

John T. Wen

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Education

Ph.D., Electrical Engineering. Concentration: Control Systems. 1/83-8/85. Rensselaer Polytechnic Institute, Troy, NY.

M.S., Electrical Engineering. Concentration: Control Systems. 1/80-5/81. University of Illinois, Champaign, IL.

M.S. Candidate, Electrical Engineering. Concentration: Control Systems. 9/79-12/79. University of Toronto, Toronto, ONT, Canada.

B. Eng., Electrical Engineering. Honors Program. 9/76-8/79. McGill University, Montreal, QUE, Canada.

Professional Experience

7/13-Present Professor and Head, Industrial and Systems Engineering, Rensselaer Polytechnic Institute, Troy, NY.

7/05-12/13 Director, Center for Automation Technologies and Systems, Rensselaer Polytechnic Institute, Troy, NY.

6/09-12/09 Interim Director, Smart Lighting Engineering Research Center, Rensselaer Polytechnic Institute, Troy, NY.

6/96-Present Professor, Electrical, Computer, and Systems Engineering, joint appointments in Mechanical, Aerospace, and Nuclear Engineering, and Industrial and Systems Engineering, Rensselaer Polytechnic Institute, Troy, NY.

9/91-5/96 Associate Professor, Electrical, Computer, and Systems Engineering, Rensselaer Polytechnic Institute, Troy, NY.

9/88-8/91 Assistant Professor, Electrical, Computer, and Systems Engineering, Rensselaer Polytechnic Institute, Troy, NY.

9/85-8/88 Member of Technical Staff, Jet Propulsion Laboratory, Pasadena, CA.

6/81-12/82 Systems Engineer, Fisher Control Company, Marshalltown, IA.

Courses Taught

Probability for Engineering Applications, Nonlinear Control, Systems Analysis Techniques, Engineering Lab I, Distributed Parameter Systems, Linear Systems, Multivariable Control, Dynamic Systems, Control Systems Engineering, Introduction to Engineering Analysis, Robotics and Automation, Robotics I, Computer Architecture, Network, and Organization, Signals and Systems, Optimal Control, Adaptive Systems, Modeling and Analysis of Uncertainties

Student Supervision

Completed Ph.D.: 32. Completed M.S.: 49. Ph.D. in progress: 8.

Honors and Awards

- IEEE Transaction on Automation Science and Engineering Best Paper Award, 2015
- IEEE Control Systems Society Transition to Practice Award, 2013
- Rensselaer School of Engineering Outstanding Team Award, Rensselaer Polytechnic Institute, 2010
- Innovation in Optomechatronic Research Award, SPIE Symposium on Optomechatronic Technologies, San Diego, 2008.
- Rensselaer School of Engineering Outstanding Research Award, 2007.
- Best Conference Paper Award, IEEE Conf. on Automation Science and Engineering, Shanghai, 2006

- Oversea Assessor, Chinese Academy of Sciences, 2004-2009
- Fellow of IEEE, 2001
- Senior Visiting Scientist, Japan Society for the Promotion of Science (JSPS), 1997
- ASEE/NASA Summer Faculty Fellow at Jet Propulsion Laboratory, summer 1993
- National Science Foundation Research Initiation Award, 1989
- Eleven NASA Tech Brief Awards from 1986-1988

Professional Activities

- Senior Editor of IEEE Transaction on Automation Science and Engineering, 2013- present.
- Senior Editor of IEEE Robotics and Automation Letters, 2015-present.
- Associate Editor of Robotica, 2008-2011.
- Associate Editor of Journal of Optomechatronics, 2007-2012.
- Associate Editor of IEEE Transaction on Robotics and Automation 1994-1998, 2004- 2008
- Program Chair of the Third Annual CIRSSE Conference, 1991.
- Publication Chair of 1994 American Control Conference.
- Publication Chair of 1995 Conference on Control Applications.
- General Chair, 2010 IEEE Conference on Automation Science and Engineering (CASE)
- Special Session Chair, 2011 American Control Conference.

