dynamical analysis and control of micro-cantilevers", *Automatica*, Vol. 35, no. 10, 1663-1670 October 1999
8. M. Ashhab^(sc), **M. V. Salapaka**, M. Dahleh, and I. Mezic, "Melnikov-based dynamical analysis of microcantilevers in scanning probe microscopy", *Nonlinear Dynamics*, 20: (3), pp. 197-220, November 1999.
9. **M. V. Salapaka**^(c), M. Khammash, M. Dahleh, "Solution of MIMO H2/l1 problem without zero interpolation", *SIAM Journal on Optimization and Control*, V37, no. 6, pp.1865-1873.
10. **M.V. Salapaka**^(c), D. Chen, J. Cleveland, "Linearity of amplitude and phase in tapping-mode atomic force microscopy", *Phys. Rev. B.* , V61, no. 2:pp.1106-1115, January 2000.
11. M. Khammash^(a), **M.V. Salapaka**, T. VanVoorhis,"Robust Synthesis in l1: A globally optimal solution", *IEEE Trans. Automatic Control*, Volume: 46 Issue: 11 , Nov. 2001, Page(s): 1744 -1754
12. A. Sebastian^(sc), **M. V. Salapaka**, D. J. Chen, J. P. Cleveland, Harmonic and power balance tools for tapping -mode AFM *Journal of Applied Physics*, June 2001, Vol. 89, Nov. 11, pages. 6473-6480.
13. M. Sridharan^(sc), A. Somani, **M. V. Salapaka**, "Approaches for Capacity and Revenue Optimization in Survivable WDM Networks", *Spl. Issue on Survivable Optical Networks, Journal of High Speed Networks*, August 2001. vol. 10, no. 2, pp. 109 -125,
14. M. Sridharan^(sa) , **M. V. Salapaka**, A. Somani, "A Practical Approach to Operating Survivable WDM Networks", Special Issue on WDM Based Network Architectures, *IEEE Journal on Selected Areas in Communications on WDM-based Network Architectures*. vol. 20, no. 1, January 2002.
15. S. Salapaka^(s), A. Sebastian, J. P. Cleveland and **M. V. Salapaka**, "High Bandwidth Nano-positioner: A Robust Control Approach", *Review of Scientific Instruments*, Vol. 73, no. 9, pp. 3232-3241, 2002.
16. D. Sahoo^(s), A. Sebastian, **M.V. Salapaka**, "Transient Signal based sample-detection in Atomic Force Microscopy", *Applied Physics Letters*, 83(26), pp. 5521-5523, December (2003). (selected for *Vir. J. Nan. Sci. & Tech.*, Volume 9, Issue 1, Imaging Science and Technology).
17. Xin Qi^(s), **M. V. Salapaka**, Petros G. Voulgaris and Mustafa Khammash, "Structured optimal and robust control with multiple criteria: A convex solution", *IEEE Trans. Automatic Control*,49 (10) pp 1623-1640, October 2004.
18. Anil Gannepalli^(s) and Abu Sebastian and Jason Cleveland and **Murti V. Salapaka**, "Thermally driven non-contact atomic force microscopy", *Applied Physics Letters*, 87,(11), 111901, 2005. (selected for *Vir. J. Nan. Sci. & Tech.* Volume 12, Issue 12, Imaging Science and Technology, September 2005)
19. D. R. Sahoo^(s) and A. Sebastian and **M. V. Salapaka**, "Harnessing the transient signals in atomic force microscopy" *International Journal of Robust and Nonlinear Control*, Special Issue on Nanotechnology and Micro-biology, Vol. 15, pp: 805-820, 2005.
20. A.G. Hatch^(c), R.C. Smith, T. De, and **M.V. Salapaka**. "Construction and experimental implementation of a model-based inverse filter to attenuate hysteresis in ferroelectric transducers",

21. R.C. Smith^(c), A.G. Hatch, T. De, **M.V. Salapaka**, R.C.H. del Rosario, and J.K. Raye. "Model development for atomic force microscope stage mechanisms". *SIAM Journal on Applied Mathematics* 66(6), pp. 1998-2026, 2006.
22. Tathagata De^(s), Pranav Agarwal, Deepak R. Sahoo, and **Murti V. Salapaka**, "Real-time detection of probe loss in atomic force microscopy" *Appl. Phys. Lett.* 89, 133119 (2006). (selected for *Vir. J. Nan. Sci. & Tech.* Volume 14, Issue 15, Imaging Science and Technology, October 2006)
23. A. Sebastian^(s), A. Gannepalli, A., **M.V Salapaka.**, "A Review of the Systems Approach to the Analysis of Dynamic-Mode Atomic Force Microscopy," *IEEE Transactions on Control Systems Technology*, , vol.15, no.5, pp.952-959, Sept. 2007.
24. M. Basso^(c), D. Materassi, **M. V. Salapaka**, "Hysteresis Models of Dynamic Mode Atomic Force Microscopes: Analysis and Identification", *Nonlinear Dynamics*, Vol. 54, No 4, pp 297-306, 2008.
25. S. Salapaka^(c) and **M. V. Salapaka**, Scanning Probe Microscopy – A Controls Systems Perspective on Nanointerrogation, *IEEE Control Systems Magazine*, Vol. 28, No. 2, pp. 65-83, 2008.
26. Hullas Sehgal^(s), Tanuj Aggarwal, and **Murti V. Salapaka**, High bandwidth force estimation for optical tweezers, *Appl. Phys. Lett.* 94, 153114, 2009.
27. P. Agarwal^(s), M. V. Salapaka, "Real time estimation of equivalent cantilever parameters in tapping mode atomic force microscopy", *Applied Physics Letters* Vol. 95, 083113, 2009. (selected for *Vir. J. Nan. Sci. & Tech.* Volume 20, Issue 10, Imaging Science and Technology)
28. P. Agarwal^(s), T. De, **M. V. Salapaka**, "Real time reduction of probe-loss using switching gain controller for high speed atomic force microscopy", *Review of Scientific Instruments*, vol. 80, pp. 103701, 2009
29. N. Kumar^(s), P. Agarwal, A. Ramamoorthy and **M. V. Salapaka**, "Maximum-Likelihood Sequence Detector for Dynamic Mode High Density Probe Storage", *IEEE Transactions on Communications*, Vol. 58, Issue 6, pp:1686-1694, 2010
30. P. Agarwal^(s), D. Sahoo, A. Sebastian, H. Pozidis, **M. V. Salapaka**, "Real time models of electrostatically actuated cantilever probes with integrated thermal sensor for nanoscale interrogation", *Journal of Microelectromechanical Systems*, Vol. 19, No. 1, pp: 83-98, 2010
31. T. De^(s), A. M. Chettoor, S. Nettikadan and **M. V. Salapaka**, "Immobilization method of yeast cells for intermittent contact mode imaging using atomic force microscope", *Ultramicroscopy*, Volume 110, Issue 3, Pages 254-258, ISSN 0304-3991, 2010
32. V. Yadav^(s), **M.V. Salapaka**, P. G. Voulgaris, "Architectures for Distributed Controller with Sub-controller Communication Uncertainty" *IEEE Trans. Automatic Control*, Vol. 55, Issue 8, pp. 1765-1780, July 2010.
33. D. Materassi, **M. V. Salapaka**, "A Generalized Zames-Falb Multiplier", *IEEE Trans. Automatic Control*, Vol. 56, no. 6, pp: 1432-1436, June 2011.
34. Tanuj Aggarwal, Hulas Sehgal, **M. V. Salapaka**, "Robust control approach to force estimation in constant position optical tweezers", *Review of Scientific Instruments*, vol: 82,, pp: 115108 (Selected in the *Virtual Journal of Biological Physics Research*, December, 2011)(Selected for *Vir. J. Nan. Sci. & Tech.*, Volume 24, Issue 23, *Micro and Nano Electromechanical Systems*, (MEMS / NEMS), December 5th, 2011).
35. Tanuj Aggarwal, **Murti V. Salapaka**, "Real-time nonlinear correction of back-focal-plane detection in optical tweezers", *Rev. Sci. Instrum.* 81, 123105 (2010); doi:10.1063/1.3520463. (Selected in the *Virtual Journal of Biological Physics Research*, January, 2011)
36. Detection of Steps in Single Molecule Data, Tanuj Aggarwal, Donatello Materassi, Donatello Robert Davison, Thomas Hays, **Murti Salapaka**, *Cellular and Molecular Bioengineering*, 2011, vol:, no:, pp:1-18.
37. D. Materassi, **M. V. Salapaka**, "On the problem of reconstructing an unknown topology via locality properties of the Wiener filter", *IEEE Trans. Automatic Control*, 57(7):1765-1777, 2012.
38. Govind Saraswat, and **Murti V. Salapaka**. "On contribution and detection of higher eigenmodes during dynamic atomic force microscopy." *Applied Physics Letters* 102, no. 17 (2013): 173108-173108.

