

## Curriculum Vitae

### Tsu-Chin Tsao

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Mechanical and Aerospace Engineering Department  
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#### Education:

<u>Degrees</u>	<u>Field</u>	<u>Institution</u>	<u>Date Awarded</u>
Ph.D.	Mech. Eng.	University of California, Berkeley	August 1988
M.S.	Mech. Eng.	University of California, Berkeley	Dec. 1984
B.S.	Mech. Eng.	National Taiwan University	June 1981

Ph. D. Dissertation Title: Digital Tracking Control And Its Application to Noncircular Machining

Ph. D. Committee Members: Masayoshi Tomizuka (Advisor and Chair), David Dornfeld, Shankar Sastry.

#### Research Areas:

Modeling and Control of Dynamic Systems with Applications in Mechanical Systems, Manufacturing Processes, Automotive Systems, and Energy Systems; Digital Control, Repetitive and Learning Control, Adaptive and Optimal Control; Precision Motion Control, Mechatronics, Robotics and Automation.

#### Professional Experience:

Assistant Professor (8/88-8/94), Associate Professor (8/94-7/99), Mechanical and Industrial Engineering, University of Illinois at Urbana-Champaign.

Professor (7/99-), Mechanical & Aerospace Engineering, University of California, Los Angeles.

Vice Chair for Undergraduate Affairs (7/02-6/05), Mechanical & Aerospace Engineering, University of California, Los Angeles.

Department Chair (7/11-6/16), Mechanical & Aerospace Engineering, University of California, Los Angeles.

## **Postgraduate Award and Recognition:**

National Science Foundation, Research Initiation Award, June 1990.

Advisors List for Advising Excellence, College of Engineering, UIUC, 1990.

1994 ASME Journal of Dynamic Systems, Measurement, and Control Best Paper Award, 1995. (awarded for best paper selected among papers published in the Journal in 1994)

Senior Xerox Award for Faculty Research, College of Engineering, UIUC, 1996  
("in recognition of excellence in engineering research during the past five academic years")

ASME Dynamic Systems and Control Division Outstanding Young Investigator Award, American Society of Mechanical Engineers, 1997. ("in recognition of his significant contributions, both in theory and application to digital adaptive feedforward control and repetitive control algorithms")

O. Hugo Schuck Best Paper Award, American Automatic Control Council, 2002. (in recognition of the paper "Control of Dual Stage Actuator System for Noncircular Turning Process" published in the 2001 American Control Conference).

Fellow, American Society of Mechanical Engineers (ASME), 2009

International Symposium of Flexible Automation Best Paper Award (Theory), 2010 (in recognition of the paper "Repetitive Control of a Levitated Shaft – FPGA Implementation based on Powell-Chau Filters")

Member of Advanced Research Advisory Committee (ARAC) and Chair of Mechanical Engineering Technical Advisory Committee (TAC) for Industrial Technology Research Institute (ITRI), Taiwan, 2012-date

International Federation of Automatic Control (IFAC) Mechatronics Systems Award, 2016.  
Citation: "For outstanding contributions in the design, modeling, control, and realization of mechatronic systems, and for investigation and engineering of precision motion and vibration control to achieve high performance in engineering systems."

ASME Dynamic Systems and Control Division Henry M. Paynter Outstanding Investigator Award, October 2018. "*For Seminal Contributions in Feedforward, Repetitive, and Adaptive Control Areas and their Applications.*"

## **Editorship:**

Associate Editor, ASME Journal of Dynamic Systems, Measurement, and Control, 1994-1997.

Technical Editor, IEEE/ASME Transactions of Mechatronics, 2008-2011.

Senior Editor, IFAC Journal of Mechatronics, 2016-2020

Co Editor-in-Chief, IFAC Journal of Mechatronics, 2020-2021

Editor-in-Chief, IFAC Journal of Mechatronics, 2022-date

### **Professional Societies and Activities:**

Member, ASME Dynamic System and Control Division

Members of Adaptive and Optimal Control Technical Panel (Chairman, 90-93), Manufacturing Systems Technical Panel, and Fluid Power Control Technical Panel.

Member of Executive Committee ASME Dynamic System and Control Division (03-08)  
Chair (06-07), Past-Chair (07-08) of ASME Dynamic System and Control Division

Senior Member, Institute of Electrical and Electronics Engineers (IEEE).

Member, IFAC TC 4.2 Mechatronics Systems Technical Committee

Co-organizer, Symposium on Monitoring and Control for Manufacturing Processes, 1990 ASME Winter Annual Meeting, Dallas, TX, 1990.

Member, Program Committee, Japan-USA Symposium on Flexible Automation, Kyoto, Japan, July 1990.

Member, Program Committee, Japan-USA Symposium on Flexible Automation, San Francisco, CA, July 1992.

