Curriculum Vitae

Masayoshi Tomizuka
Cheryl and John Neerhout, Jr. Distinguished Professor
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Birth Date: March 31, 1946 **Place of Birth:** Tokyo, Japan

Education:

B. S.	Keio University, Japan, March 1968
M. S.	Keio University, Japan, March 1970
Ph. D.	Massachusetts Institute of Technology, February 1974

Professional Appointments:

1974	Member of teaching staff, Keio University, Japan
1974-1980	Assistant Professor, Department of Mechanical Engineering, University of California at Berkeley
1980-1986	Associate Professor, Department of Mechanical Engineering, University of California at Berkeley
1986-Present	Professor, Department of Mechanical Engineering, University of California at Berkeley
1989-1991	Vice Chairman of Instruction, Department of Mechanical Engineering, University of California at Berkeley
1991-1992	Visiting Professor, Toshiba Chair in Intelligent Mechatronics, University of Tokyo.
1995-1996	Vice Chairman of Graduate Studies, Department of Mechanical Engineering, University of California at Berkeley
1999-2002	Director of Engineering Systems Research Center, University of California at Berkeley
2002-2004	Program Director, Dynamic Systems and Control Program, Civil and Mechanical Systems, National Science Foundation
1976-Present	Engineering consultant to several U.S. and foreign corporations.

Awards and Honors:

- Fellow, American Society of Mechanical Engineers (1989)
- Toshiba Professor in Intelligent Mechatronics, University of Tokyo (1991-1992)
- 1994 Best Paper Award, ASME Journal of Dynamic Systems, Meas. and Control
- Roscoe and Elizabeth Hughes Professor of Mechanical Engineering (1996-1997)
- Outstanding Investigator Award, ASME Dynamic Systems and Control Division (1996)
- Fellow, Institute of Electric and Electronics Engineers (1997)

- Charles Russ Richards Memorial Award (ASME: Outstanding achievement in mech. engineering by an engineer twenty years or more following graduation) (1997)
- Cheryl and John Neerhout, Jr., Distinguished Professor (1998-)
- Fellow, Society of Manufacturing Engineers (1998)
- Leadership Award, ASME Dynamic Systems and Control Division (2000)
- Hideo Hanafusa Outstanding Investigator Award (2002)
- Rufus Oldenburger Award (2002)
- John R. Ragazzini Award (2006)
- Outstanding Investigator Award, Asia-Pacific Network of Centers for Research in Smart Structure Technology (2007)

Society Activities:

American Society of Mechanical Engineers (ASME)

- Chairman of Executive Committee, Dynamic Systems and Control Division, 1986-1987
- Chairman of Honors Committee, Dynamic Systems and Control Division, 1986-1987
- Associate Editor, Journal of Dynamic Systems, Measurement and Control, 1979-1984
- Technical Editor, Journal of Dynamic Systems, Measurement and Control, 1988-1993
- Editor-in-Chief, IEEE/ASME Transactions on Mechatronics, 1/1997-12/1999 (Editor-in-Chief Elect, 1995-1996, Past Editor-in-Chief, 2000-)
- Numerous ASME-Dynamic Systems and Control Division Offices including Long Range Planning Chairman, Computer Control Panel Chairman)

Society of Manufacturing Engineers (SME)

Member of North American Manufacturing Research Institution (NAMRI) Scientific Committee, 1993-2000

Institute of Electrical and Electronics Engineers (IEEE)

Associate Editor, IEEE Control Systems Magazine, 1986-1988

International Federation of Automatic Control (IFAC)

- Member of Organizing Committee, 1st IFAC Workshop on Adaptive Systems in Control and Signal Processing, San Francisco, 1983.
- Member of International Program Committee, 2nd IFAC Workshop on Adaptive Systems in Control and Signal Processing, Lund, Sweden, 1986
- Associate Editor of IFAC Journal Automatica, 1993-1999
- Chair, 1996 IFAC World Congress Young Author Prize Committee, July 1996
- Vice Chair of IFAC Technical Committee on Mechatronic Systems (2002-) Member (2000-2002)
- Chairman of International Program Committee, 2nd IFAC Conference on Mechatronic Systems, Berkeley, CA, December 2002
- Chair, Technical Committee on Mechatronic Systems, 2005 -
- Chair, Award Committee, 2005 – 2008
- Chair, Publication Committee, 2008 -