39. Govind Saraswat, Pranav Agarwal, Greg Haugstad, **Murti V. Salapaka**, "Real-time probe-based quantitative determination of material properties at the nanoscale", *Nanotechnology*, vol: 24, no:26, pp:265706, 2013
40. Naveen Kumar, Aditya Ramamoorthy, **Murti Salapaka**, "Error analysis for ML sequence detection in ISI channels with Gauss Markov Noise", *IEEE Transactions on Signal Processing*, Vol: 61, no. 14, pp. 3647-3652, 2013.
41. Subhrajit Roychowdhury, Tanuj Aggarwal, Srinivasa Salapaka, **Murti V. Salapaka**, "High bandwidth optical force clamp for investigation of molecular motor motion," *Applied Physics Letters*, vol.103, no.15, pp.153703,153703-5, Oct 2013.
42. Materassi, D., Innocenti, G., Giarre, L., **Salapaka, M.**, "Model identification of a network as compressing sensing", *Systems & Control Letters*, vol:62, no:8, pp:664-672, 2013
43. Salapaka, S, Ramamoorthy, Aditya, Salapaka, M, AFM Imaging - Reliable or Not: Validation and Verification of Images in Atomic Force Microscopy, *Control Systems, IEEE*, vol:33, no:6, pp:106-118, 2013.
44. Materassi, Donatello, Roychowdhury, Subhrajit, Hays, Thomas, **Salapaka, Murti**, "An exact approach for studying cargo transport by an ensemble of molecular motors", *BMC biophysics*, vol:6, no:1, pp:14, 2013
45. Roychowdhury, Subhrajit, Govind Saraswat, Srinivasa Salapaka, and **Murti Salapaka**. "On control of transport in Brownian ratchet mechanisms." *Journal of Process Control* 27 (2015): 76-86.
46. Sayan Ghosal and **Murti V. Salapaka**, "Fidelity imaging for atomic force microscopy", *Applied Physics Letters*, 106, 013113-1, January 2015.
47. Ghosal, Sayan, Govind Saraswat, and **Murti Salapaka**. "Model detection with application to probe based data storage." *Automatica* 74 (2016): 171-182.
48. Bhaban, Shreyas, Donatello Materassi, Mingang Li, Thomas Hays, and **Murti Salapaka**. "Interrogating emergent transport properties for molecular motor ensembles: A semi-analytical approach." *PLoS Computational Biol* 12, no. 11 (2016): e1005152.
49. Talukdar, Saurav, Bhaban, Shreyas, **Salapaka, Murti V**, "Memory erasure using time-multiplexed potentials", *Physical Review E*, vol: 95, no: 6, pp: 062121, 2017
50. Ghosal, Sayan, Gannepalli, Anil, **Salapaka, Murti V**, "Toward quantitative estimation of material properties with dynamic mode atomic force microscopy: a comparative study", *Nanotechnology*, vol: 28, no: 32, pp: 325703, 2017
51. Baranwal, M., Askarian, A., Salapaka, S. and Salapaka, M., 2018. A distributed architecture for robust and optimal control of DC microgrids. *IEEE Transactions on Industrial Electronics*, 66(4), pp.3082-3092.
52. Ghosal, Sayan, Pradhan, Sourav, **Salapaka, Murti**, "Note: Design of FPGA based system identification module with application to atomic force microscopy", *Review of Scientific Instruments*, vol: 89, no: 5, pp: 056103, 2018
53. Bhaban, Shreyas, Saurav Talukdar, Mingang Li, Thomas Hays, Peter Seiler, and **Murti Salapaka**. "Single Molecule Studies Enabled by Model-Based Controller Design." *IEEE/ASME Transactions on Mechatronics* 23, no. 4 (2018): 1532-1542.
54. Ghosal, Sayan, **Salapaka, Murti**, "Fidelity measurement on signal detection algorithms with application to AFM imaging", *IEEE Access*, 6, (1), 2018
55. Saurav Talukdar, Shreyas Bhaban, James Melbourne, and **Murti Salapaka**. Analysis of heat dissipation and reliability in information erasure: A Gaussian mixture approach. *Entropy*, 20(10):749, 2018.
56. Rajaganapathy, Sivaraman, Jackie L. McCourt, Sayan Ghosal, Angus Lindsay, Preston M. McCourt, Dawn A. Lowe, James M. Ervasti, and **Murti V. Salapaka**. "Distinct mechanical properties in homologous spectrin-like repeats of utrophin." *Scientific Reports* 9, no. 1 (2019): 5210.
57. Prakash, Mangal, Saurav Talukdar, Sandeep Attree, Vikas Yadav, and **Murti V. Salapaka**. "Distributed Stopping Criterion for Consensus in the Presence of Delays." *IEEE Transactions on Control of Network Systems* (2019).

58. Shrivastava, R., Rai, A., **Salapaka, M.** and Sivaramakrishnan, S., 2019. Stiffness of Cargo–Motor Linkage Tunes Myosin VI Motility and Response to Load. *Biochemistry*, 58(47), pp.4721-4725.
59. Materassi, Donatello, and Murti V. Salapaka. "Signal selection for estimation and identification in networks of dynamic systems: a graphical model approach." *IEEE Transactions on Automatic Control* 65, no. 10 (2019): 4138-4153.
60. Deka, Deepjyoti, Saurav Talukdar, Michael Chertkov, and Murti V. Salapaka. "Graphical models in meshed distribution grids: Topology estimation, change detection & limitations." *IEEE Transactions on Smart Grid* 11, no. 5 (2020): 4299-4310.
61. Talukdar, Saurav, Deepjyoti Deka, Harish Doddi, Donatello Materassi, Michael Chertkov, and **Murti V. Salapaka**. "Physics informed topology learning in networks of linear dynamical systems." *Automatica* 112 (2020): 108705.
62. V. R. Subramanian, A. Lamperski, **M. V. Salapaka**, "Network Structure Identification from Corrupt Data Streams," in *IEEE Transactions on Automatic Control (TAC)*, November 2020, DOI: 10.1109/TAC.2020.3040952.
63. S. Patel, S. Chakraborty, B. Lundstrom, S. Salapaka and **M. V. Salapaka**, "Isochronous Architecture-Based Voltage-Active Power Droop for Multi-Inverter Systems," in *IEEE Transactions on Smart Grid*, 16 November 2020, doi: 10.1109/TSG.2020.3037159.
64. B. Lundstrom, S. Patel and **M. V. Salapaka**, "Distribution Feeder-Scale Fast Frequency Response via Optimal Coordination of Net-load Resources Part I: Solution Design," in *IEEE Transactions on Smart Grid*, 21 October 2020, doi: 10.1109/TSG.2020.3032097.
65. B. Lundstrom, S. Patel and **M. V. Salapaka**, "Distribution Feeder-Scale Fast Frequency Response via Optimal Coordination of Net-load Resources Part II: Large-Scale Demonstration," in *IEEE Transactions on Smart Grid*, 21 October 2020, doi: 10.1109/TSG.2020.3032107
66. B. Lundstrom and **M. Salapaka**, "Optimal Power Hardware-in-the-Loop Interfacing: Applying Modern Control For Design and Verification of High-Accuracy Interfaces," in *IEEE Transactions on Industrial Electronics*, 29 October 2020, doi: 10.1109/TIE.2020.3032918
67. Venkat Ram Subramanian, Andrew Lamperski, **Murti V Salapaka**, "Effects of Data Corruption in Network Identification using Directed Information", *IEEE Transactions on Automatic Control*, 2021, doi: 10.1109/TAC.2021.3093301.
68. Veedu, Mishfad, Doddi Harish, and **Murti V. Salapaka**. "Topology learning of linear dynamical systems with latent nodes using matrix decomposition." *IEEE Transactions on Automatic Control* (2021), doi: 10.1109/TAC.2021.3124979.
69. Deka, Deepjyoti, Doddi Harish, Sidhant Misra, and Murti V. Salapaka. "Tractable learning in under-excited power grids." *IEEE Transactions on Control of Network Systems*, vol: 9 (2) pp: 763-774, DOI: 10.1109/TCNS.2021.3124299 (2022)
70. Rai, Ashim, Rachit Shrivastava, Duha Vang, Michael Ritt, Fredrik Sadler, Shreyas Bhaban, **Murti Salapaka**, and Sivaraj Sivaramakrishnan. "Multimodal regulation of myosin VI ensemble transport by cargo adaptor protein GIPC." *Journal of Biological Chemistry*, 2022, Mar 1;298(3).
71. Shrivastava, Rachit, Sivaraj Sivaramakrishnan, and **Murti V. Salapaka**. "Cargo-motor interaction kinetics regulate myosin VI-based transport." *Biophysical Journal* 121, no. 3 (2022): 402a.
72. Rajaganapathy, Sivaraman, James Melbourne, and **Murti V. Salapaka**. "Change detection using an iterative algorithm with guarantees." *Automatica* 136 (2022): 110075.
73. Melbourne, James, Sourav Talukdar, Shreyas Bhaban, Mokshay Madiman, and **Murti Salapaka**. "The differential entropy of mixtures: New bounds and applications." *IEEE Transactions on Information Theory* vol. 68, no. 4, pp. 2123-2146, April 2022, doi: 10.1109/TIT.2022.3140661).

74. V. Khatana and M. V. Salapaka, "DC-DistADMM :ADMM Algorithm for Constrained Optimization over Directed Graphs," in *IEEE Transactions on Automatic Control*, 2022, doi: 10.1109/TAC.2022.3221856.
75. G. Saraswat, V. Khatana, S. Patel and M. V. Salapaka, "Distributed Finite-Time Termination for Consensus Algorithm in Switching Topologies," in *IEEE Transactions on Network Science and Engineering*, vol. 10, no. 1, pp. 489-499, 1 Jan.-Feb. 2023, doi: 10.1109/TNSE.2022.3216286.
76. Ramirez, Maria Paz, Sivaraman Rajaganapathy, Anthony R. Hagerty, Cailong Hua, Gloria C. Baxter, Joseph Vavra, Wendy R. Gordon, Joseph M. Muretta, Murti V. Salapaka, and James M. Ervasti. "Phosphorylation alters the mechanical stiffness of a model fragment of the dystrophin homologue utrophin." *Journal of Biological Chemistry* 299, no. 2 (2023).
77. S. Chakraborty, S. Patel, G. Saraswat, A. Maqsood and M. V. Salapaka, "Seamless Transition of Critical Infrastructures using Droop Controlled Grid-forming Inverters," in *IEEE Transactions on Industrial Electronics*, doi: 10.1109/TIE.2023.3253946.
78. S. Chakraborty, S. Patel and M. V. Salapaka, " μ -Synthesis-Based Generalized Robust Framework for Grid-Following and Grid-Forming Inverters," in *IEEE Transactions on Power Electronics*, vol. 38, no. 3, pp. 3163-3179, March 2023, doi: 10.1109/TPEL.2022.3226224.
79. Chakraborty, Soham, Jaesang Park, Govind Saraswat, Toby Meyers, Jing Wang, Soumya Tiwari, Vivek Khatana, Atif Maqsood, Apurva Somani, and Murti V. Salapaka. "Emergency Power Supply System for Critical Infrastructures: Design and Large Scale Hardware Demonstration." *IEEE Access* (2023).
80. Veedu, Mishfad Shaikh, and Murti V. Salapaka. "Topology identification under spatially correlated noise." *Automatica* 156 (2023): 111182.
81. J. Melbourne, G. Saraswat, V. Khatana, S. Patel and M. V. Salapaka, "Convex Decreasing Algorithms: Distributed Synthesis and Finite-Time Termination in Higher Dimension," in *IEEE Transactions on Automatic Control*, doi: 10.1109/TAC.2023.3344721.
82. V. Khatana and M. V. Salapaka, "Noise Resilient Distributed Average Consensus Over Directed Graphs," in *IEEE Transactions on Signal and Information Processing over Networks*, vol. 9, pp. 770-785, 2023, doi: 10.1109/TSIPN.2023.3324583.
83. V. Khatana, G. Saraswat, S. Patel and M. V. Salapaka, "GradConsensus: Linearly Convergent Algorithm for Reducing Disagreement in Multi-Agent Optimization," in *IEEE Transactions on Network Science and Engineering*, vol. 11, no. 1, pp. 1251-1264, Jan.-Feb. 2024, doi: 10.1109/TNSE.2023.3321757.
84. S. Chakraborty, M. T. Rana, & M. V. Salapaka. (2024). A Robust Power Hardware-in-the-Loop Interface Under Uncertain Software and Hardware System. *IEEE Transactions on Industrial Electronics*.
85. Hua, C., Vavra, J., Powers, J., Muretta, J.M., Ervasti, J.M. and Salapaka, M.V., 2026. Multiple modes of AFM reveal distinct mechanical properties for dystrophin and utrophin not manifest by small fragments. *Proceedings of the National Academy of Sciences*, 123(3), p.e2511722123.
86. Edlund, Connor, and Murti V. Salapaka. "Orientation control of optically trapped micro-rods using iterative learning control." *Optics Express* 33.19 (2025): 40191-40207.
87. Arnab Dey, Soham Chakraborty, and Murti V. Salapaka. "Topology Change Estimation in Power Distribution Networks: A Machine Learning Approach". *IEEE Transactions on Smart Grid* (Accepted).
88. Sivaraman Rajaganapathy, Cailong Hua, and Murti Salapaka, "Quantifying errors in the Jarzynski estimator" *Physical Review E*, Feb 2026 (Accepted)