Co-organizer, Symposium on Mechatronics for Manufacturing, 1993 ASME Winter Annual Meeting, New Orleans, LA, Nov. 1993.

Co-organizer, Invited Session in American Control Conference, San Francisco, CA, June 1993.

Co-organizer, Symposium on Mechatronics 1994 ASME International Mechanical Engineering Congress and Exposition, Chicago, IL, Nov. 1994.

Member, Program Committee, International Conference on Recent Advances in Mechatronics - ICRAM'95," Istanbul, Turkey, Aug. 1995.

Member, Program Committee, 4th International Workshop on Advanced Motion Control, Tsu, Mie, Japan, March, 1996.

Member, Program Committee, Japan-USA Symposium on Flexible Automation, Boston, MA, July 1996.

Member, Program Committee, International Conference on Advanced Intelligent Mechatronics '97, Tokyo, Japan, June, 1997.

Member, Program Committee, Japan-USA Symposium on Flexible Automation, Kotsu, Japan, July 1998.

Member, Program Committee, 1998 International Conference on Mechatronic Technology, (ICMT'98), Hsinchu, Taiwan, Nov. 1998.

Member, Program Committee, 2000 American Control Conference, Chicago, IL, June 2000.

Member, Program Committee, 2002 American Control Conference, Anchorage, Alaska, May 2002.

Member, Program Committee, Japan-USA Symposium on Flexible Automation, Hiroshima, Japan, July 2002.

Program Chair, ASME Dynamic Systems And Control Division, 2002 IMECE, New Orleans, LA, Nov. 2002.

Member, International Program Committee, 2<sup>nd</sup> IFAC Conference on Mechatronic Systems Berkeley, CA, December, 2002.

Member, Technical Committee, the 8th IEEE International Workshop on Advanced Motion Control, AMC'04, Kawasaki , Japan, March 2004.

Member, Program Committee, 2004 American Control Conference, Boston, Massachusetts, June 2004.

Member, Program Committee, Japan-USA Symposium on Flexible Automation, Denver Colorado, July, 2004.

Member, Program Committee, 2004 IEEE CCA- Conference on Control Applications, Taipei, August 2004.

Member, Program Committee, SPIE SENSORS AND SMART STRUCTURES TECHNOLOGIES FOR CIVIL, MECHANICAL, AND AEROSPACE SYSTEMS (SSM09), FEBRUARY, 2006.

Member, Program Committee, Japan-USA Symposium on Flexible Automation, Osaka, Japan, July, 2006.

Member, International Program Committee, 4<sup>th</sup> IFAC-Symposium on Mechatronic Systems Wiesloch / Heidelberg, Germany, September 12<sup>th</sup>-14<sup>th</sup>, 2006.

Member, Technical Program Committee, The 9<sup>th</sup> IEEE International Workshop on Advanced Motion Control, Hotel Hilton, Istanbul, Turkey, March 27- 29, 2006

Member, International Program Committee, 2007 International Conference on Control, Automation and Systems (ICCAS 2007) October 17(Wed.)-20(Sat.), 2007  
COEX (Convention & Exhibition), Seoul, KOREA

Local Arrangement Chair, 2009 ASME Dynamic Systems Control Conference, Hollywood, California, Sept. 13-15, 2009

Member, Technical Program Committee, Area Editor, 48<sup>th</sup> IEEE Conference on Decision and Control and 28<sup>th</sup> Chinese Control Conference, Shanghai, Dec. 16-18, 2009.

Secretary, Treasurer, Management Committee, IEEE/ASME Transactions of Mechatronics, 2009-2010.

Program Chair, 2010 ASME Dynamic Systems and Control Conference, Cambridge, Massachusetts.

Program Chair, 2012 International Conference on Motion and Vibration Control (MOVIC), Fort Lauderdale, Florida.

Vice Chair, IFAC TC 4.2 Mechatronics Systems Technical Committee, 2015-2017

Chair, IFAC TC 4.2 Mechatronics Systems Technical Committee, 2017-date

Chair of Mechanical and Mechatronics Systems Technical Advisory Committee (TAC) , Member of Advanced Research Advisory Committee (ARAC), Industrial Technology Research Institute (ITRI), Taiwan, 2011-date

Program Chair, 2021 IEEE Control Systems Society, Conference on Control Technology and Applications (CCTA)

### **Supervision of Completed Graduate Theses:**

Ph.D. Dissertation:

- D1. Alter, D. M., 1994, Control of Linear Motors for Machine Tool Feed Drives.
- D2. Hanson, R. D., 1996, Dynamic Variable Depth of Cut Machining for Dynamic Error Compensation. Employer: Seagate Technologies, Minnesota
- D3. McLaughlin, J. K., 1997 (Co-Advised with L. L. Christianson), Supervisory Control of a Commercial Heating, Ventilation, and Air Conditioning System. Employer: International Papers
- D4. Kim, D. H., 1997, Precision Motion Control of Electrohydraulic Actuators. Employer: Bradley University, Peoria, IL
- D5. McNab, R. J., 1997, Digital Tracking Control for Machine Tool Feed Drives. Employer: Western Digital Corp., San Jose, CA
- D6. Li, J. W., 1999, Robust Performance Repetitive Control And Its Applications. Employer: General Electrics, Cleveland, OH.
- D7. Babinski, A., 2000, Control of Voice Actuator with Application to Cam Turning. Employer: Western Digital Corp., Lake Forrest, CA
- D8. Sun, Z. X., 2000, Tracking Control And Disturbance Rejection with Applications to Non-Circular Turning for Camshaft Machining. Employer: University of Minnesota, MN (Faculty).
- D9. Kim, B. S., 2001, Enhanced Robust Performance Repetitive Control And Application to Dual-Stage Actuating Systems. Employer: Korea Institute of Machines and Manufacture (KIMM), South Korea
- D10. Tai, Chun, 2002, Modeling And Control of Camless Engine Valvetrain Systems. Employer: Volvo Powertrain Technologies, Hagerstown, Maryland
- D11. Kalyanam Krishnamoorthy, 2005, Advanced Motion Control Applied to Hard Disk Drives and Fast Tool Servos. Employer: Air Force Research Lab, Dayton, Ohio
- D12. Jungqing Wang, 2006, Linear Time Varying Repetitive Control and its Applications. Employer: Hass Machine Tools, Oxnard, CA

- D13. Orzechowski Pawel K. 2007 (Co-Advised with S. G. Gibson), High Performance Adaptive Control Algorithms for Optical Jitter Suppression. Employer: Northrup Grumman, CA
- D14. Pérez Arancibia, Néstor O., 2007 (Co-Advised with S. G. Gibson). Adaptive Control of Opto-Electro-Mechanical Systems for Broadband Disturbance Rejection, Employer: Harvard University (Post doc.).
- D15. Wang, Xiaoyong, 2008, Modeling and Experiment of Compressed Air Hybrid Engines. Employer: Ford Research Lab. Dearborn, Michigan.
- D16. Lin, Chi-Ying, 2008, Adaptive and Repetitive Control of a Fast Tool Servo for Precision Motion Control. Employer: National Taiwan University of Science and Technology, Taipei, Taiwan (Faculty)
- D17. Johnson, William Leigh , 2009, A musculoskeletal model of the rat hindlimb: Application to neuroprosthesis development and quantitative gait evaluation. (Co-Advisor: Victor Edgerton)
- D18. Wang, Yi-Gang, 2010, Adaptive Control for deterministic and Stochastic Disturbances with Application to Precision Motion Control. Employer: Eaton Corporation, Minneapolis, Minnesota.
- D19. Ruben, Shalom, 2010, Modeling, Control, and Real-Time Optimization for a Nano-Precision System. Employer: University of Colorado. (Co-Adviser: R. Hocken, University of North Carolina Charlotte)
- D20. Wilson, Jason, 2011, An Intraocular Robotic Interventional Surgical System – IRISS. Employer: Vantage Surgical Systems, Inc. Los Angeles, CA.
- D21. Chu, Kevin, 2011, Stochastic and Deterministic Disturbance Cancellation for Nano-Precision Systems. Employer: QBotix, Menlo Park, CA.
- D22. Lim, Christopher, 2011, Modeling and Analysis of Cam-based and Camless Air Hybrid Vehicles. Employer: Aerospace Corp., El Segundo, CA.
- D23. Stephen Prince, 2012, Design and Manufacture of a Laparoscopic Telesurgical and Telementoring Robot Manipulator. Employer: Freedom Innovations, Irvine, CA.
- D24. Herrick Chang, 2012, High Sampling Rate Dynamic Inversion - Digital Signal Processing, Filter Realizations and Applications in Digital Control. Employer: NASA JPL, Pasadena, CA.
- D25. David Luong, 2013, Modeling, Estimation, and Control of Waste Heat Recovery Systems, Aerospace Corporations, El Segundo, CA.