Japan Society of Mechanical Engineers (JSME)---Member
Society of Instrument and Control Engineers, Japan---Member
Sigma Xi---Member

Other Professional Activities

• Paper reviewer for numerous professional journals and conferences including those of ASME, IEEE and IFAC (International Federation of Automatic Control), 1974-Present
• Proposal Reviewer for National Science Foundation and other Agencies, 1976-Present
• Member of a Select Panel, DOE/ORNL Workshop on Research Goals and Priorities in Intelligent Machines, November 1983.
• Member of a Select Panel, 1984 NSF Research Study of Supercomputers in Mechanical Systems, September 1984
• Member of a Select Panel, NSF/ASME Workshop on Research Needs in the Control of Mechanical Systems, June 1986
• Vice Chairman of Organizing Committee and Program Co-Chairman, Japan-USA Symposium on Flexible Automation, Osaka, Japan, July 1986
• ASME Director, American Automatic Control Council, 1989-1992
• Member of Organizing Committee, 2nd USA-Japan Symposium on Flexible Automation, Minneapolis, July 1988
• Member of Program Committee, 1989 American Control Conference, June 1989.
• Member of Program Committee, 1990 American Control Conference, June 1990.
• Program Chairman, 1991 American Control Conference, June 1991.
• Chairman of Organizing Committee, 1992 Japan-USA Symposium on Flexible Automation, San Francisco, Japan
• Associate Editor, Advanced Robotics, 1994-Present
• Corresponding Member, Proceedings of the Institute of Mechanical Engineers, Journal of Systems and Control Engineering, 1994-Present
• Member of International Prog Committee for 1994 RI/SME World Conference on Robotics Research
• Associate Editor, European Journal of Control, 1995-Present
• General Chairman, 1995 American Control Conference, June 1995
• Vice President, American Automatic Control Council, January 1996 - 1997
• Member of Program Committee, IFAC-IFIP-IMACS Conference on Control of Industrial Systems (CIS'97), Belfort, France, May, 1997.
• Member of Organizing Committee, IEEE/ASME International Conference on Advanced Intelligent Mechatronics '97, Tokyo, Japan, June 1997.
• Member of Program Committee, 12th IEEE International Symposium on Intelligent Control, July 16-18, 1997, Istanbul, Turkey
• Guest Editor, IVHS Special Section, Control Engineering Practice, Journal of IFAC, November 1997.
• Member of International Program Committee, 11th IFAC Symposium on System Identification, July 8-11, Fukuoka, Japan
• President, American Automatic Control Council (January 1998- December 1999)
• Past President, American Automatic Control Council (January 2000 -
• Member of Program Committee, IFAC Workshop on Intelligent Components for Vehicles - ICV'98, March 1998.
• Program Co-Chairman, Japan-USA-Vietnam Workshop on Research and Education in Systems, Computation and Control Engineering, May 1998.
• Co-Chairman, Program Committee, 5th International Workshop on Advanced Motion Control, Coimbra, Portugal, June 29-July 1, 1998