Bulletins, Reports, or Conference Proceedings That Have Undergone Stringent Editorial Review by Peers

1. **M. V. Salapaka**^(c), M. Dahleh and P. Voulgaris, “Mixed objective control synthesis: optimal l_1/H_2 control”, Proceedings of the American Control Conference, Vol. 2, pp. 1438-1442, Seattle, Washington, June 1995.
2. **M. V. Salapaka**^(c), P. Voulgaris and M. Dahleh, “Controller design to optimize a composite performance measure”, Proceedings of the IEEE Conference on Decision and Control, Vol.1, pp: 817-22, New Orleans, La. December 1995.
3. **M. V. Salapaka**^(c), P. Voulgaris and M. Dahleh, “ Controller design to minimize a composite measure of the l_1 and the H_2 norms”, Proceedings of the third Mediterranean Symposium on New Directions in Control and Automation”, Vol. 2 pp: 93-100, Cyprus, 1995.
4. **M. V. Salapaka**^(c), M. Dahleh and P. Voulgaris, “MIMO optimal control design: the interplay of the H_2 and the l_1 norms,” Proceedings of the IEEE Conference on Decision and Control, Vol. 1, pp: 3682-3687, New Orleans, La., December 1995.
5. **M. V. Salapaka**^(c), M. Dahleh, A. Vicino, and A. Tesi, “Nominal H_2 performance and l_1 robust performance,” Proceedings of the IEEE Conference on Decision and Control. pp. 4034-4039, Kobe, Japan, December 1996.
6. M. Ashhab^(c), **M. V. Salapaka**, M. Dahleh and I. Mezic., “Control of chaos in atomic force microscopes”, Proceedings of the American Control Conference, Albuquerque, New Mexico June 1997.
7. **M. V. Salapaka**^(c) and M. Dahleh, “ l_1/H_2 control”, Proceedings of the Allerton Conference, Urbana, Illinois, 1997.
8. A. Daniele^(c), T. Nakata, L. Giarre, **M. V. Salapaka**, M. Dahleh , “Robust Identification and Control of Scanning Probe Microscope Scanner”, Proceedings Volume from the IFAC Symposium, Budapest, Hungary, Oxford, UK: Pergamon, 1997. p. 33-8.
9. **M. V. Salapaka**^(c), M. Khammash, and M. Dahleh, “Solution of MIMO H_2/l_1 problem without zero interpolation”, Proceedings of the 36th IEEE Conference on Decision and Control, San-Diego, CA, 1997, pp. 1546-1551.
10. **M. V. Salapaka**^(c), M. Khammash, and M. Dahleh, “Recent progress in mixed objective control synthesis with l_1 and H_2 norms”, Proceedings of the ASME conference, 1998.
11. **M. V. Salapaka**^(c), M. Khammash “Multi-objective MIMO optimal control design without zero interpolation”, Proceedings of the 1998 American Control Conference, Philadelphia, Pennsylvania, June 1998, Vol. 1, pp.660-664.
12. S. Salapaka^(c), **M. V. Salapaka**, M. Dahleh, I.Mezic, “Complex dynamics in repeated impact oscillators,” Proceedings of the 37th IEEE Conference on Decision and Control, Tampa, Florida, December 1998, pp. 2053-2058.
13. M. Khammash^(a), **M. V. Salapaka** , T. Vanvoorhis, “Synthesis of globally optimal controllers in l_1 sing linear relaxation,” Proceedings of the 37th IEEE Conference on Decision and Control, Tampa, Florida, December 1998, pp. 3315-3320.
14. **M. V. Salapaka**^(c), D. J. Chen, J. P. Cleveland, “Stability and sensitivity analysis of periodic orbits in tapping mode atomic force microscopy,” Proceedings of the 37th IEEE Conference on Decision and Control, Tampa, Florida, December 1998, pp. 2047-2052.
15. A. Daniele^(c), S. Salapaka, **M.V. Salapaka**, M. Dahleh “Piezoelectric Scanners for Atomic Force Microscopes: Design of Lateral Sensors, Identification and Control” Proceedings of the American Control Conference, San Diego, California , June 1999, pp. 253-257
16. M. Basso^(c), M. Dahleh, I. Mezic, **M. V. Salapaka**, “Stochastic resonance in atomic force microscopes,” Proceedings of the 1999 American Control Conference, San Diego California.
17. **M. V. Salapaka**^(c), D. J. Chen, J. P. Cleveland, “Harmonic analysis based modeling of tapping mode AFM,” Proceedings of the 1999 American Control Conference, San Diego California.

18. R. Rajaram^(s), **M. V. Salapaka**, M. Basso, M. Dahleh, “Experimental verification of stochastic resonance”, Proceedings of the 2000 American Control Conference, Phoenix, Arizona, 2000.
19. Qi, X^(sa)., M. H. Khammash, and **M. V. Salapaka**, “A new approach to multiple-objective controller synthesis”, Proceedings of the 38th annual allerton conference on communication, control and computing, Allerton, Urbana, Illinois, 2000.
20. Qi, X^(sa)., M. H. Khammash, and **M. V. Salapaka**, “Optimal controller synthesis with multiple objectives”, Proceedings of the 2001 American Control Conference, Arlington VA, 2001, pp: 2730-2735
21. Qi, X^(sa)., M. H. Khammash, and **M. V. Salapaka**,” A Matlab Package for Multiobjective Control Synthesis”, IEEE conference on Decision and Control, 2001, Volume: 4 , 2001 Page(s): 3991 -3996.
22. D. Sahoo^(s), **M. V. Salapaka**, “Constructive control for quantum mechanical systems”, IEEE Conference on Control and Decision Conference, Volume: 2 , 2001 Page(s): 1601 –1606.
23. Salapaka, Srinivasa^(s), A. Sebastian, J. P. Cleveland and **M. V. Salapaka**,” Design, Identification and Control of a fast Nanopositioning Device”, American Control Conference, vol. 3, pages:1966-1971, Anchorage, Alaska, May, 2002.
24. Qi, Xin^(sa), M. Khammash, **M. V. Salapaka**, “Integrated Parameter and Control Design”, American Control Conference, vol. 6, pages: 4888-4893, Anchorage, Alaska, 2002.
25. D. Sahoo^(s), **M. V. Salapaka**, Al-Omari, R. Somani A. Manimaran, G. “ Feedback Control theory for Real-time Scheduling” American Control Conference, col.2, pages: 1254-1259, Anchorage, 2002.
26. Abu Sebastian^(s), **M. V. Salapaka**, “Analysis of Periodic Solutions in Tapping Mode AFM”, IEEE symposium on Mathematical Theory of Networks and Systems, University of Notredame, South Bend, Indiana, August 12, 2002.
27. D. Sahoo^(s), A. Sebastian, **M. V. Salapaka**, “Transient Detection of Atomic Force Microscopy”, Proceedings of the Allerton Conference, Urbana, Illinois, October, 2002.
28. R. Smith^(c), **M. V. Salapaka**.”Model development and control design for high speed nanopositioning”, 41st IEEE Conference on Decision and Control, Las Vegas, Nevada, December 2002.
29. Xin, Qi^(s), M. V. Salapaka, P. Voulgaris, M. Khammash, “Structured optimal control with applications to network flow coordination” Accepted to American Control Conference, 2003.
30. A. Sebastian^(s), **M. V. Salapaka**, J.P. Cleveland,” Robust Control Approach to Atomic Force Microscopy”, 42nd IEEE Conference on Decision and Control, pages 2853-2858, Maui, Hawaii, December 2003
31. Yadav, V.^(s), P. Voulgaris, **M. V. Salapaka**, “Stabilization of nested systems with uncertain subsystem communication channels”, 42nd IEEE Conference on Decision and Control, pages 2853-2858, Maui, Hawaii, December 2003.
32. A. Sebastian^(s), D. Sahoo, **M. V. Salapaka**, “An Observer Based Sample Detection Scheme for Atomic Force Microscopy”, 42nd IEEE Conference on Decision and Control, pages 2132-2137, Maui, Hawaii, December 2003.
33. A. Sebastian^(s), A. Gannepalli, **M. V. Salapaka**,, “Amplitude Phase Dynamics and Fixed Points in Tapping-Mode Atomic Force Microscopy”, pages: 2499-2504, Proceedings of the American Control Conference, Boston, Massachusetts, June 30 - July 2, 2004.
34. A. Gannepalli^(s), A. Sebastian, J. Cleveland, **M. V. Salapaka**,, “Thermal Noise Response Based Control of Tip-Sample Separation in an Atomic Force Microscope” Proceedings of the American Control Conference, Boston, Massachusetts, June 30 - July 2, 2004.
35. V. Yadav.^(s), P. Voulgaris, **M. V. Salapaka**, “Distributed Architectures and Implementations of Observer Based Controllers for Performance Optimization”. Proceedings of the American Control Conference, pp. 4844-4859, Portland, Oregon, June 8-10, 2005.
36. Sahoo, D.R.; De Murti, T.; **Salapaka, V.**, "Observer based imaging methods for Atomic Force Microscopy," Decision and Control, 2005 and 2005 European Control Conference. CDC-ECC '05. 44th IEEE Conference on , vol., no., pp. 1185-1190, 12-15 Dec. 2005
37. Materassi, D.; **Salapaka, M.**; Basso, M., "Harmonic Bounds in Atomic Force Microscopy," Decision and Control, 2005 and 2005 European Control Conference. CDC-ECC '05. 44th IEEE Conference on , vol., no., pp. 8221-8226, 12-15 Dec. 2005
38. Materassi, D.; **Salapaka, M.**; Basso, M., "A less conservative circle criterion," American Control Conference, 2006 , vol., no., pp. 4 pp.-, 14-16 June 2006