University Service

- Intellectual Property Faculty Steering Committee, 2014- present
- Chair of School of Engineering Graduate Studies Task Force, 2015
- Rensselaer Polytechnic Institute representative on the Advanced Manufacturing Partnership (AMP) 2.0 Operating Committee 2013-2014
- School of Engineering Dean Search Committee 2008, 2013
- ISE, ECSE, and MANE Faculty Search Committees 2002,2008, 2013, 2014, 2015, 2016
- ECSE Chair Search Committee, 1999, 2008

Patents and Licensing

- U.S. Patent # 6,325,808, "Robotic system, docking station, and surgical tool for collaborative control in minimally invasive surgery," C.J. Bernard, H. Kang, B.L. Sachs, S.K. Singh, J.T. Wen, December 4, 2001.
- U.S. Patent # 6,796,447, "Crane control system," B. Laundry, G. Liu, G. Montemayor, D. Popa, M. Taylor, J.T. Wen, September 28, 2004.
- U.S. Patent # 7,028,856: "Crane control apparatus and method," B. Laundry, G. Liu, G. Montemayor, D. Popa, M. Taylor, J.T. Wen, April 18, 2006.
- U.S. Patent # 7,253,946: "Microscope with Extended Field of Vision," Y. Bellouard, B. Potsaid, J.T. Wen, August 7, 2007.
- U.S. Patent # 7,345,448: "Adaptive Command Filtering for Servomechanism Control Systems," David Watt, Mehmet Alpay, Mark Unrath, Ben Potsaid, John T. Wen, March 18, 2008.
- U.S. Patent # 7,742,213 (June 22, 2010), China Patent # CN ZL 2005 8 0045412.6 (Jan 27, 2010), "Adaptive Scanning Optical Microscope," Yves Bellouard, Ben Potsaid, John Wen. Licensed to Thorlabs in Nov, 2006.
- U.S. Patent # 8,746,310: "System and method for probe-based high precision spatial orientation control and assembly of parts for microassembly using computer vision," John Wason, John T. Wen, Jason Gorman, Nicholas Dagalakis. June 10, 2014.
- Three pending patents, US-2015-0186594, US-2017-0095382, US-2017-0211837.

Research Grants

Current

- Advanced Robotics for Manufacturing (ARM) Institute (PI: John Wen) (50%), *Robot Assistant for Composites Manufacturing*, 12/21/17–4/20/18, \$692,400.
- Craig Nielsen Foundation (PI: John Wen, jointly with Tufts University) (100%), *Robot Assistance with Activities of Daily Living for Persons with C4-C7 Spinal Cord Injury*, 10/1/17-9/30/18, \$29,403.
- Army Research Office (PI: John Wen, Co-PI: Agung Julius) (50%) *A Quantitative Approach to the Biochronicity of Circadian Rhythm, Sleep, and Neurobehavioral Performance*, 9/1/17-8/31/20, \$328,824.
- National Science Foundation (PI: Robert Hull, Co-PI: Antoinette Maniatty, John Wen, Dan Lewis) (25%), *Designing Materials to Revolutionize and Engineer our Future (DMREF), Adaptive Control of Microstructure from the Microscale to the Macroscale*, 9/1/2017-8/31/2021, \$1,524,300.
- New York State Empire State Development (ESD) Division on Science, Technology, and Innovation (NYSTAR) (PI: John Wen) (100%), *Regional Robotic Innovation Collaborative (RRIC) of the Advanced Robotics for Manufacturing (ARM) Institute*, 7/1/17–6/30/22, \$2.5M.
- Office of Naval Research (60%) (PI: John Wen, Co-PI: Shankar Narayanan), *Distributed System Level Thermal Management of High Transient Heat Loads using Microchannel Evaporators*, 8/15/2016–8/14/2019, \$555,915.
- NASA Goddard Flight Research Center (PI: John Wen) (100%) *Technology Development for Robotic Servicing of Orbital Space Assets*, 1/15-9/30/15, \$150,000. 10/1/15-9/30/16, \$200,000, 10/1/16-9/30/17, \$200,000. 10/1/17-9/30/18, \$249,829.