• Member of Review Panel, Professional Opportunities for Women in Research and Education (POWRE) proposals, Div. of Design, Manufacturing and Industrial Innovation, NSF, March 11, 1999
• Member of Advisory Committee, 2nd International Conference on Recent Advances in Mechatronics, May 24-26, 1999, Istanbul, Turkey
• Member of Site Visit Review Panel, NSF ERC on Reconfigurable Machining Systems at the University of Michigan, May 10-13, 1999
• External Committee Member, Comprehensive Personnel Planning Committee, Faculty of Engineering and Science, Keio University, Japan (September 1999 – March 2000)
• Technical Program Chair, 6th International Workshop on Advanced Motion Control, Nagoya, Japan, March 30-April 1, 2000.
• Member of the NSF Site Visit Team (Engineering Research Center for Reconfigurable Machining Systems at the University of Michigan) (May 11-12, 2000)
• Chairman of International Program Committee, Japan-USA-Vietnam Workshop on Research and Education in Systems, Computation and Control Engng, HoChiMing City, Vietnam, June 7-9, 2000.
• Chair of AVEC (Advanced Vehicle Control) 2000 International Technical Committee
• Member of Program Committee, International Conference on Machine Automation (ICMA2000)
• External Reviewer, Mechatronics Program, The National University of Singapore
• External Reviewer for Research Project Submission, The National University of Singapore
• Member, Visiting Committee on Advanced Technology, NIST, 2001-2002
• Member, National Research Council (NRC) Panel on Manufacturing Technology, 2000-2002
• Member of External Evaluation Committee, Mechanical and Aerospace Engineering, Kyoto University, Kyoto, Japan, January 13, 2003
• Member, Comprehensive Personnel Planning Committee, Faculty of Science and Technology, Keio • University, Japan (2002-)
• Member of Advisory Committee, Japan-USA Symposium on Flexible Automation (2004)
• Chair, Award Committee, American Automatic Control Council (2003-2005)
• Member, National Academies Panel on Benchmarking the Research Competitiveness of the U.S. in Mechanical Engineering, 2006
• Member, National Academies Panel on Benchmarking the Research Competitiveness of the U.S. in Mechanical Engineering
• Chair, Committee on Full System Testing and Evaluation of personal Protection Equipment Ensembles, National Academies
• Member of External Review Panel, Institute of Industrial Science, University of Tokyo, March 2008

Research Interests:

Tomizuka's research covers control theory and its applications to various mechanical systems. A balance between theory and laboratory work is emphasized. The trend in mechanical system design is to replace mechanical complexity with electronics and computers (real time controllers) in order to gain high performance, reliability and flexibility. A number of control methodologies relevant to mechanical systems are under investigation in his research group: they include optimal control, preview control, adaptive control, and nonlinear robust control. Since these control methodologies are implemented on computers, the discrete time (digital) aspect is emphasized in the development of theory. Actual mechanical systems currently under study include direct drive robot arms, a machining center, x-y motion control tables, computer disk file systems and automotive vehicles.

Seminar Talks and Invited Lectures (after 1990)

- "Discrete Time Robust Control," 3rd Control Mechanics Workshop, USC, January 1990
- "Digital and Discrete Time Control of Mechanical Systems," Digital Equipment Corporation, June 1990.
- "Digital Control of Mechanical Systems," GMF Robotics, June 1991.
- "Vehicle Lateral Control with Magnetic Marker Reference," GM Research Laboratories, June 1991.
- "On Compensation of Phase Shift in Linear Controller Design" Texas A&M University, November 1991.
- "Mechatronics Research at the University of California at Berkeley," Tokyo Chapter, IEEE Robotics and Automation Society, December 26, 1991.
- "Control Approaches for Systems Under Action of Periodic Disturbances," SICE Neural Network Group, Tokyo, January 16, 1992.
- "Adaptive and Repetitive Control for Robot Manipulators," University of Tokyo, Tokyo, January 27, 1992.
- "Digital Motion Control," Nagoya University, Nagoya, February 19, 1992.
- "Discrete Time Robust Nonlinear Control," Tokyo, February 24, 1992.
- "Discrete Time Repetitive Control Algorithms---Regulation under Periodic Disturbances," invited talk at the 1992 Workshop on Advanced Motion Control, Nagoya, March 16-18, 1992; Mini-Symposium on Advances in Motion Control Systems, Keio University, Yokohama, March 19, 1992.
- "Vehicle Lateral Control for Highway Automation," Nippon Denso Corp., Nagoya, March 17, 1992.
- "Trends of Mechanical Control Research in the United States," A keynote speech delivered at the 1992 JSME Annual Meeting, Yokohama, April 1, 1992.
- "Program on Advanced Technologies for Highway---California Program on Highway Automation," Institute of Industrial Science, University of Tokyo, April 22, 1992.
- "Control/Mechatronics Research in the United States," Korea Advanced Institute of Science and Technology, Daejon, Korea, May 11, 1992.
- "Digital Feedforward Control for High Speed/High Precision Tracking," Korea Advanced Institute of Science and Technology, Daejon, Korea, May 12, 1992; Yonsei University, Seoul, Korea, May 13, 1992.
- "Digital Tracking Control and Regulation for Mechanical Systems," Toshiba Corporation, Isogo, Kanagawa, May 14, 1992.
- "Adaptive Control Using Frequency Sampling Filters---Handling Periodic Reference Trajectories and Disturbances," 29-th Panel Meeting on Adaptive Control, Society of Instrument and Control Engineers, Tokyo, May 15, 1992.
- "Trends of Mechanical Control Research in the United States," Toyohashi University of Technology, Toyohashi, May 18, 1992; Osaka Prefecture University, Osaka, May 19, 1992.
- "Research Activities at the UCB on Mechanical Systems Control," Higashifuji Technical Center, Toyota Motor Corporation, May 27, 1992.
- "Control Research and Education in the United States," Plenary Talk at the 21st SICE Symposium on Control Theory, Kariya, May 28, 1992.
- "Trends of Mechanical Control Research in the United States," Tokushima University, Tokushima, May 29, 1992.