39. V. Yadav, P. G. Voulgaris, and **M. V. Salapaka**. "Architectures for Distributed Control for Performance Optimization in Presence of Sub-controller Communication Noise" Proceedings of the IEEE Conference American Control Conference. pp. 626-631 Minneapolis, MN, USA June14-16, 2006.
40. Materassi, D.; **Salapaka, M.V.**; Basso, M., "Identification of Interaction Potentials in Dynamic Mode Atomic Force Microscopy," Decision and Control, 2006 45th IEEE Conference on , vol., no., pp.3702-3705, 13-15 Dec. 2006
41. Deepak R. Sahoo, Pranav Agarwal and **Murti V. Salapaka**, "Transient Force Atomic Force Microscopy: A New Nano-Interrogation Method", Proceedings of the 2007 American Control Conference, New York City, USA, July 11-13, 2007.
42. Yadav, Vikas, and **Murti V. Salapaka**. "Distributed protocol for determining when averaging consensus is reached." In 45th Annual Allerton Conf, pp. 715-720. 2007.
43. Sehgal, Hullas; Aggarwal, Tanuj; **Salapaka, Murti**, "Characterization of Dual Beam Optical Tweezers System Using a Novel Detection Approach," American Control Conference, 2007. ACC '07 , vol., no., pp.4234-4239, 9-13 July 2007
44. Hullas Sehgal; Tathagata De; Saju Nettikadan; **Murti V. Salapaka**, "Micro-manipulation using combined optical tweezers and atomic force microscope", Optical Trapping and Optical Micromanipulation IV. Edited by Dholakia, Kishan; Spalding, Gabriel C.. , Proceedings of the SPIE, Volume 6644, pp. 66441L. September 2007. (Abstract Reviewed; paper published).
45. H. Sehgal, T. Aggarwal, **M. V. Salapaka**, "Systems approach to identification of feedback enhanced optical tweezers", Proceedings of SPIE, Vol. 78, August 2008 (Abstract Reviewed; paper published).
46. Naveen Kumar, Pranav Agarwal, Aditya Ramamoorthy and **Murti V. Salapaka**, "Channel Modeling and Detector Design for Dynamic Mode High Density Probe Storage" 42nd Annual Conf. on Information Sciences and Systems (CISS), pp. 1273-1278, March 2008.
47. Agarwal, P.; Sahoo, D.; Sebastian, A.; Pozidis, H.; **Salapaka, M.V.**, "Modeling and identification of the dynamics of electrostatically actuated microcantilever with integrated thermal sensor," 47th IEEE Conference on Decision and Control, pp.2624-2630, 9-11 Dec. 2008.
48. Makan Fardad, Mihailo R. Jovanović, and **Murti V. Salapaka**, "Damping Mechanisms in Dynamic Mode Atomic Force Microscopy Applications", American Control Conference, 2009, pp. 2271-2277, June 10-12, 2009, St Louis (MO)
49. Donatello Materassi and **Murti V. Salapaka**, "Attraction Domain estimates combining Lyapunov Functions", Proc. of American Control Conference, pp. 4007-4012, June 10-12, 2009, St Louis (MO)
50. Donatello Materassi and **Murti V. Salapaka**, "Less conservative absolute stability criteria using Integral Quadratic Constraints", Proc. of American Control Conference, pp. 113-118, June 10-12, 2009, St Louis (MO)
51. Naveen Kumar, Pranav Agarwal, Aditya Ramamoorthy and **Murti V. Salapaka**, "Maximum likelihood sequence detector for dynamic mode high density probe storage", IEEE GlobeCom, 2009.
52. Donatello Materassi and **Murti V. Salapaka**, "On the problem of reconstructing an unknown topology", Proc. of American Control Conference, pp. 2113--2118, 2010.
53. Tanuj Aggarwal, D. Materassi and **Murti V. Salapaka**, "Detection of Steps in Noisy Biological Systems with Dynamics Compensation", 49th IEEE Conference on Decision and Control, Dec. 2010.
54. Naveen Kumar, Govind Saraswat, Pranav Agarwal, Aditya Ramamoorthy and **Murti V. Salapaka**, "High-speed Nano-imaging using dynamic mode AFM: A MAP detection approach", 44th Asilomar Conference on Signals, Systems and Computers, 2010.
55. Naveen Kumar, Aditya Ramamoorthy and **Murti V. Salapaka**, "Performance evaluation of ML sequence detection in ISI channels with Gauss Markov Noise", IEEE GlobeCom, 2010.
56. Materassi, Donatello; **Salapaka, Murti V.**; Giarre, Laura; , "Relations between structure and estimators in networks of dynamical systems," Decision and Control and European Control Conference (CDC-ECC), 2011 50th IEEE Conference on , vol., no., pp.162-167, 12-15 Dec. 2011
57. Materassi, D.; **Salapaka, M.V.**; , "Causal and non-causal filtering for network reconstruction," American Control Conference (ACC), 2011 , vol., no., pp.4928-4933, June 29 2011-July 1 2011.[Best Presentation Award]
58. Materassi, D.; **Salapaka, M.V.**"A generalized Zames-Falb multiplier," American Control Conference (ACC), 2011, vol., no., pp.1990-1993, June 29 2011-July 1 2011. .[Best Presentation Award]

59. Roychowdhury, S.; Salapaka, S.; **Salapaka, M.V.**; "Maximizing Transport in Open Loop for Flashing Ratchets", American Control Conference (ACC), 2012, June 27-June 29, 2012, Fairmont Queen Elizabeth, Montréal, Canada. [Best Presentation Award]
60. Salapaka, Srinivasa, Rowchowdhury, Subhrajit, **Salapaka, Murti**, Modeling and role of feedback controlled stochastic ratchets in cellular transport, IEEE 51st Annual Conference on Decision and Control (CDC), vol., no., pp:374-379, 2012.
61. Rowchowdhury, Subhrajit, Salapaka, Srinivasa, **Salapaka, Murti**, "Maximizing transport in open loop for flashing ratchets", American Control Conference (ACC), 2012, vol., no., pp:3210-3215, 2012. [Best Presentation Award]
62. Materassi, Donatello, **Salapaka, Murti V**, "Network reconstruction of dynamical polytrees with unobserved nodes", IEEE 51st Annual Conference on Decision and Control (CDC), vol., no., pp:4629-4634, 2012
63. Sayan Ghosal, Govind Saraswat, Aditya Ramamoorthy, **Murtri V. Salapaka**, "Topography detection using innovations mismatch method for high speed and high density dynamic mode AFM", pp:5500-5505, American Control Conference, 2013
64. Govind Saraswat, Pranav Agarwal, **Murtri V Salapaka**, "Multimode and multitone analysis of the dynamic mode operation of the Atomic Force Microscope", American Control Conference, pp:5506-5511, 2013
65. Subhrajit Roychowdhury, Shreyas Bhaban, Srinivasa Salapaka, **Murtri V. Salapaka**, "Design of a Constant Force Clamp and Estimation of Molecular Motor Motion using Modern Control Approach." pp:1525-1530, American Control Conference, 2013
66. Donatello Materassi, **Murtri V. Salapaka**, "Reconstruction of directed acyclic networks of dynamical systems", *American Control Conference (ACC)*, 2013, vol., no., pp:4687-4692, 2013
67. Subhrajit Roychowdhury, Govind Saraswat, **Murtri V. Salapaka**, "Dynamic Programming based approach for optimal transport by flashing ratchet against a load force", IEEE Multi-conference on Systems and Control, 2013.
68. M Wytock, S Salapaka, **M. V. Salapaka**, "Preventing Cascading Failures in Microgrids with One-sided Support Vector Machines", Control and Decision Conference, Los Angeles, CA, 2014
69. S Salapaka, B Johnson, B Lundstrom, S Kim, S Collyer and Murtri Salapaka, "Viability and analysis of implementing only voltage-power droop for parallel inverter systems", Control and Decision Conference, Los Angeles, CA, pp:3246-3251, December 15-17, 2014
70. Materassi, Donatello, and Murtri V. Salapaka. "Notions of Separation in Graphs of Dynamical Systems." In World Congress, vol. 19, no. 1, pp. 2341-2346. 2014.
71. Materassi, Donatello, and Murtri V. Salapaka. "An algorithmic approach for lessening conservativeness of criteria determining absolute stability." Control and Automation (MED), 2015 23th Mediterranean Conference on. IEEE, 2015.
72. Baranwal, Mayank, Srinivasa M. Salapaka, and Murtri V. Salapaka. "Robust decentralized voltage control of dc-dc converters with applications to power sharing and ripple sharing." In American Control Conference (ACC), 2016, pp. 7444-7449. IEEE, 2016.
73. Findeisen, Rolf, Martha A. Grover, Christian Wagner, Michael Maiworm, Ruslan Temirov, F. Stefan Tautz, Murtri V. Salapaka, Srinivasa Salapaka, Richard D. Braatz, and SO Reza Moheimani. "Control on a molecular scale: A perspective." In American Control Conference (ACC), 2016, pp. 3069-3082. IEEE, 2016 (Tutorial paper).
74. Shreyas Bhaban*, Saurav Talukdar, and Murtri Salapaka."Noise Induced Transport at Microscale Enabled by Optical Fields." pp. 5823-5829, American Control Conference (ACC), Boston, July 6-8
75. Materassi, Donatello, and Murtri V. Salapaka. "Graphoid-based methodologies in modeling, analysis, identification and control of networks of dynamic systems." In American Control Conference (ACC), 2016, pp. 4661-4675. IEEE, 2016.
76. Talukdar, Saurav, Shreyas Bhaban, Donatello Materassi, and Murtri Salapaka. "Steady state dynamics of molecular motors reveals load dependent cooperativity." In Decision and Control (CDC), 2016 IEEE 55th Conference on, pp. 3356-3362. IEEE, 2016.
77. Saurav Talukdar, Shreyas Bhaban, Donatello Materassi and Murtri Salapaka."Steady State Distribution of Molecular Motor Ensembles." 22nd Conference on Mathematical Theory of Networks and Systems (MTNS), Minneapolis, 9-11 July 2016.