- D26. Christopher Kang, 2014, Control of an Active Magnetic Bearing-Rotor System. Employer: UCLA.
- D27. Yen-Chin Chang, 2014, Precision Motion Sensing and Control Through Constrained Optimization. Employer: DYSCI Inc. Santa Monica, CA.
- D28. Kuo-Tai Teng, 2014, Repetitive and Iterative Learning Control for Power Converter and Precision Motion Control. Employer: Freedom Innovations, Irvine, CA.
- D29. James Simoneli, 2017, Novel Hydrostatic Fluid Power Actuators. Employer: UCLA
- D30. Niloufar Esfandi, 2017, Stability and Control for Machining of Thin-Walled Structures -- A Time-Varying Delayed Distributed Parameter System, Employer: Nothrop Grumman Corp.
- D31. Sandeep Rai, 2017, "Identification and Control of a Magnetic Bearing System for Boring Application, Employer: Cymer-ASML
- D32. Cheng-Wei Chen, 2018, "Automation and Precision Control for Intraocular Robotic Interventional Surgical System, Employer: Assistant Professor, Department of Electrical Engineering, National Taiwan University
- D33. Matthew Gerber, 2019, "Optical Coherence Tomography {Guided Robotic System for Automated Retinal Microsurgery, Employer: UCLA
- D34. Yu-Hsiu Lee, 2019, "Adaptive and Iterative Learning Control for Robot Trajectory Tracking, Employer: UCLA
- D35. Lecheng Ruan, 2020, "Independent Position and Attitude Control on Multirotor Aerial Platforms," Employer: Beijing Institute for General Artificial Intelligence (BIGAI)
- D36. Yao Su, 2020, "Compensation and Control Allocation with Input Saturation Limits and Rotor Faults for Multi-Rotor Copters with Redundant Actuators, Employer: Beijing Institute for General Artificial Intelligence (BIGAI)
- D37. Shahin Rouhani, 2021, "Optimal Dynamic Inversion: Towards Safety, Reliability and Performance with Application to the Active Magnetic Bearing System," Employer: Western Digital Corp.

M.S. Theses:

- M1. Burke, J. A., 1991, Active Control of Face Milling to Reduce the Effects of Periodic Disturbances (Co-Advisor: P. Ferreira).
- M2. Levand, G. A., 1991, Digital Tracking Control, Theory of Optimization with Experiments.

- M3. Pong, K. C., 1991, Variable Speed Control of Direct-Drive Spindles And Its Applications in Face Milling.
- M4. Ruiz-Suarez, P. J., 1992, Modeling and Control of Magnetic Bearing Systems - A Feedback Linearization Approach.
- M5. S. T. Pang (Co-Advisor: L. A. Bergman), 1992, Structural Dynamics, Control and Control-Structure Interaction in Distributed Parameter Systems.
- M6. Ariano, D. J., 1992, Introduction to Fuzzy Logic Control and Its Application to a Heat Exchanger.
- M7. Rasmussen, J. D., 1993, A Piezoelectric Tool System for Variable Depth of Cut Machining.
- M8. Nemani, M., 1993, Multi-Rate Analysis and Design of Visual Feedback Servo Control System.
- M9. Snider, E.A., 1993, A Programmable Logic Controller Based Heating, Ventilating, and Air Conditioning Control System.
- M10. Kim, D. H., 1993, An Improved Linearized Model of Electrohydraulic Servo Actuators and Its Usage for Robust Performance Control System Design
- M11. Ditman, J. B., 1993, The Design of Extended Bandwidth Shape Memory Alloy Actuators (Co-Advisor: L. A. Bergman).
- M12. Ling, Min, 1994, Control of Variable Air Volume HVAC Systems.
- M13. Prell, A. 1996, Application of Repetitive Control to Active Vibration Control. (Co-Advisor: L. A. Bergman).
- M14. Jacobsen, M. 1997, Design of a High-Speed Solder Deposition Method for Semiconductor Manufacturing And a Kalman Filter Based Linear Velocity Observer.
- M15. Flores, M. A., 1997, Supervisory Control of Machining Using Open Architecture CNC.
- M16. Anderson, M. D., 1997, Adaptive Control of a Camless Electrohydraulic Valvetrain System.
- M17. Sun, Z. X., 1997, Adaptive Control with Asymptotic Tracking Performance And Its Application to Non-Circular Machining.
- M18. Tai, C. 1999, Adaptive Feedforward with Feedback Control of an Electrohydraulic Camless Valvetrain.



- M19. A. J. Hanson, 1999, (Co-Adviser: J. Peters), Experimental investigation of Camless Engine.
- M20. White, D. M. 1999, Intelligent Control for Agile Deep-Hole Drilling.
- M21. Lee, S. H. 2000, Nonlinear Backstepping Control for an Electrohydraulic Material Testing Machine.
- M22. Stubbs, A. 2000, Modeling and Controller Design of an Electromagnetic Engine Valve
- M23. Orzechowski, Pawel Konrad, 2004 (Co-Advised with S. G. Gibson), Disturbance Rejection by Optimal Feedback Control in a Laser Beam Steering System.
- M24. Hu, John, C. H., 2005, Hydraulic Amplification with a Piezoelectric Actuator with Applications to Camless Engine.
- M25. Norton, Dwight D., 2009, Automated Alignment in Two-Dimensions using Moire Fringe Technique.
- M26. Ryan J. Beach, 2014, Identification and Control of a Fast Tool Servo for Machining Non-Cylinder Holes.
- M27. Rashid Muhammed Yasin, 2014, Design, Modeling, and Control of a Hydrostatic Actuator for MRI.
- M28. Grant Cavalier, 2015, Modeling and Control of an Active Magnetic Bearing Spindle System

M.S. Non-Thesis Project Reports:

- m1. Liang, Yee, 2000, A Report on Electro-Discharge Machining Experiments.
- m2. Yim, B., 2001, A Report on X-Y Stage System Identification Experiment.
- m3. Kim, Jason, 2002, An Experimental Truck-Bridge System for Dynamic Testing.