Completed

- NASA Goddard Flight Research Center (PI: Riccardo Bevilacqua, Co-PI: John Wen) *SSCO Technology Development for Robotic Servicing of Orbital Space Assets*, 5/1/14-9/30/14, \$166,476 (John Wen portion).
- Army Research Office (PI: John Wen, Co-PI: Agung Julius) (50%) *Short Term Innovative Research (STIR), Light-based Circadian Rhythm Modeling and Control*, 12/1/13-8/31/14, \$50,000.
- National Science Foundation (PI: Robert Hull, Co-PI: Antoinette Maniatty, John Wen, Dan Lewis) (25%) *Designing Materials to Revolutionize and Engineer our Future (DMREF), Real Time Control of Grain Growth in Metals*, 7/1/2013-6/30/2016, \$1,285,243.
- Office of Naval Research (PI: John Wen, Co-PI: Yoav Peles, Michael Jensen) (50%) *Systems Level Thermal Management for Multiple High Transient Heat Loads*, 2/1/2013–1/31/2016, \$430,233.
- National Science Foundation (PI: Sandipan Mishra, Co-PI: John Wen, Koushik Kar) (33%) *Human-Mediated Intelligent Control of Building Energy Systems*. 9/15/2012-8/14/2016, \$585,000.
- HP Labs (PI: Sandipan Mishra, Co-PI: John Wen) (50%) *Intelligent Human Centered Building Environment Modeling and Control*, 9/1/2012-8/31/2013, \$75,000.
- Vivonics (PI: John Wen, Co-PI: Glenn Saunders) (50%) *DOD Phase 2 SBIR Control for Tactile and Haptics Enabled Open Surgery Simulation*, 1/2/2012-6/30/2013, \$120,000.
- New York State Division for Science, Technology and Innovation (NYSTAR) (PI: John Wen) (100%) *Center for Automation Technologies and Systems (CATS)*, 7/1/05-6/30/09 \$1M/year, 7/1/09-6/30/14 \$920,000/year.
- National Science Foundation (PI: Sandipan Mishra, Co-PI: John Wen) (50%) *High-speed Estimation and Control using Slow-rate Integrative Image Sensors for Adaptive Optics*, 9/1/2011- 8/31/2014, \$350,000.
- Boeing (PI: Miki Amitay, Co-PI: John Wen) (50%), *Active Flow Control*, 1/1/10-12/31/11, \$62,256 (John Wen portion).
- National Science Foundation (PI: Robert Karlicek) (Faculty participant: ~\$50K/yr support) *Smart*

Lighting Engineering Research Center (now Light Enabled Systems and Applications, LESA, Center), 9/1/09-8/31/14. Approximately \$100,000/year.

- Office of Naval Research Multidisciplinary University Research Initiative (MURI) (PI: Michael Jensen, Co-PI: Yoav Pelese, John Wen) (33%) *System-Level Approach for Multi-Phase, Nanotechnology-Enhanced Cooling of High-Power Microelectronic Systems*, 5/07-4/12, \$3.4M.
- Crystal-IS (PI: John Wen, Co-PI: Bill Gressick, Antoinette Maniatty, Sheppard Salon) (50%) *Process Efficiency Improvements for Aluminum Nitride Semiconductor Crystal Growth*, 1/07-6/08, \$250,000
- GE (PI: John Wen) (100%) *Fiber Alignment for MEMS Fabry-Perot Interferometer*, 1/07-4/07, \$30,000.
- Electro-Systems Inc. (PI: John Wen, Co-PI: Michael Jensen) (50%) *Thermal Error Research*, 5/06-4/07, \$60,000.
- Electro-Systems Inc. (PI: Srinivas Akella, Co-PI: John Wen) (50%) *Quattro Optimization*, 7/06-6/07, \$60,000.
- National Institute of Standards and Technology (PI: John Wen) (100%) *Insertion Tasks in Micro-Assembly*, 6/1/06-5/31/07, \$35,000.
- National Science Foundation (PI: Mark Shephard) (Faculty participant, supported at ~\$100K/yr) *Multiscale Systems Engineering for Nanocomposites*, 9/1/03–8/31/06.
- National Science Foundation (PI: John Wen) (100%) *GOALI: Precision Motion Control with Iterative Input Refinement*, 5/1/03–4/30/06, \$271,000.
- Electro-Systems Inc. (PI: John Wen) (100%) *Input Shaping Control for a Galvo Positioning System, Phase I: \$45,000, 8/01-12/01. Phase II: \$45,000, 2/01-10/02. Phase III: \$45,000, 11/02- 7/03, Phase IV: \$45,000, 8/03-5/04, Phase V: \$70,000, 5/04-7/05, Phase VI: \$60,000, 7/05-7/06.*
- Proctor & Gamble (PI: John Wen) (100%) *Modeling and Simulation of the Flexible Standard Converter System*, 2/01-6/01, \$60,000.
- National Science Foundation (PI: John Wen) (100%) *Model Predictive Control for Nonlinear Mechanical Systems*, 9/1/98–8/31/01. \$250,000 + REU \$15,000.
- National Science Foundation (PI: John Wen) (100%) *Analysis, Synthesis, and Control of General Parallel Robotic Systems*, 9/1/99–8/31/02. \$200,000 + REU \$10,000.
- Scientific Systems Company Inc.: (PI: John Wen) (100%) *Model Predictive Control for Nonlinear Satellites*, 4/1/98-3/31/00, \$50,000.
- Aluminum Processing Program (PI: Wojciech Misiolok) *Process Control in Aluminum Extrusion*, Sponsoring companies: Werner, Alcoa, Reynold, Ormet, Kaiser, Exal, Hydro Aluminum, Alumex, Aluminum Shapes, Brazeway, 9/93–8/97, (John Wen portion: \$50,000/yr).
- National Science Foundation (PI: John Wen) (100%) *A Global Approach to Kinematic Path Planning*, 9/1/94–8/31/97, \$210,600 + REU \$5,000.
- General Electric (PI: John Wen) (100%) *Spacecraft Orbit Position Estimation*, 2/1/94–12/31/94, \$40,000.
- Army Research Office (PI: Kevin Craig) (co-PI: John Wen, Dimitris Lagoudas) (25%) *MURI: Interdisciplinary Basic Research in Smart Materials and Structures*, 7/1/92–6/30/97, \$2,000,000.
- National Science Foundation (PI: John Wen) (100%) *Passive Feedback Control with Feedforward Compensation*, 12/1/91–11/30/94, \$197,112 + REU \$5,000.
- National Aeronautical and Space Administration (PI: John Wen) (100%) *Manipulator Flexible Joint Control System Feasibility Study*, 7/1/90–6/30/91, \$24,000.
- National Science Foundation (PI: John Wen) (100%) *A Passivity Based Control Methodology for Distributed Parameter Systems*, 9/1/89–2/1/92, \$70,000 + REU \$5,000.
- National Aeronautical and Space Administration (PI: George Saridis) (Faculty participant at ~\$50K/yr) *Center of Intelligent Robotic Systems for Space Exploration*, 9/1/89–10/31/92, \$5,500,000.
- National Institutes of Standard and Technology, Northeast Manufacturing Technology Center (PI: Gene Simon), *Real-Time Control Systems effort*, John Wen portion: 1/1/89–6/30/90, \$161,379,