78. Talukdar, Saurav, Deka, Deepjyoti, Materassi, Donatello, Salapaka, Murti V, "Exact topology reconstruction of radial dynamical systems with applications to distribution system of the power grid", American Control Conference (ACC), 2017, pp: 813 - 818, 2017
79. Talukdar, Saurav, Shreyas Bhaban, and Murti Salapaka. "Beating Landauer's bound by Memory Erasure using Time Multiplexed Potentials." IFAC-PapersOnLine 50, no. 1 (2017): 7645-7650.
80. Talukdar, S., Deka, D., Lundstrom, B., Chertkov, M., & Salapaka, M. V. (2017, May). "Learning exact topology of a loopy power grid from ambient dynamics". In Proceedings of the Eighth International Conference on Future Energy Systems (pp. 222-227). ACM.
81. Naderi, Taher, Donatello Materassi, Giacomo Innocenti, Roberto Genesio, and Murti V. Salapaka. "Revisiting Kalman and Aizerman conjectures." In Decision and Control (CDC), 2017 IEEE 56th Annual Conference on, pp. 523-528. IEEE, 2017.
82. Subramanian, Venkat Ram, Andrew Lamperski, and Murti V. Salapaka. "Network topology identification from corrupt data streams." In Decision and Control (CDC), 2017 IEEE 56th Annual Conference on, pp. 1695-1700. IEEE, 2017.
83. Mayank Baranwal, Alireza Askarian, Srinivasa M. Salapaka, Murti V. Salapaka. "A Robust Scheme for Distributed Control of Power Converters in DC Microgrids with Time-Varying Power Sharing", IEEE ACC 2017
84. Sourav Patel, Sandeep Attree, Saurav Talukdar, Mangal Prakash and Murti V. Salapaka, "Distributed Apportioning in a Network of Energy Resources for providing Ancillary Services". International Conference on Smart Grid Communications (IEEE Smart Grid Comm), Germany, Oct 23-26, 2017, IEEE.
85. Rajaganapathy, Sivaraman, James Melbourne, Tanuj Aggarwal, Rachit Shrivastava, and Murti V. Salapaka. "Learning and Estimation of Single Molecule Behavior." In 2018 Annual American Control Conference (ACC), pp. 5125-5130. IEEE, 2018.
86. Doddi, Harish, Saurav Talukdar, Deepjyoti Deka, and Murti Salapaka. "Data-driven identification of a thermal network in multi-zone building." In IEEE Conference on Decision and Control (CDC), pp. 7302-7307. IEEE, 2018.
87. Subramanian, Venkat Ram, Andrew Lamperski, and Murti V. Salapaka. "Inferring Directed Graphs for Networks from Corrupt Data-Streams." In 2018 IEEE Conference on Decision and Control (CDC), pp. 4493-4498. IEEE, 2018.
88. James Melbourne, Saurav Talukdar, and Murti V Salapaka. Realizing information erasure in finite time. In 2018 IEEE Conference on Decision and Control (CDC), pages 4135–4140. IEEE, 2018.
89. M. Prakash, S. Talukdar, S. Attree, S. Patel and M. V. Salapaka, "Distributed Stopping Criterion for Ratio Consensus," 2018 56th Annual Allerton Conference on Communication, Control, and Computing (Allerton), Monticello, IL, USA, 2018, pp. 131-135. doi: 10.1109/ALLERTON.2018.8635839
90. B. Lundstrom, S. Patel, S. Attree and M. V. Salapaka, "Fast Primary Frequency Response using Coordinated DER and Flexible Loads: Framework and Residential-scale Demonstration," 2018 IEEE Power & Energy Society General Meeting (PESGM), Portland, OR, 2018, pp. 1-5. doi: 10.1109/PESGM.2018.8586166
91. James Melbourne, Saurav Talukdar, Shreyas Bhaban, and Murti V Salapaka. Error bounds on a mixed entropy inequality. In 2018 IEEE International Symposium on Information Theory (ISIT), pages 1973–1977. IEEE, 2018.
92. Talukdar, Saurav, Deepjyoti Deka, Michael Chertkov, and Murti Salapaka. "Topology Learning of Radial Dynamical Systems with Latent Nodes." In 2018 Annual American Control Conference (ACC), pp. 1096-1101. IEEE, 2018.
93. Doddi, Harish, Saurav Talukdar, Deepjyoti Deka, and Murti Salapaka. "Exact Topology Learning in a Network of Cyclostationary Processes." In 2019 American Control Conference (ACC), pp. 4968-4973. IEEE, 2019.
94. Subramanian, Venkat Ram, Andrew Lamperski, and Murti V. Salapaka. "Corruption Detection in Networks of Bi-directional Dynamical Systems." In 2019 IEEE 58th Conference on Decision and Control (CDC), pp. 4545-4550. IEEE, 2019.

95. Melbourne, James, Mokshay Madiman, and Murti V. Salapaka. "Relationships between certain f-divergences." In 2019 57th Annual Allerton Conference on Communication, Control, and Computing (Allerton), pp. 1068-1073. IEEE, 2019.
96. S. Patel, S. Chakraborty, S. Roychowdhury and M. V. Salapaka, "Virtual Impedance Shaping for low voltage Microgrids," 2020 IEEE Applied Power Electronics Conference and Exposition (APEC), New Orleans, LA, USA, 2020, pp. 589-596, doi: 10.1109/APEC39645.2020.9124563.
97. S. Patel, V. Khatana, G. Saraswat and M. V. Salapaka, "Distributed Detection of Malicious Attacks on Consensus Algorithms with Applications in Power Networks," 2020 7th International Conference on Control, Decision and Information Technologies (CoDIT), Prague, Czech Republic, 2020, pp. 397-402, doi: 10.1109/CoDIT49905.2020.9263882
98. S. Chakraborty, S. Patel and M. V. Salapaka, "Robust and Optimal Single-loop Voltage Controller for Grid-forming Voltage Source Inverters," 2020 IEEE Power and Energy Conference at Illinois (PECI), Champaign, IL, USA, 2020, pp. 1-7, doi: 10.1109/PECI48348.2020.9064633.
99. V. Khatana, G. Saraswat, S. Patel and M. V. Salapaka, "Gradient-Consensus Method for Distributed Optimization in Directed Multi-Agent Networks," 2020 American Control Conference (ACC), Denver, CO, USA, 2020, pp. 4689-4694, doi: 10.23919/ACC45564.2020.9147544.
- 100.V. Khatana and M. V. Salapaka, "D-DistADMM: A $O(1/k)$ Distributed ADMM for Distributed Optimization in Directed Graph Topologies," 2020 59th IEEE Conference on Decision and Control (CDC), Jeju Island, Korea (South), 2020, pp. 2992-2997, doi: 10.1109/CDC42340.2020.9304086.
- 101.Melbourne, J., Saraswat, G., Khatana, V., Patel, S., & Salapaka, M. V. "On the Geometry of Consensus Algorithms with Application to Distributed Termination in Higher Dimension" Selected to appear in IFAC, 2020.
- 102.B. Lundstrom, G. Saraswat and M. V. Salapaka, "High-Frequency, Multiclass Nonintrusive Load Monitoring for Grid-Interactive Residential Buildings," 2020 IEEE Power & Energy Society Innovative Smart Grid Technologies Conference (ISGT), Washington, DC, USA, 2020, pp. 1-5, doi: 10.1109/ISGT45199.2020.9087745.
- 103.Doddi, Harish, Deepjyoti Deka, and Murti Salapaka. "Learning partially observed meshed distribution grids." In 2020 International Conference on Probabilistic Methods Applied to Power Systems (PMAPS), pp. 1-6. IEEE, 2020.
- 104.S. Chakraborty, S. Patel and M. V. Salapaka, "Design of H-infinity-based Robust Controller for Single-phase Grid-feeding Voltage Source Inverters," 2020 52nd North American Power Symposium (NAPS), 2021, pp. 1-6, doi: 10.1109/NAPS50074.2021.9449747.
- 105.Edlund, C., Shrivastava, R., Salapaka, M.V., 2021. "Orientation of an Optically Trapped Non-Spherical Micro-Particle Using Iterative Learning Control". Proc. 2022 American Control Conference, Atlanta, GA.
- 106.Dey, A., Chakraborty, S., Salapaka, M.V., "An End-to-End Cyber-Physical Infrastructure for Smart Grid Control and Monitoring". In 2022 Innovative Smart Grid Technologies (ISGT). IEEE, 2022.
- 107.V. Khatana, S. Chakraborty, G. Saraswat, B. Lundstorm and M. V. Salapaka, "Evaluation of Horizon of Viability Optimization Engine for Sustained Power to Critical Infrastructure," 2022 IEEE Power and Energy Conference at Illinois (PECI), Champaign, IL, USA, 2022, pp. 1-8, doi: 10.1109/PECI54197.2022.9744038.
- 108.Doddi, Harish, Deepjyoti Deka, Saurav Talukdar, and Murti Salapaka. "Efficient and passive learning of networked dynamical systems driven by non-white exogenous inputs." In *International Conference on Artificial Intelligence and Statistics*, Vol:151, pp. 9982-9997. PMLR, 2022.
- 109.J. Wang, S. Chakraborty, V. Khatana, B. Lundstrom, G. Saraswat and M. Salapaka, "Evaluation of Optimal Net Load Management in Microgrids Using Hardware-in-the-Loop Simulation," 2022 IEEE Power & Energy Society Innovative Smart Grid Technologies Conference (ISGT), New Orleans, LA, USA, 2022, pp. 1-5, doi: 10.1109/ISGT50606.2022.9817515.
- 110.A. Dey, S. Chakraborty, and M. V. Salapaka, "Cyber-secured Microgrid Operation for Enhancing Resiliency Against False Data Injection," in 2022 IEEE North American Power Symposium (NAPS), IEEE, 2022.