**Post Doctoral Researchers**

R. D. Hanson	Post Doctoral Research Associate 100% Academic Appointment	8/1996-8/1997
B. S. Kim	Post Doctoral Research Associate 100% Academic Appointment	5/2001-6/2002
N. O. Pérez Arancibia	Post Doctoral Research Associate	9/2007-4/2010

	100% Academic Appointment (co-advised with Professor J. S. Gibson)	
Kevin Chu	Post Doctoral Research Associate 100% Academic Appointment	10/2011-6/2012
Christopher Lim	Post Doctoral Research Associate 100% Academic Appointment	1/2012-8/2012
Herrick Chang	Post Doctoral Research Associate 100% Academic Appointment	1/2013-8/2013
Matthew Gerber	NIH Post Doctoral Trainee 100% Academic Appointment (co-advised with Dr. Hubschman)	1/2020-12/2021
Yu-Hsiu Lee	Post Doctoral Research Associate 100% Academic Appointment	1/2020-12/2020
<b>Visiting Researchers:</b>		
W. Zhang	Visiting Scholar	9/1995-12/1996
C. T. Choi	Visiting Post Doctoral Research Associate Research Institute of Industrial Science & Technology (RIST), Pohang, South Korea	7/1997-5/1998
K. Matsubara	Visiting Post Doctoral Research Associate Faculty, Kyoto University, Japan	9/1997-9/1998
A. Pesterev	Visiting Scholar Senior Researcher at Russia Institute for Systems Analysis, Russian Academy of Sciences	1/2000-6/2000
Jon Madariaga	Visiting Scholar IK4 Technika, Spain	12/2012-12/2013
Her-Terng Yau	Visiting Scholar Faculty, National Chung Cheng University, Taiwan	6/2017-9/2017
Chen-Huan Pi	Visiting Graduate Student National Chiao Tung, University, Taiwan	11/2018-11/2019
Stone Cheng	Visiting Scholar Faculty, National Chiao Tung University, Taiwan	12/2019-1/2020
Leo I-Haur Tsai	Visiting Graduate Student	4/2019-2/2020

National Taiwan University, Taiwan

Tien-Yun Chi

Visiting Scholar

8/2019-2/2020

Industrial Technology Research Institute, Taiwan

## Research Publications

Google Scholar Profile: <http://scholar.google.com/citations?user=wADiNucAAAAJ&hl=en>

### Articles in Journals:

- J1. Tomizuka, M., M. S. Chen, S. Ren, and T. C. Tsao, "Tool Positioning for Noncircular Cutting with Lathe," American Society of Mechanical Engineers Journal of Dynamic Systems, Measurement, and Control, 109, 176-179, June 1987.
- J2. Tsao, T. C. and M. Tomizuka, "Adaptive Zero Phase Error Tracking Algorithm for Digital Control," American Society of Mechanical Engineers Journal of Dynamic Systems, Measurement, and Control, 109, 349-354, Dec. 1987.
- J3. Tomizuka, M., T. C. Tsao, and K. Chew, "Analysis and Synthesis of Discrete-Time Repetitive Controllers," American Society of Mechanical Engineers Journal of Dynamic Systems, Measurement, and Control, 111, 353-358, 1989.
- J4. Chen, Y. Y. and T. C. Tsao, "A Description of the Dynamic Behavior of Fuzzy Systems," Institute of Electrical and Electronics Engineers Transactions of Systems, Man, and Cybernetics, 19:4, 745-755, 1989.
- J5. Tsao, T. C., Y. Y. Chen, and M. Tomizuka, "Noncircular Turning of Workpieces with Sharp Corners," ASME Journal of Engineering for Industry, 112:2, 181-183, 1990.
- J6. Tsao, T. C. and K. C. Pong, "Control of Radial Runout in Multi-Tooth Face Milling," Transactions of the North American Manufacturing Research Institute of SME, 183-190, 1991.
- J7. Tsao, T. C. and K. C. Pong, "Spindle Speed Regulation and Tracking in Interrupted Cutting," Transactions of the North American Manufacturing Research Institute of SME, 235-241, 1992.
- J8. Tsao, T. C., M. W. McCarthy, and S. G. Kapoor, "A New Approach to Stability Analysis of Variable Speed Machining Systems," International Journal of Machine Tools and Manufacture, 33:6, 791-808, 1993.
- J9. Pang, S. T., T. C. Tsao, and L. A. Bergman, "Active and Passive Damping of Euler-Bernoulli Beams and Their Interactions," ASME Journal of Dynamic Systems, Measurement, and Control, 115:3, 379-384, 1993.
- J10. Rasmussen, J. D., T. C. Tsao, R. D. Hanson, and S. G. Kapoor, "Dynamic Variable Depth of Cut Machining Using Piezoelectric Actuators," International Journal of Machine Tools and Manufacture, 34:3, 379-392, 1994.
- J11. Nemani, M., T. C. Tsao, and S. Hutchinson, "Multi-Rate Analysis and Design of Visual Feedback Servo Control System," ASME Journal of Dynamic Systems, Measurement, and Control, 116:1, 45-55, 1994.