7/1/90–12/31/90, \$17,000, 1/1/91–5/30/91, \$10,000.

- National Science Foundation (PI: Joe Chow, Co-PI: John Wen) (50%) *Real Time Control Applications Laboratory Equipment*, 9/1/89–2/1/91, \$65,000.

Publications

Books

- J.T. Wen, S. Mishra (Ed.), *Intelligent Building Control*, Springer-Verlag, 2018.
- H. Bai, M. Arcak, J.T. Wen, *Cooperative Control: A Systematic Passivity-Based Approach*, Springer-Verlag, 2011.

Book Chapters

- L. Parker, H. Akeel, S.J. Hu, K.S. Whitefoot, J.T. Wen, “Robotic Systems for Smart Manufacturing,” in *An Assessment of the Smart Manufacturing Activities at the National Institute of Standards and Technology Engineering Laboratory: Fiscal Year 2017*, The National Academies Press, 2018.
- J.T. Wen, D.T. Pollock, Z. Yang, “Hierarchical Systems Level Thermal Management for Multiple High Transient Heat Loads,” in *Encyclopedia of Two-Phase Heat Transfer and Flow III*, John R. Thome (Editor-in-Chief), World Scientific Publishers, 2018.
- L. Lu, J.T. Wen, “Baxter-On-Wheels (BOW): An Assistive Mobile Manipulator for Mobility Impaired Individuals,” in *Trends in Control and Decision-Making for Human–Robot Collaboration Systems*, Ed. by Y. Wang and F. Zhang, Springer-Verlag, London, U.K., 2017.
- J. Wen, L.S. Wilfinger, “Kinematic Manipulability of General Mechanical Systems,” in *Complex Robotic Systems*, Ed. by P. Chiacchio, S. Chiaverini, Springer-Verlag, 1998. pp.33–78.
- A. Divelbiss, S. Seereeram, J.T. Wen, “Kinematic Path Planning for Robots with Holonomic and Nonholonomic Constraints,” in *Essays on Mathematical Robotics*, Ed. by J.B. Baillieul, S.S. Sastry, H.J. Sussmann, The IMA Volumes in Mathematics and its Applications, Vol.104, Springer-Verlag, NY, 1998. pp.127–150.
- J.T. Wen, “Control of Nonholonomic Systems,” in *Control Handbook*, Ed. by W. Levine, CRC Press, 1995, pp.1359–1368.
- S. Murphy, J.T. Wen, G.N. Saridis, “Modeling and Simulation of the Dynamics of Geared, Flexibly–Jointed Cooperating Manipulators,” in *International Handbook on Robotic Simulation Systems*, Ed. by D. Wloka, John Wiley & Sons, NY, 1993.
- J.T. Wen, M. Balas, “Direct Adaptive Control in Hilbert Space,” in *Adaptive and Learning Systems, Theory and Applications*, Ed. by K.S. Narendra, Plenum Press, NY, 1985.