- 111.S. Chakraborty et al., "Novel Power-Hardware-in-the-Loop Interface Method for Grid-Forming Inverter Systems," IECON 2022 – 48th Annual Conference of the IEEE Industrial Electronics Society, Brussels, Belgium, 2022, pp. 1-6, doi: 10.1109/IECON49645.2022.9968638.
- 112.S. Chakraborty, M. T. Rana and M. V. Salapaka, "Active Synchronization of Islanded Microgrid using Droop-controlled Grid-forming Inverters," IECON 2022 – 48th Annual Conference of the IEEE Industrial Electronics Society, Brussels, Belgium, 2022, pp. 1-6, doi: 10.1109/IECON49645.2022.9968775.
- 113.A. Dey and M. V. Salapaka, "Reinforcement Learning-based Electricity Market Vulnerability Analysis under Cyber-Topology Attack", in 2023 IEEE Power & Energy Society Innovative Smart Grid Technologies Conference (ISGT)
- 114.Saraswat, Govind, Blake Lundstrom, and Murti V. Salapaka. "Scalable hybrid classification-regression solution for high-frequency nonintrusive load monitoring." 2023 IEEE Power & Energy Society Innovative Smart Grid Technologies Conference (ISGT). IEEE, 2023.
- 115.M. T. Rana, S. Chakraborty and M. V. Salapaka, "Causal Discovery in Electronic Circuits and Its Application in Fault Diagnosis," 2023 62nd IEEE Conference on Decision and Control (CDC), Singapore, Singapore, 2023, pp. 8223-8228, doi: 10.1109/CDC49753.2023.10383284.
116. Veedu, Mishfad Shaikh, Deepjyoti Deka, and Murti V. Salapaka. "Information Theoretically Optimal Sample Complexity of Learning Dynamical Directed Acyclic Graphs." *Artificial Intelligence and Statistics Conference - AISTat (2024)*.
- 117.Chakraborty, Soham, Govind Saraswat, Nischal Guruwacharya, Arnab Dey, Richard Bryce, and Murti V. Salapaka. "Evaluation of Distributed Power Apportioning with Net Load Management Engine in Microgrids using Power Hardware-in-the-loop Simulation." In 2023 North American Power Symposium (NAPS), pp. 1-6. IEEE, 2023.
- 118.M. T. Rana, S. Mazumder, S. Chakraborty, M. V. Salapaka, & K. Basu. (2024, August). PWM Inverter Based Active Filter for High Frequency AC Systems in Space Applications. In 2024 IEEE International Communications Energy Conference (INTELEC) (pp. 1-6). IEEE.
- 119.V. Khatana and M. V. Salapaka, "Distributed Difference of Convex Optimization," 2024 60th Annual Allerton Conference on Communication, Control, and Computing, Urbana, IL, USA, 2024, pp. 1-8, doi: 10.1109/Allerton63246.2024.10735298.
- 120.V. Khatana, S. Chakraborty, G. Saraswat, S. Patel and M. V. Salapaka, "A Distributed Malicious Agent Detection Scheme for Resilient Power Apportioning in Microgrids," IECON 2024 - 50th Annual Conference of the IEEE Industrial Electronics Society, Chicago, IL, USA, 2024, pp. 1-7, doi: 10.1109/IECON55916.2024.10905675.
- 121.V. Khatana, S. Chakraborty and M. V. Salapaka, "A Plug and Play Distributed Secondary Controller for Microgrids with Grid-Forming Inverters," IECON 2024 - 50th Annual Conference of the IEEE Industrial Electronics Society, Chicago, IL, USA, 2024, pp. 1-6, doi: 10.1109/IECON55916.2024.10905727.
- 122.A. Dey, V. Khatana, A. Mani and M. V. Salapaka, "Guaranteeing Service in Connected Microgrids: Storage Planning and Optimal Power Sharing Policy," 2024 American Control Conference (ACC), Toronto, ON, Canada, 2024, pp. 3551-3556, doi: 10.23919/ACC60939.2024.10644580.
- 123.Bijit Kumar Dey, Deepak Ramasubramanian, Sairaj Dhople and Murti Salapaka, "Output Impedance Shaping of GFM Inverters Using Robust H_∞ 2-DOF Controllers," 2024 IEEE Energy Conversion Congress & Expo (ECCE), Phoenix, AZ, USA, 2024, pp. 1-8.
- 124.Mishfad Shaikh Veedu, Deepjyoti Deka, and Murti Salapaka. "Information theoretically optimal sample complexity of learning dynamical directed acyclic graphs." *International Conference on Artificial Intelligence and Statistics*, pp. 4636-4644. PMLR, 2024.
- 125.Hua, C., Rajaganapathy, S., Slick, R.A., Vavra, J., Muretta, J.M., Ervasti, J.M. and Salapaka, M., A Physics-Augmented Deep Learning Framework for Classifying Single Molecule Force Spectroscopy Data. In *Forty-second International Conference on Machine Learning (ICML) 2025*.
- 126.Mohammed Tuhin Rana, and Murti V. Salapaka. "Learning Topology of Meshed Microgrids Using Voltage Magnitude." 2025 IEEE Energy Conversion Conference Congress and Exposition (ECCE). IEEE, 2025.

127. Mohammed Tuhin Rana, and Murti V. Salapaka. "Reconstruction of Dynamic Networks with Cycles Using Partial Ancestral Graphs and Properties of Wiener Filters." 64th IEEE Conference on Decision and Control, 2025 (CDC).

128. Mohammed Tuhin Rana, Mishfad Shaikh Veedu, James Melbourne, Murti Salapaka, "Frequency-Domain Better than Time-Domain for Causal Structure Recovery in Dynamical Systems on Networks" International Conference on Learning Representations (ICLR), 2026 accepted

Abstracts (in print or accepted) and Technical Presentations

129. D. R. Sahoo(s), T. De, and M. V. Salapaka, "Systems approach based Q-control and imaging in atomic force microscopy", Scanning Probe Microscopy, Sensors and Nanostructures, Cancun, Mexico, June 5-8, 2005
130. De, T, Chettoor, A. M, Nettikadan, S and Salapaka, M.V. "Quantitative imaging of live yeast cells in intermittent contact mode AFM imaging", SPM Conference: Poster session, Montpellier, France, 2006
131. Materassi, Donatello; Salapaka, Murti V.; Giarre, Laura; , "Relations between structure and estimators in networks of dynamical systems" 2011, SIDRA, Pisa, Italy, [Best Presentation Award]
132. S. Roychowdhury, D. Materassi, T. Aggarwal, M. Yang, T. S. Hays and M. Salapaka, "Systems Enabled Methods for Single Molecule Investigation", American Society of Cell Biology, San Fransisco, Ca, December, 2012.
133. Govind Saraswat, Greg Haugstad, Murti V. Salapaka, "Real-time Quantitative Determination of Dissipation and Elastic Properties of Material at the Nano-scale Using Dynamic Mode, Intermittent Contact Atomic Force Microscopy", Meeting of the Materials Research Society, April, 2013.
134. Bhaban, S. Roychowdhury, M. Li, T. Hays and M. Salapaka. "Systems Approach to Bio-molecular Investigation", 4th Global Conference for Nano Engineering for Medicine and Biology (NEMB), ASME Minneapolis, 2015, April 19 - 22, 2015 (won an Award of Merit)
135. S. Bhaban, D. Materassi, M. Li, T. Hays and M. Salapaka "Transport Properties of Molecular Motor Ensemble Affected by Single Motor Mutations" 60th Annual Bio-physical Meeting, Feb 27 - March 2, 2016, Los Angeles Convention Centre, Los Angeles, CA
136. S. Bhaban, S. Roychowdhury, M. Li, T. Hays and M. Salapaka. "Systems Approach to Biomolecular Investigation", 2015 Annual Institute of Engineering in Medicine (IEM) Conference and Retreat, Minneapolis, September 21, 2015
137. S. Roychowdhury, S. Bhaban, S. Salapaka, T. Hays and M. Salapaka. "High Bandwidth Optical Force Clamp for Investigation of Molecular Motors", 2014 Annual Institute of Engineering in Medicine (IEM) Conference and Retreat, Minneapolis, September 21, 2015
138. Sayan Ghosal, Jackie McCourt, James Ervasti, and Murti Salapaka, "Single molecule force spectroscopy reveals contrasting mechanical behavior between actin-binding and dystroglycan binding halves of utrophin" Biophysical Society 60 th Annual Meeting, 2016
139. Shreyas Bhaban, Donatello Materassi, Mingang Li, Thomas Hays and Murti Salapaka, "Transport Properties of Molecular Motor Ensemble Affected by Single Motor Mutations", 60th Annual Bio-physical Meeting, Feb 27 - March 2, 2016, Los Angeles Convention Centre, Los Angeles, CA
140. Shreyas Bhaban, Saurav Talukdar and Murti Salapaka. "Noise Induced Transfer at Microscale Enabled by Optical Fields", 2016 American Control Conference (ACC), Boston, MA, July 6-8, 2016, Boston, MA