- J12. Alter, D. M. and T. C. Tsao, "Two-Dimensional Exact Model Matching with Application to Repetitive Control," ASME Journal of Dynamic Systems, Measurement, and Control, 116:1, 2-9, 1994.
- J13. Tsao, T. C. and M. Tomizuka, "Robust Adaptive and Repetitive Digital Tracking Control and Application to a Hydraulic Servo for Noncircular Machining," ASME Journal of Dynamic Systems, Measurement, and Control, 116:1, 24-32, 1994.
- J14. Tsao, T. C., "Simple Stability Criteria for Nonlinear Time Varying Discrete Systems," Systems & Control Letters, 22, 223-225, 1994.
- J15. Alter, D. M. and T. C. Tsao, "Stability of Turning Processes with Actively Controlled Linear Motor Feed Drives," ASME Journal of Engineering for Industry, 116, 298-307, 1994.
- J16. Wu, J. W. and T. C. Tsao, "A Sufficient Stability Condition for Linear Conservative Gyroscopic Systems," ASME Journal of Applied Mechanics, 61, 715-717, 1994.
- J17. Tsao, T. C., "Optimal Feed-Forward Digital Tracking Controller Design," ASME Journal of Dynamic Systems, Measurement, and Control, 116, 583-592, 1994.
- J18. Manayathara, T. J., T. C. Tsao, and J. Bentsman, "Rejection of Unknown Periodic Load Disturbances in Continuous Steel Casting Process Using Learning Repetitive Approach," IEEE Transactions on Control Systems Technology, 4:3, 259-265, 1996.
- J19. Alter, D. M. and T. C. Tsao, "Control of Linear Motors for Machine Tool Feed Drives: Design and Implementation of H-Infinity Optimal Feedback Control," ASME Journal of Dynamic Systems, Measurement, and Control, 118, 649-656, 1996.
- J20. Aubrecht, J., A. Vakakis, T. C. Tsao, and J. Bentsman, "Experimental Study of Nonlinear Transient Motion Confinement in a System of Coupled Beams," Journal of Sound and Vibration, 195, 629-648, 1996.
- J21. Ditman, J. B., L. A. Bergman, and T. C. Tsao, "The Design of Extended Bandwidth Shape Memory Alloy Actuators," Journal of Intelligent Material Systems and Structures, 7, 635-645, 1996.
- J22. Srinivasan, K. and T-C. Tsao, "Machine Tool Feed Drives and Their Control - A Survey of the State of the Art," ASME Journal of Manufacturing Science and Engineering, 119, 743-748, 1997.
- J23. Alter, D. M. and T-C. Tsao, "Control of Linear Motors for Machine Tool Feed Drives: Experimental Investigation of Optimal Feedforward Tracking Control," ASME Journal of Dynamic Systems, Measurement, and Control, 120, 137-142, March 1998.
- J24. Hanson, R. D. and Tsu-Chin Tsao, "Reducing Cutting Force Induced Bore Cylindricity Error by Learning Control and Variable Depth of Cut Machining," ASME Journal of Manufacturing Science and Engineering, Vol. 120, 547-554, August 1998.
- J25. Furness, R. J., T. C. Tsao, J. S. Rankin, III, M. J. Muth, and K. Manes, "Torque Control for a Form Tool Drilling Operation," IEEE Transactions on Control Systems Technology, Vol. 7, 22-30, Jan. 1999.
- J26. Prell, A. P., T-C. Tsao, and L. A. Bergman, "Application of Repetitive Control to Vibration Attenuation in Engineering Structures," Journal of Vibration and Control, 5(5), 741-760, 1999.
- J27. Anderson, Mark D., Tsu-Chin Tsao, and M. B. Levin, "Adaptive Lift Control of Camless Electrohydraulic Valvetrain," SAE 1998 Transactions, Journal of Engines, (Also as SAE Technical Paper 981029), Vol 107-3, Oct. 1999.