Archival Journals (98)

- Y. Peng, D.S. Carabis, J.T. Wen, “Collaborative Manipulation with Multiple Dual-Arm Robots under Human Guidance,” *International Journal of Intelligent Robotics and Applications*, conditionally accepted for publication, Dec, 2017.
- S. Gupta, K. Kar, S. Mishra, J.T. Wen, “Incentive Mechanism for Truthful Occupant Comfort Feedback in Human-in-the-loop Building Thermal Management,” *IEEE Systems Journal*, Nov, 2017, pp. 1-12.
- Y. Tan, A. Maniatty, J.T. Wen, C. Zheng, “Monte Carlo grain growth modeling with local temperature gradients” *Modelling and Simulation in Materials Science and Engineering*, conditionally accepted for publication, Mar. 2017.

- S. Gupta, K. Kar, S. Mishra, J.T. Wen, “Singular Perturbation Method for Smart Building Temperature Control Using Occupant Feedback,” *Asian Journal of Control*, accepted for publication, Apr. 2017.
- Z. Yang, D.T. Pollock, J.T. Wen, “Optimization and Predictive Control of a Vapor Compression Cycle under Transient Pulse Heat Load,” *International Journal of Refrigeration*, 75, Mar. 2017, pp. 14-25. <http://dx.doi.org/10.1016/j.ijrefrig.2017.01.009>
- C. Okaeme, S. Mishra, J.T. Wen, “Comfort Zone Set-Based Thermohygro-metric Control in Buildings,” *IEEE Transaction on Control Systems Technology*, to appear, Dec. 2017.
- L. Lu, J.T. Wen, “Human-Directed Coordinated Control of Assistive Mobile Manipulator,” *International Journal of Intelligent Robotics and Applications*, 2016, doi:10.1007/s41315-016-0005-3.
- C. Zheng, G.P.S. Balasubramanian, Y. Tan, A.M. Maniatty, R. Hull and J.T. Wen “Simulation, Microfabrication and Control of a Micro-Heater Array,” *IEEE Transaction on Mechatronics*, Jan, 2017. doi: 10.1109/TMECH.2017.2650682
- Y. Tan, C. Zheng, J.T. Wen, A.M. Maniatty, “Inverse heat transfer analysis for design and control of a micro-heater array” *Inverse Problems in Science & Engineering*, Oct. 2016. doi:10.1080/17415977.2016.1240791
- W. Qiao, J.T. Wen, A. Julius, “Entrainment Control of Phase Dynamics,” *IEEE Transaction on Automatic Control*, 62(1), Jan, 2017, pp. 445-450.
- S. Gupta, K. Kar, S. Mishra, J.T. Wen, “BEES: Real-Time Occupant Feedback and Environmental Learning Framework for Collaborative Thermal Management in Multi-Zone, Multi-Occupant Buildings,” *Energy & Buildings*, 125, 2016, pp.142-152.
- P. Balasubramanian, C.J. Zheng, Y. Tan, G. Kane, A. Maniatty, J.T. Wen, R. Hull, “Substrates with Programmable Heater Arrays for In-Situ Observation of Microstructural Evolution of Polycrystalline Films: Towards Real Time Control of Grain Growth,” *MRS Advance*, Apr 2016, pp. 1947-1952.
- J.T. Wen, “Book Review of Passivity-Based Control and Estimation in Networked Robotics,” *Automatica*, 72, Oct 2016, pp. 251-252.
- A. Julius, J. Zhang, W. Qiao, J.T. Wen, “Multi-input Adaptive Notch Filter and Observer for Circadian Phase Estimation,” to appear in *International Journal of Adaptive Control and Signal Processing*, 2016.
- J. Zhang, W. Qiao, J.T. Wen, A. Julius, “Light-Based Circadian Rhythm Control: Entrainment and Optimization,” *Automatica*, 68, June, 2016. pp. 44-55.
- J. Tani, S. Mishra, J.T. Wen, “Motion Blur-Based State Estimation,” 24(3), May 2016, pp. 1012-1019. doi: 10.1109/TCST.2015.2473004.
- S. Gupta, K. Kar, S. Mishra, J.T. Wen, “Collaborative Energy and Comfort Management Through Distributed Consensus Algorithms,” *IEEE Transaction on Automation Science and Engineering*, 12(4), Oct, 2015, pp.1285-1296.
- Z. Yang, D.T. Pollock, J.T. Wen, “Gain-Scheduling Control of Vapor Compression Cycle for Transient Heat-Flux Removal,” *Control Engineering Practice*, 39, Jun 2015, pp. 67-89.
- D. Kruse, J.T. Wen, R.J. Radke, “Sensor-Based Dual-Arm Tele-Robotic System,” *Transaction on Automation Science and Engineering*, 12(1), Jan, 2015, pp. 4-18.
- D.T. Pollock, Z. Yang, J.T. Wen, Y. Peles, M.K. Jensen, “Model-Based Control of Vapor Compression Cycles Transient Heat-Flux Removal,” *International Journal of Heat and Mass Transfer*, 77, Oct., 2014, pp. 662–683.
- J. Tani, S. Mishra, J.T. Wen, “Identification of Fast-rate Systems using Slow-rate Image Sensor Measurements,” *IEEE/ASME Transactions on Mechatronics*, 19(4), Aug. 2014, pp. 1343–1351.
- S. Afshari, S. Mishra, A. Julius, F. Lizarralde, J.D. Wason, J.T. Wen “Modeling and Control of Color Tunable Lighting Systems Energy and Buildings,” *Energy and Buildings*, 68(A), Jan, 2014, pp. 242-253.