141. Shreyas Bhaban, Donatello Materassi, Mingang Li, Thomas Hays and Murti Salapaka, "Interrogating the Effect of Single Motor Mutations on Emergent Transport Properties for Molecular Motor Ensembles: An Exact Approach", American Society for Cell Biology (ASCB) Annual Meeting, Dec 3-7, 2016, Mascone Centre, San Francisco, CA
142. Donatello Materassi, Murti V. Salapaka* "Fully observable networks with polytree structure", 2016 American Control Conference, pp: 4676 (tutorial paper: abstract)
143. 2016. Donatello Materassi, Murti V. Salapaka* "Partially observable networks with polytree structure" American Control Conference, Boston, pp. 4677, 2016. (tutorial paper)
144. Materassi, Donatello, and Murti V. Salapaka. "Links between notions of separation in graphs and observable statistics in networks of dynamic systems." In American Control Conference (ACC), 2016, pp. 4678-4678. IEEE, 2016.
145. Materassi, Donatello, and Murti V. Salapaka. "Reconstruction of Directed Acyclic Graphs and fundamental limitations." In American Control Conference (ACC), 2016, pp. 4679-4679. IEEE, 2016.
146. Donatello Materassi*, Murti V. Salapaka "Methods for network identification robust with respect to uncertainties in a topology", pp:4680, 2016 American Control Conference, (tutorial paper: abstract)
147. Murti V. Salapaka*, Srinivasa M. Salapaka, "Gleaning signals from noise for probing matter at the molecular scale", pp: 3092, 2016 American Control Conference, (tutorial paper: abstract)
148. S Bhaban, S Talukdar, D Materassi, M Li, T Hays, M Salapaka, "Interrogating the Effect of Single Motor Mutations on Emergent Transport Properties For Molecular Motor Ensembles: An Exact Approach" American Society of Cell Biology, Annual Meeting, Philadelphia, PA, Dec 2017
149. S Talukdar, S Bhaban, M Salapaka, "Beating Landauer's Bound: Tradeoff between Accuracy and Heat Dissipation" APS March Meeting Abstracts 2017
150. S Bhaban, S Talukdar, D Materassi, M Li, T Hays, M Salapaka , "Analysis of Intracellular Transport by Teams of Molecular Motors" APS March Meeting Abstracts 2017
151. D Deka, S Talukdar, M Chertkov, M Salapaka "Topology estimation in bulk power grids: Guarantees on exact recovery", Bulk Power Systems Conference 2017
152. S Talukdar, S Bhaban, J Melbourne, M Salapaka , "Mixture of Gaussians perspective on the Landauer Bound", Bulletin of the American Physical Society 2018
153. J Melbourne, S Talukdar, S Bhaban, M Salapaka "Mixed Entropy Power Inequalities and Log-Concavity of Equilibrium Distribution with application to the Physical Limits of Computation" Bulletin of the American Physical Society 2018
154. Saurav Talukdar, Murti Salapaka , "Structure Learning in Network of Time Series," , poster presentation at Baylearn, San Francisco, 2018
155. Shrivastava, Rachit, Shreyas Bhabhan, Sivaraman Rajaganapathy, Thomas Hays, Murti Salapaka "Transport Properties of Molecular Motor Ensemble with Bi-Directional Motors: A Computational Approach" In American Society of Cell Biology Annual Meeting 2018
156. Shreyas Bhaban, Saurav Talukdar, James Melbourne, and Murti Salapaka. Analytical aspects of molecular motor ensemble dynamics. In APS Meeting Abstracts, 2018.
157. James Melbourne, Saurav Talukdar, Harish Doddi, and Murti Salapaka. Optimal finite time erasure: A mass transport perspective. Bulletin of the American Physical Society, 2019.
158. Salapaka, Murti, Tryphon Georgiou, and Thomas Hays "Learning from Cells to Create Transportation Infrastructure at Micron Scale". In National Science Foundation Annual PI meet Alexandria, VA, 11-14 Nov, 2018.

159. Shrivastava, Rachit, Shreyas Bhaban, James Melbourne, Sivaraman Rajaganapathy, and Murti Salapaka. "A Semi-Analytical Model to Investigate Cargo Transport by Bi-Directional Molecular Motor Ensemble." In APS Meeting Abstracts. 2019..
160. Melbourne, James, Saurav Talukdar, Harish Doddi, and Murti Salapaka. "Optimal Finite Time Erasure: A mass transport perspective." In APS Meeting Abstracts. 2019.
161. Doddi, Harish, Saurav Talukdar, James Melbourne, and Murti Salapaka. "Thermodynamics of Feedback with application to Landauer's Principle" In American Physical Society March Meeting Abstracts. 2019.
162. Lundstrom, Blake R., Govind Saraswat, and Murti V. Salapaka. High-Frequency, Multiclass Nonintrusive Load Monitoring for Grid-Interactive Residential Buildings. No. NREL/CP-5D00-74701. National Renewable Energy Laboratory (NREL), Golden, CO (United States), 2019.
163. Lopez, M.P.R., Rajaganapathy, S., Gordon, W.R., Salapaka, M.V. and Ervasti, J.M., 2020. The Mechanical Properties of a Utrophin Construct Encoding the Tandem CH Actin Binding Domain through Spectrin Repeat 3 is Altered by the Cell Expression System through Post-Translational Modifications. *Biophysical Journal*, 118(3), pp.257a-258a
164. Shrivastava, R., Rai, A., Salapaka, M., & Sivaramakrishnan, S. (2020). Investigating the Effect of Cargo-Motor Linkage Stiffness on Cellular Functions of Myosin VI. *Bulletin of the American Physical Society*, 65.
165. Shrivastava, R., Rai, A., Salapaka, M., & Sivaramakrishnan, S. (2020). Effect of Cargo-Motor Dissociation on transport properties of molecular motor ensemble: A Semi-Analytical Approach. *Cell Bio Virtual 2020*, American Society of Cell Biology.
166. Shrivastava, R., Rai, A., Salapaka, M., & Sivaramakrishnan, S. (2020). Effect of Cargo-Motor Linkage Stiffness on mechano-biological properties of Myosin VI. *Biophysical Society Annual Meeting*, San Diego, CA
167. Shrivastava, R., Rai, A., Salapaka, M., & Sivaramakrishnan, S. (2021). Effect of Cargo-Motor Dissociation on transport properties of molecular motor ensemble: A Semi-Analytical Approach. *Bulletin of the American Physical Society*, 66.
168. Shrivastava, R., Sivaramakrishnan, S., & Salapaka, M. V. (2022). Cargo-motor interaction kinetics regulate myosin VI based transport. *Biophysical Journal*, 121(3), 402a.
169. Rajaganapathy, Sivaraman, Cailong Hua, and Murti Salapaka. "Confidence bounds for the Jarzynski estimator." In APS March Meeting Abstracts, vol. 2022, pp. S09-007. 2022
170. Hua, Cailong, and Murti Salapaka. "Assessing Mechanical Properties of a Utrophin Fragment with Two Operational Modes." *Bulletin of the American Physical Society* (2024).
171. M. T. Rana, M. V. Salapaka. Learning Topology of Meshed Microgrids Using Voltage Magnitude. In *IEEE Energy Conversion Congress & Expo 2025*. (Submitted)
172. Hua, C., & Salapaka, M. (2024, March). Assessing Mechanical Properties of a Utrophin Fragment with Two Operational Modes. In *APS March Meeting Abstracts* (Vol. 2024, pp. N27-002).
173. Arnab Dey, Vivek Khatana, Ankur Mani and Murti V. Salapaka. "Risk Sharing Among Microgrids: Connectivity Requirements and Optimal Control." *61st Allerton Conference on Communication, Control, and Computing Proceedings, 2025*.
174. Silva Ortiz, Pedro, Allison Ogren, Mark McClellan, Cailong Hua, Lynn Hartweck, Murti Salapaka, Kurt Prins, and Melissa Gardner. "Abstract Wed051: Microtubule Reorganization in Response to Vasoconstrictive Peptides Limits Kinesin-based Transport of the T-tubule Anchoring Protein Junctophilin-2." *Circulation Research* 137, no. Suppl_1 (2025).

Patents, Disclosures and Technology Transfer Activities

1. Salapaka; Murti V. (Ames, IA), Sebastian; Abu (Adliswil, CH), Sahoo; Deepak Ranjan (Ames, IA) , Method to transiently detect samples in atomic force microscopy, Patent No.: 7,066,014, Filed: Sept. 29, 2004, Granted: June 27, 2006.
2. Salapaka; Murti V. (Ames, IA), De; Tathagata (Ames, IA), Agarwal; Pranav (Ames, IA), Sahoo; Deepak Ranjan (Ames, IA) Real time detection of loss of cantilever sensing loss, Patent No.: 7,313,948, Filed: May 22, 2006. Granted: January 1, 2008.
3. Blake Lundstrom, Sourav Patel, Sandeep Attree, and Murti V. Salapaka, "Coordinated Net-load Management" (Filed).
4. Kim, S., Salapaka, S.M., Salapaka, M.V. and Roychowdhury, S., Google Inc, 2017. Virtual impedance shaping. U.S. Patent 9,712,040.
5. Lundstrom, Blake Richard, Sourav Kumar Patel, and Murti Salapaka. "Coordinated net-load management." U.S. Patent 10,756,570, issued August 25, 2020.
6. "Power Recovery Under Grid Contingencies Using Droop-Controlled Grid-Forming Inverters", Soham Chakraborty, Sourav Patel, Murti V. Salapaka, United States Provisional Patent, Regents of the University of Minnesota. Serial No.: 63/304,546. Filed: January 28, 2022, UMN Ref. No.: 2021-246, WCK Ref.: U011.0375US0

INSTRUCTION AND SUPERVISION

Non-ISU Instruction (including Short Courses, Workshops, Training)

1. "Scanning Probe Microscopy", **M. V. Salapaka** and S. Salapaka, Proceedings of the American Control Conference, Portland, Oregon, June 8, 2005
2. "Nanotechnology: Micro-cantilever Technology Nanopositioning and Control", Full Day workshop, American Control Conference, Boston, Massachusetts, 28th June 2004.
3. "Scanning Probe Microscopy: NanoLab on a Tip" Full Day workshop, Control and Decision Conference, Atlantis, Paradise Islands, Bahamas, 13th December 2004.
4. "Modeling, Estimation, and Control for Single Molecule Investigation", Tutorial Session, 7th IEEE Conference on Control Technology and Applications (CCTA) August, 2023