- "Differences between Japanese Universities and American Universities and Approaches to Industry University Cooperation," Fukui-City, Fukui, June 1, 1992.
- "Japanese Universities and American Universities," Special Lecture, Institute of Industrial Science Open House, University of Tokyo, Tokyo, June 4, 1992.
- "Motion Controls---Mechanical Engineers View, Electrical Engineers View and Control Engineers View," Keynote Speech at Robotics/Mechatronics Conference, JSME, Kawasaki, June 16-17.
- "Some Examples of Industry University Cooperation in the United States," Yonezawa-City, Yamagata, June 19, 1992.
- "Digital Regulation and Tracking Control for Mechanical Systems," Murata Machinery Corporation, Kyoto, June 22, 1992.
- "Digital Controls for Mechanical Systems," Workshop for Advances in Motion Controls, Tainan, Taiwan, July 1, 1992.
- "Vehicle Lateral Control for Highway Automation---a PATH Project," IEEE-VTS, Tokyo Chapter, Tokyo, July 3, 1992, University of Illinois at Urbana Champaign, October 30, 1992, Univ. of Southern California, May 20, 1993, Tokyo Institute of Technology, August 2, 1993.
- "Digital Regulation and Tracking Control for Mechanical Systems," Ohita University, Ohita, Japan, July 6, 1992.
- "Repetitive Control," National University of Singapore, July 28, 1992, Texas A&M University, January 30, 1993.
- "Digital Motion Controls," Kawasaki Steel, Chiba, Japan, March 25, 1993.
- "Advanced Controls for Disk File Systems," National University of Singapore, July 14, 1993. Mechanical Engineering Laboratory, Hitachi Ltd., August 5, 1993.
- "Fuzzy Control in CONTROL ENGINEER'S Tool Box," ARO-NASA Workshop on Formal Models for Intelligent Cont., Sept. 30-Oct. 2, Cambridge Mass.; Janu.14, 1994, Univ. of Michigan
- "Controller Structure for Robust High-Speed/High-Accuracy Digital Motion Control," Tutorial S-2, 1994 IEEE International Conference on Robotics and Automation, May 1994; Bogazici University, Istanbul, May 1994.
- "Advanced Vehicle Control Systems Research in California PATH," Bogazici University, Istanbul, May 1994.
- "Advanced Vehicle Control Systems (AVCS) Research for Automated Highway Systems in California PATH," a plenary talk at the 1994 Vehicle Navigation & Information Systems Conference, Yokohama, Japan, August 1994.
- "Robust Digital Tracking Control for Motion Control Applications," a plenary lecture at the 1994 Korea Automatic Control Conference, Daejon, Korea, October 1994.
- "Vehicle Lateral Control for Automated Highway Systems," Tokyo, Japan, October 1994.
- "Advanced Vehicle Control Systems (AVCS) Research for Automated Highway Systems in California PATH," Xerox Distinguished Lecture Series in Control and Diagnostics, Webster, Xerox, June 29, 1995; University of California at San Diego, July 7, 1995.
- "Robust Digital Motion Controllers for Mechanical Systems," (Plenary Talk), International Conference on Recent Advances in Mechatronics, ICRAM95, August 14-16, 1995, Istanbul, Turkey.
- "Digital Repetitive Controls and Their Applications to Mechanical Systems," October 6, 1995, Technische Hochshule Darmstadt, Darmstadt, Germany
- "Advanced Vehicle Control Systems for Automated Highway Systems", (Plenary Talk), IFAC-Workshop Motion Control, October 9-11, 1995, Munich, Germany
- "Intelligent Vehicle Highway Systems (IVHS) Research in California PATH," (Invited Talk), International Hi-Tech Forum Osaka '95, November 27-28, 1995, Osaka Japan.