- J28. Kim D. H., and Tsu-Chin Tsao, "Robust Performance Control of Electrohydraulic Actuators for Electronic Cam Motion Generation," IEEE Transactions on Control Systems Technology, Vol. 8, 220-227, March 2000.
- J29. Kim D. H., and Tsu-Chin Tsao, "A Linearized Electrohydraulic Servovalve Model for Valve Dynamics Sensitivity Analysis and Control System Design," ASME Journal of Dynamic Systems, Measurement, and Control, Vol. 122, 179-187, March 2000.
- J30. Sun, Z., and Tsu-Chin Tsao, "Adaptive Control with Asymptotic Tracking Performance And Its Application to an Electrohydraulic Servo System," ASME Journal of Dynamic Systems, Measurement, and Control, Vol. 122, 188-195, March 2000.
- J31. Tsao, T. C., Y. X. Qian, and M. Nemani, "Adaptive Repetitive Control Schemes for Asymptotic Tracking of Periodic Signals with Unknown Period," ASME Journal of Dynamic Systems, Measurement, and Control, Vol. 122, 364-369, June 2000.
- J32. McNab, R. J. and T-C. Tsao, "Receding Horizon Linear Quadratic Optimal Control for Multi-Axis Contour Tracking," ASME Journal of Dynamic Systems, Measurement, and Control, Vol. 122, 375-381, June 2000.
- J33. Hanson, R. D. and T-C. Tsao, "Periodic Sampling Interval Repetitive Control And Its Application to Variable Spindle Speed Non-Circular Turning Process," ASME Journal of Dynamic Systems, Measurement, and Control, Vol. 122, 560-566, September 2000.
- J34. Choi, C. T. and T-C. Tsao, "Synthesis of an H-infinity Controller with Preview Compensation," ASME Journal of Dynamic Systems, Measurement, and Control, Vol. 123, 117-124. March 2001.
- J35. Li, J-W. and T-C. Tsao, "Robust Performance Repetitive Control Design Using Structured Singular Values and Implementation," ASME Journal of Dynamic Systems, Measurement, and Control, Vol. 123, 330-337. September 2001.
- J36. Pesterev, A. V., Bergman, L. A., Tan, C. A., Tsao, T.-C., and Yang, B., "On Asymptotics of the Solution of the Moving Oscillator Problem," Journal of Sound and Vibration, Vol. 260, 519-536. 2003.
- J37. Tai, Chun, Tsao, Tsu-Chin, Schörn, N. A., and Levin, M. B., "Increasing Torque Output From a Turbodiesel With Camless Valvetrain," SAE 2002 Transactions Journal of Engines, Vol 111-3, 1802-1810. (Also as SAE Paper 2002-01-1108 ), September 2003.
- J38. Kim, B. S. and Tsao, T-C., "A Performance Enhancement Scheme for Robust Repetitive Control System," ASME Journal of Dynamic Systems, Measurement, and Control. Volume 126, Issue 1, pp. 224-229, March 2004.
- J39. Kim, B. S., Li, J. and Tsao, T-C., "Two-Parameter Robust Repetitive Control With Application to a Novel Dual-Stage Actuator for Noncircular Machining," IEEE/ASME Trans. on Mechatronics, Vol. 9, No. 4, 644-652, Decemeber 2004.
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Invited Presentations (Since 2013):

- T1. "Rejecting deterministic and random disturbances in Mechatronic Systems," **Semi-Plenary Lecture**, 04/11/2013, The 6<sup>th</sup> IFAC Symposium on Mechatronic Systems (Mechatronics '13), Zhejiang University, Hangzhou, China.
- T2. "Tracking and Rejecting Deterministic and Random Signals for Precision Motion," Ohio State University, Columbus, OH, 08/30/2013
- T3. "Overview of Pedagogy and Research in Mechatronics and Controls," National Taiwan University, 12/15/2013
- T4. "Digital Control for Mechatronic Systems," UCSD, La Jolla, CA 04/18/2014
- T5. "Building an Algorithm Engineering Paradigm for Digital Manufacturing," **Keynote Presentation** Industrial Technology Research Institute (ITRI) Technical Advisory Committee (TAC) meeting, 05/22.2014. Hsinchu, Taiwan.
- T6. "Advanced Motion Control for Manufacturing Machines," International Conference on Machining Materials and Mechanical Technology (IC3MT) 2014, **Plenary Lecture**, 09/02/2014. Taipei, Taiwan.
- T7. Symposium Celebrating the 70<sup>th</sup> Birthday of Professor Larry Bergman High Performance Control for Motions and Vibrations, Allerton Park, University of Illinois Urbana-Champaign, Monticello, IL October 18, 2014