Supervision of Graduate Student Research

Masters Thesis

1. Abu Sebastian, Masters, won the ISU, Research Excellence Award. for his Masters Thesis, "Harmonic Analysis Based Identification of Tapping-Mode AFM Dynamics," December 1999.
2. Rajeev Rajaram , Masters, "Study of Nanodynamics Using the Atomic Force Microscope." July 2001.
3. Raegan Johnson, Masters. "Characterization of Piezoelectric ZnO Thin Films and the Fabrication of Piezoelectric Micro-cantilevers" 2005 (co-advised with Prof. Weber).
4. Monisha Kodi Shivanna "Automation Of Particle Detection And Tracking Of Motor Proteins", 2015
5. Carmen Li, "Bimodal AFM Using State Estimation and In Vitro AFM Imaging of Microtubules", 2015
6. Saurav Pradhan, "Real time identification of local surface properties of material using atomic force microscope - An FPGA based implementation", 2017

Masters (Non-thesis)

7. Vikas Yadav, "Study of Phase Transitions on Graphs in Presence of Noise", 2007
8. Hullas Sehgal, "Optical Tweezers: Characterization and Control Systems Perspectives", 2007.
9. Pranav Agarwal. "A FPGA Based Real Time Implementation of Model Based Algorithms for Atomic Force Microscopy", 2007
10. Tanuj Agarwal, "Single Bio-Molecule Manipulations using Optical Tweezers", 2007
11. Tathagatha De, 2007
12. Mangal Prakash, 2017
13. Sandeep Attree, 2018

PhD

1. Xin Qi, (2002), "Mathematical Optimization and Robust Control Synthesis", PhD. (co-Advised with Prof. Khammash)

- Research Scientist at Garmin Industries
2. Sebastian, Abu (2004) Nanotechnology: A systems and control approach. PhD thesis, Iowa State University
 - Research Scientist at IBM Zurich Research Laboratories
 - Receptient of ISU Reasearch Excellence Award
 - IEEE Fellow
 3. Gannepalli, Anil (2004) “Theoretical and experimental explorations in atomic force microscopy”. PhD thesis, Iowa State University. (co-Advised with Prof. Mallapragada)
 - Scientist at Asylum Research, Santa Barbara (2004)
 - Receptient of ISU Reasearch Excellence Award
 4. Sahoo, Deepak (2006) “Transient force atomic force microscopy, and systems approaches to emerging applications.” PhD thesis, Iowa State University
 - Employed at IBM Research Labs, Zurich (2006)
 5. Yadav, Vikas (2007) “Distributed controller synthesis and decision making”. PhD thesis, Iowa State University.
 - Receptient of ISU Reasearch Excellence Award
 - Employed at Garmin
 6. Tathagatha De (2008), “Systems approach based solution to fundamental limitations in unraveling spatial and temporal regimes in nano-interrogation and nano-positioning”, Iowa State University
 - recipient of ISU Research Excellence Award
 - Employed at United Technologies
 7. Naveen Kumar, (2010), “Channel Modeling and Detector Design for Dynamic Mode High Density Probe Storage and Nano-imaging Applications” (co-Advised with Prof. A. Ramamoorthy), Iowa State University.
 - Recipient of ISU Research Excellence Award
 8. Hullas Sehgal (2010), “Optical Tweezers: Characterization, and systems approach to high bandwidth force estimation”
 - Employed at GE Research
 9. Pranav Agarwal (2010), “Model Mismatch Paradigm for Probe based Nanoscale Imaging”, University of Minnesota Twin Cities
 - Employed at GE Research
 10. Tanuj Agarwal (2012), “Novel Tools for Biophysical Research,”
 - Employed at Cymer (San Diego)
 11. Govind Saraswat (2014), “Probe based multimodal and multi frequency methods for material characterization at nanoscale”
 - Employed at Oracle
 12. Subhrajit Roychowdhury (2015), "Breaking Perceived Limits of Performance for Nanoscale Interrogation & Transport Systems."
 - Employed at GE Research
 13. Sayan Ghosal (2017), "Signals and Systems Tools for Advanced Nanoscale Investigation with Atomic Force Microscopy"
 - Employed at Seagate
 14. Shreyas Bhaban, (2018)
 - Employed at KLA-Tencor
 15. Saurav Talukdar (2018)
 - Employed at Verrus Inc.
 16. Blake Lundstrom (2020)
 - Employed at NREL
 17. Sourav Patel, (2021)
 - Employed at Google
 18. Venkat Ram Subramanian (2021) co-advised with Prof. Lamperski

- Employed at Honeywell
- 19. Harish Doddi (2022)
 - Employed at Nvidia
- 20. Sivaraman Rajaganapathy (2023) (Unraveling Information Excited and Corrupted by Noise: With Applications to Single Molecule Biophysics.)
 - Employed at Mayo Clinic
- 21. Rachit Srivastava (2023); Employed at Google
- 22. Soham Chakraborty (2023) (Robust Dynamic Resilient Power Grids Enabled By Modern Control Framework)
 - Employed at NREL
- 23. Arnab Dey 08/27/2024 (Optimal Coordination of Resource and Transport Capacity for Interacting stochastic Processes)
 - Employed at Skyworks
- 24. Mishfad Veedu 04/12/2024 (Network Topology and Causal Structure Recovery in Linear Dynamical Systems)
 - Employed at Google
- 25. Vivek Khatana 01/14/2025 (Balancing Information Mixing and Optimality for Robust and Efficient Distributed Decision-Making)
 - Postdoc at Aviate Lab UIUC
- 26. Connor Edlund 01/24/2025 (Learning-Based Control for Optically Trapped Non-Spherical Particles)
 - Employed at KLA-Tencor
- 27. Cailong Hua, 10/08/2025
 - Employed at Amazon

Current

1. Mohammed Tuhin Rana (PWE and OPE completed)
2. Bijit Dey (PWE completed)
3. Yiyuan Zhang, Started, Jan. 2025
4. Vinitendra Singh, Started Jan 2025

Postdoctoral Researchers:

1. Dr. Donatello Materassi: 2008-2011.
 - i. Professor at University of Minnesota, Twin-Cities
2. Dr. James Melbourne: 2017-2020
 - i. Assistant Professor, Department of Probability and Statistics, Centro de Investigación en Matemáticas (CIMAT), Mexico
3. Dr. Govind Saraswat
 - i. Employed at Google

SERVICE (PUBLIC, PROFESSIONAL/DISCIPLINARY, AND UNIVERSITY)

Service to Disciplinary and Professional Societies or Associations

1. Chair, CSS Transition To Practice Award Committee: 2023-present.
2. Associate Editor, IEEE Transactions on Control of Network Systems, 2018
3. Thesis evaluation, titled "Modeling, Analysis and Control of Ultracapacitor based Bidirectional DC-DC Converter Systems". Indian Institute of Sciences, 2018
4. Evaluator for The Fund for Scientific Research-FNRS (F.R.S.-FNRS), Brussels, Belgium, 2017.
5. Associate Editor at Large for American Control Conference, 2017
6. Organizer, Workshop: Quantum and Nano Control, Institute of Mathematics and its Applications, University of Minnesota, Twin-Cities, April 11-15, 2016
7. Program Chair, Mathematical Theory of Networks and Systems, 2016
8. Invited Workshop, "Enabling the Grid of the Future", Electrical Engineering Department, Indian Institute of Sciences, Aug-11-Aug 19th, 2016.
9. Associate Editor, Indian Control Conference, 2014-present

10. Registration Chair, American Control Conference, 2014, Portland Oregon.
11. Conference Editorial Board, Control Systems Society, 2004-2011.
12. NSF Review Panel Feb. 2004
13. Organized and Chaired Two Sessions on Nanotechnology at the Control and Decision Conference, 2003.
14. ASME, Nanotechnology Institute organizational meeting, Washington DC, November 19th, 2003.
15. Panelists for the ECS-NSF CAREER Awards 2002.
16. Chair of a session on positioning during American Control Conference, 2002.
17. Chair of a session on MEMS and Nanotechnological Devices, Conference on Decision and Control, 2002.
18. Organized and Chaired a session on Quantum control in IEEE Conference on Decision and Control, 2001
19. Member Institute of Electrical and Electronics Engineers (IEEE) Control System Society
20. Member American Association for Advancement of Science
21. Reviewer for the Following Journals: IEEE Transactions on Automatic Control, IEEE Transactions on Control System Technology, Automatica, American Society of Mechanical Engineers, ASME Transactions, Journal on Dynamic Systems, Measurement, and Control, Journal of Applied Physics, Physical Review Letters, SIAM Journal on Control and Optimization, Nanotechnology (IOP), IEEE Transaction on Nanotechnology, IEEE Transaction on Control Of Network Systems.

University/Campus Service

1. P&T Committee, (1997-1998)
2. Computer Usage Committee (2000-2001)
3. Computer Usage Committee (2001-2002).
4. Faculty Search Committee (2001-2002) during which the department was successful in hiring nine new faculty. Key role in identifying candidates and the subsequent evaluation of the candidates.
5. Awards Committee (2002-2003)
6. HCI Search Committee (2003)
7. Strategic Planning Committee (2003)
8. Graduate Ad Hoc Committee (2004)
9. Strategic Planning Committee Chair (2004-2006)
10. Ad-hoc Recruitment Committee (2004)
11. Recruitment Committee (2004-2006)
12. Ad-hoc Cluster Hire Committee (CoE 2005)
13. Cluster Hire Committee (CoE 2005-2006)
14. ECE Recruitment Committee (2008)
15. ECE Consultative Committee (2008)
16. Ad Hoc Committee to evaluate WPE
17. Recruitment Committee (2017)
18. Recruitment Committee (2016)
19. Graduate Committee (2015-present)
20. Graduate Education Council (2016-2017)
21. Graduate School Advisory Board (2018)
22. Director of Graduate Studies, ECE (2015-present)