- J. Catano, F. Lizarralde, T. Zhang, J.T. Wen, M.K. Jensen, Y. Peles, “Vapor Compression Refrigeration Cycle for Electronics Cooling – Part II: Gain- Scheduling Control for Critical Heat Flux Avoidance,” *International Journal of Heat and Mass Transfer*, 66, Nov 2013, pp. 911-921.
- J. Catano, T. Zhang, J.T. Wen, M.K. Jensen, Y. Peles, “Vapor Compression Refrigeration Cycle for Electronics Cooling – Part I: Dynamic Modeling and Experimental Validation,” *International Journal of Heat and Mass Transfer*, 66, Nov 2013, pp. 922929.
- J.D. Wason, J.T. Wen, J.J. Gorman, N.G. Dagalakis, “Automated Multi-Probe Microassembly using Vision Feedback,” *IEEE Transaction on Robotics*, 28(5), 2012, pp. 1090–1103.
- Z. Schilling, E. Frank, V. Magidson, J. Wason, J. Loncarek, K. Boyer, J. Wen, A. Khodjakov, “Predictive-focus illumination for reducing photodamage in live-cell microscopy,” *Journal of Microscopy*, pp. 160-167, 246(2), May, 2012.
- T. Zhang, J.T. Wen, A. Julius, Y. Peles, M.K. Jensen, “Stability Analysis and Maldistribution Control of Two-Phase Flow in Parallel Evaporating Channels,” *International Journal of Heat and Mass Transfer*, 54(25-26), Dec, 2011, pp. 5298–5305.
- T. Zhang, J.T. Wen, Y. Peles, J.E. Catano, R. Zhou, M.K. Jensen, “Two-Phase Refrigerant Flow Instability Analysis and Active Control in Transient Electronics Cooling Systems,” *International Journal of Multiphase Flow*, 37(1), Jan, 2011, pp. 84-97.
- P. E. Phelan, Y. Gupta, H. Tyagi, R. S. Prasher, J. Catano, G. Michna, R. Zhou, J. Wen, M. Jensen, Y. Peles, “Energy Efficiency of Refrigeration Systems for High Heat-Flux Microelectronics,” *ASME Journal of Thermal Science & Engineering Applications*, 2(3), pp. 031004, Dec. 2010.
- C. Scott, B. Potsaid, John T. Wen, “Wide Field Scanning Telescope using MEMS Deformable Mirrors,” *International Journal on Optomechatronics*, 4(3), Sep, 2010, pp. 285-305.
- R. Zhou, T. Zhang, J. Catano, J.T. Wen, G.J. Michna, Y. Peles, M.K. Jensen, “The Steady-State Modeling and Optimization of a Refrigeration System for High Heat Flux Removal,” *Applied Thermal Engineering*, 30(16), November 2010, pp. 2347-2356.
- T.J. Zhang, Y. Peles, J.T. Wen, T. Tong, J.Y. Chang, R. Prasher, M. Jensen, “Analysis and Active Control of Pressure-Drop Flow Instabilities in Boiling Microchannel Systems,” *International Journal on Heat and Mass Transfer*, 53(11-12), May, 2010, pp. 2347-2360.
- H. Bai, J.T. Wen, “Cooperative Load Transport: A Formation Control Perspective,” *IEEE Transactions on Robotics*, 26(4), August, 2010, pp. 742-749.
- L.I. Rivera, B. Potsaid, J.T. Wen, “Image Tracking of Multiple *C. Elegans* Worms Using Adaptive Scanning Optical Microscope (ASOM),” *International Journal on Optomechatronics*, 4(1), March, 2010, pp. 1-21.
- N. Chakraborty, S. Akella, J. T. Wen, “Coverage of a Planar Point Set with Multiple Robots subject to Geometric Constraints,” *IEEE Transaction on Automation Science and Engineering*, 7(1), Jan, 2010, pp. 111-122.
- T. Tong, T.J. Zhang, J.Y. Chang, Y. Peles, R. Prasher, M. Jensen, J. Wen, P. Phelan “Ledinegg instability in microchannels,” *International Journal on Heat and Mass Transfer*, 52 (25-26), December, 2009, pp.5661-5674.
- B. Potsaid, F. Finger, J.T. Wen, “Automation of Challenging Spatial-Temporal Biomedical Observations with the Adaptive Scanning Optical Microscope (ASOM),” *IEEE Transaction on Automation Science and Engineering*, 6(3), July, 2009, pp.525-535.
- H. Bai, M. Arcaç and J.T. Wen, “Adaptive motion coordination: using relative velocity information to track a reference velocity,” *Automatica*, 45, 2009, pp.1020-1025.
- H. Bai, M. Arcaç, J.T. Wen, “Rigid Body Attitude Coordination without Inertial Frame Information,” *Automatica*, 44, 2008, pp. 3170-3175.
- H. Bai, M. Arcaç, J.T. Wen, “An Adaptive Design for Reference Velocity Recovery in Motion Coordination,” *Systems & Control Letters*, 57(8), August, 2008, pp.602-610.