- T8. “Repetitive and Adaptive Control of Distributed Generation for Seamless Transition Between Grid-tied and Off-Grid Operations,” 11/06/2014, Berkeley, CA
- T9. “Advanced Precision Motion Control Technology,” HIWIN Microsystems, Taichung, Taiwan, 12/14/2014
- T10. “Motion And Vibration Control: Narrow Band Harmonic and Broad Band Random Disturbances Rejection and Tracking,,”NASA Armstrong, March 17, 2015
- T11. Mechatronics and Controls for Steel Making, China Steels, Kaohsiung, Taiwan, 03/27/2015
- T12. “High Performance Motion Control and Applications,” University of Michigan, Ann Arbor, Michigan, 11/13/2015.
- T13. “Realizing CPS “*Algorithms Inside*” Research, Education, and Industrial Applications,”
- T14. **Keynote Presentation** in *Cyber Physical Systems Round Table*, Delft, Netherland. 12/03/2015
- T15. “Overview of Mechatronics and Controls Research and Education,” National Chiao Tung University, Hsinchu, Taiwan, 12/14/2015
- T16. “Precision Motion Control – From Engine Piston Machining to Robotic Cataract Surgery,” Texas A&M University, College Station, Texas, 04/13/2016
- T17. “Innovations in Robots Beyond Manufacturing Automation Precision Motion Control for Industrial Automation,” **Keynote Presentation** in Dushu Lake International Conference, CHINA 9/23/2016
- T18. **Plenary Panel Talk**, “Mechatronics And Controls Research in Automation,” Chinese Automatic Control Society (CACS) Annual Conference, Taichung, Taiwan, 11/10/2016
- T19. “High-Performance Motion and Vibration Control for Intelligent Machines,” Ministry of Education Industrie 4.0 Program, Taipei, Taiwan, 11/22/2016
- T20. “Intraocular Robotic interventional and Surgical System’ National Chiao Tung University, Hsin Chu, Taiwan, 11/30/2016
- T21. **Keynote Lecture**, “High-Performance Motion and Vibration Control for Intelligent Machines,” Chinese Society of Mechanical Engineers (CSME) Annual Conference, Hsin Chu, Taiwan, 12/3/2016
- T22. “Adding Values by High-Performance Intelligent Servo Control,” National Chung Hsin University, Tai Chun, Taiwan, 12/13/2016
- T23. “High-Performance Motion and Vibration Control for Intelligent Machines,” National Taiwan University of Science and Technology, Taipei, 01/16/2017
- T24. High-Performance Motion and Vibration Control for Intelligent Machines, National Chung Cheng University, Chiayi, Taiwan, 01/18/2017
- T25. “High-Performance Motion and Vibration Control and Applications,” National Chiao Tung University, Hsin Chu, Taiwan, 03/01/2017
- T26. “Pedagogy of Mechatronics in Mechanical Engineering Capstone Design Projects,” “National Taiwan University, Taipei, Taiwan, 03/17/2017
- T27. “High-Performance Motion and Vibration Control and Applications,” TU Wien, Vienna, Austria, 05/05/2017
- T28. ADVANCED MECHATRONICS AND CONTROL FOR PRECISION MOTION CONTROL,” **Plenary Talk**, International Electric Machines & Drive Conference, San Diego, 05/13/2019
- T29. “Smart Machines Enabled by Advanced Mechatronics and Control: From Precision Machining to Robotic Surgery,” **Plenary Talk**, International Conference on Advanced

- Robotics and Intelligent Systems (ARIS 2019) and National Conference on Advanced Robotics (NCAR 2019), Taipei Taiwan, 08/21/2019
- T30. “Advanced Mechatronics and Control: From Precision Machining to Robotic Surgery,” University of California, Santa Barbara, 09/27/2019
- T31. “Mechatronics and Control: From Precision Machining to Robotic Surgery,” University of Texas, Dallas, 02/03/2020
- T32. “Precision Manufacturing Enabled by Advanced Control,” National Chung Cheng University, 03/03/2021
- T33. “Advanced High-Performance Control for Precision Machines,” National Chung Hsing University, 03/04/2021
- T34. “Six Degree-of-Freedom Multi-Rotor Aerial Vehicles,” National Taiwan University, 03/10/2021
- T35. “Advanced High-Performance Control for Precision Manufacturing,” Ming Chi University of Technology, 03/11/2021
- T36. “Medical Robotic Interventions and Surgeries,” Chang Gung University, 03/11/2021
- T37. “Advanced High-Performance Control for Precision Machines,” National Cheng Kung University, 03/16/2021
- T38. “Intelligent Precision Machines – From Precision Machining to Image Guided Robotic Surgery,” National Tsing Hua University, 03/17/2021
- T39. “Advanced Mechatronics and Control Enabling Technology for Innovations in Precision Manufacturing and Robotic Surgery,” National Taipei University of Technology, 03/18/2021
- T40. “High-Performance Control for Precision Mechanical Motions,” **Plenary Talk**, Modeling, Estimation, and Control Conference, 10/26/2021
- T41. “Novel Multirotor Aerial Vehicles for 6 Degree-of-Freedom Motions,” National Tsing Hua University, 02/24/2022