- B. Potsaid and J.T. Wen, "Adaptive Scanning Optical Microscope (ASOM): large field of view and high resolution imaging using a MEMS deformable mirror," *Journal of Micro/Nanolithography, MEMS, and MOEMS (JM3)*, Special Issue on Silicon-Based MOEMS and Their Applications, 7(2), Apr-Jun, 2008.
- B. Potsaid and J.T. Wen, "Design of Adaptive Optics Based Systems Using High Fidelity MEMS Deformable Mirror Models", *International Journal of Optomechatronics*, 2(2), June 2008, pp. 104-125.
- T. Alpcan, X. Fan, T. Basar, M. Arcak, J.T. Wen, "Power Control for Multicell CDMA Wireless Networks: a Team Optimization Approach," *Wireless Networks*, 14(5), pp.647-657, October 2008.
- J.F. O'Brien, J.T. Wen, "On the Elimination of Self-Motion in Parallel Mechanisms," *International Journal of Automation, Robotics and Autonomous Systems*, 6(1), April 2007, pp. 5-16.
- J. Yi, Q. Wang, D. Zhao, J.T. Wen, "BP Neural Network Prediction-based Variable-period Sampling Approach for Networked Control Systems," *Applied Mathematics and Computation*, 185, pp.976-988, 2007.
- B. Potsaid, J.T. Wen, M. Unrath, D. Watt, M. Alpay, "High Performance Motion Tracking Control for Electronic Manufacturing," *ASME Journal on Dynamics, Measurement, & Control*, 129(6), November, 2007, pp. 767-776.
- B. Potsaid and J.T. Wen, "Active Optics Improve Microscope's Field of View", *Microscopy Today*, 14(4), July 2006, pp. 16-22.
- X. Fan, K. Chandrayana, M. Arcak, S. Kalyanaraman, J.T. Wen, "A Two-Time- Scale Design for Edge-Based Detection and Rectification of Uncooperative Flows," *IEEE/ACM Transactions on Networking*, 14(6), December, 2006, pp. 1313-1322.
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Doctoral Students

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2. Xin Chen, Passivity Based Stability Analysis and Controller Synthesis for Distributed Parameter Systems with Unbounded Input/Output Operators. November 1993.
3. Wei–Ying Cheng, A Class of Neural Controllers with Application to Robot Tracking Control. November 1993. (Tellabs)
4. Adam Divelbiss, Nonholonomic Motion Planning in the Presence of Obstacles. November 1993. (Creative Logic Entertainment)
5. Sanjeev Seereeram, A Path Space Approach to Path Planning for Redundant Manipulators. November 1993. (Scientific Systems and Control Inc., SSCI)

6. Steve Cummings, Direct Model Reference Adaptive Control Utilizing Nominal Model Information. April 1995. (Raytheon)
7. Gongming Shu, Thermomechanical Modeling and Analysis of Flexible Structures with Shape Memory Alloy Actuators, August 1996. (Co-advised with Dimitri Lagoudas) (Exxon)
8. Declan Hughes, Piezoceramic and Shape Memory Alloy Hysteresis Modeling and Compensation, February 1997. (Texas A&M)
9. Padma Akella, Modeling, Analysis, and Control of Flexible and Smart Structures. October 1997.
10. Carrie Dickinson, Feedback Compensation of Shape Memory Alloy Hysteresis, November 1997. (Whirlpool)
11. Dan Popa, Path Planning and Feedback Stabilization of Nonholonomic Control Systems, April, 1998. (University of Louisville)
12. Fernando Lizarralde, Stabilization of Nonlinear Affine Control Systems using a Newton-Type Method, September 1998. (Co-Advised with Liu Hsu) (University of Rio de Janero)
13. Brian Tibbetts, Modeling and Control of Aluminum Extrusion Process. September 1999. (Orbital Science)
14. John O'Brien. Feasible Solutions to Unstable Singularity in Parallel Robots June, 2001. (University of Wyoming)
15. Sooyong Jung. Nonlinear Model Predictive Control: Stability, Robustness and Real-time Implementation, April, 2002. (Samsung)
16. Hyosig Kang. Robotic Assisted Suturing in Minimally Invasive Surgery, May, 2002. (Stryker)
17. Byoung Hun Kang. Parallel Mechanisms with Flexure Joints: Analysis, Design, and Control, Aug. 2004. (Korea Institute of Technology)
18. Gustavo Montemayor. Multiple Manipulator Control with Distributed Information, Sensing, and Actuation Feb. 2005.
19. Ben Potsaid. Expanding the Field of View in Optical Microscopy: a Multi-disciplinary Approach Aug. 2005 (Thorlabs)
20. Rafael Quintanilla. Iterative Learning Control for High Performance Motion Systems Dec. 2007 (ALTAN)
21. Josh Hurst. Transport Coefficient Computation based on Input/Output Reduced Order Models, Nov. 2008. (Rensselaer Polytechnic Institute)
22. He Bai. Passivity-Based Motion Coordination of Multi-Agent Systems: Theory and Experiments, May 2009 (jointly supervised with Murat Arca). (Oklahoma State University)
23. Rongliang Zhou. Model Based Thermal Management Through Heat Injection and Removal, Nov 2010 (HP Labs)
24. Xiaoqing Ge. Reduced Order Modeling and Active Flow Control of an Inlet Duct, April 2011. (GE)
25. Juan Catano. Dynamic Modeling and Advanced Control of Vapor Compression Cycles for Electronics Cooling, September 2011. (Emerson Electric)
26. John Wason. Visually-Guided Multi-Probe Microassembly of Spatial Micro-electromechanical Systems, December 2011. (Wason Technology)
27. Nanhu Chen. Modeling and Control of a Class of Nonlinear Opto-Mechatronic Systems with the Linear Parameter Varying Representation. November 2012. (Corning)
28. Jiayang Zhang. Circadian Rhythm Modeling, Estimation and Control based on Dynamic Lighting, August 2013 (jointly supervised with Agung Julius). (Corning)
29. Jacopo Tani. Closing the Loop with Blur, August 2015. (MANE) (jointly supervised with Sanipan Mishra). (MIT)
30. Dan Pollock. Modeling and Control of Vapor Compression Cycles for Electronics Cooling, April 2016. (United Technology Research Center)
31. Zehao Yang, Advanced Control of Vapor Compression Cycle for Large and Transient Heat Flux Removal, December 2016. (Corning)
32. Dan Kruse, Dual-Arm Robot Control for Human-Robot Collaborative Manipulation, December 2016. (SRI Robotics)

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