- "Advanced Vehicle Control Systems (AVCS) Research for Automated Highways Systems in California," Distinguished Lecture Series 1995-96, Department of Mechanical Engineering, University of Maryland, February 19, 1996.
- "Phase Cancellation in the Design of Feedback and Feedforward Control Systems," University of California, Santa Barbara, February 23, 1996; University of California, Irvine, April 15, 1996.
- "Model Based Prediction, Preview and and Robust Controls in Motion Control Systems," (Plenary Talk), 4th International Workshop on Advanced Motion Control, March 18-21, 1996, Mie, Japan .
- "Japanese Universities and American Universities," Citizen's Forum - Towards 21-st Century, March 21, 1996, Mie University, Japan.
- "Current Status and Future Direction of Controls for Precision Manufacturing Technology," Keynote Lecture, Intelligent Systems Kumamoto Symposium '96, Kumamoto, Japan, October 18, 1996
- "Automated Highway Systems," Mitsubishi Electric Company, Osaka, Japan, December 12, 1996
- "Advanced Control Applications to Machine Tool Controls," Department of Precision Engineering, Kyoto University, December 11, 1996.
- "Control of Disk File Systems," Hitachi Mechanical Engineering Laboratory, December 13, 1996.
- "On Multi-Rate Control Systems," Yokohama National University, December 21, 1996.
- "Automated Highway Systems - An Intelligent Transportation System for the Next Century," Plenary Talk, IEEE/ASME International Conference on Advanced Intelligent Mechatronics '97, Tokyo, June 1997; Plenary Lecture at the 1997 IEEE International Symposium on Industrial Electronics, Guimaraes, Portugal, July 1997.
- "Intelligent Controls for Precision and High-Speed Motion Control Systems," Invited Talk, The Second World Congress on Intelligent Control and Intelligent Automation, Xian, China, June 1997.
- Advanced Control Applications to Servo Systems for Precision Machines, Keynote Speech at the International Conference on Micromechatronics for Information and Precision Equipment, Tokyo, Japan, July 1997.
- Advanced Control Applications to Information Storage Devices, NSK Corporation, Tokyo Japan, July 1997.
- Mechatronics for Computer Data Storage Devices, IEEE International Conference on Intelligent Engineering Systems, Budapest, Hungary, September 1997 (Plenary talk).
- Vehicle Lateral Control for Automated Highway Systems, KSME Dynamics & Control Division Fall Conference, "Intelligent Vehicle Control for AHS," Kwangju, Korea, September 1997 (Keynote speech).
- Advanced Control Applications to Computer Data Storage Devices, Southwest Mechanics Lecture Series (SWMLS), October 1997, University of Oklahoma, Norman (10/13), Oklahoma State University (10/14), Southern Methodist University (10/15) and Texas A&M University (10/16)
- Advanced Control Applications to Computer Data Storage Devices, Princeton University (2/13/98).
- Advanced Vehicle Control System (AVCS) for Heavy Duty Vehicles for Automated Highway Systems (AHS), IFAC Workshop on Intelligent Components for Vehicles, Seville, Spain, March 23-24, 1998, (Plenary Talk).
- Challenges in Control of Mechanical Systems: Blending Control Theory and Applications, Japan-USA-Vietnam Workshop on Research and Education in Systems, Computation and Control Engineering, Hanoi, Vietnam, May 13-15, 1998 (Keynote Speech).
- "Intelligent Control of Road Vehicles for Automated Driving: PATH Architecture for Automated Highway Systems and Vehicle Lateral Control Research Conducted at California PATH Program,"

Fourth ECPD International Conference on Advanced Robotics, Intelligent Automation and Active Systems," August 24-26, 1998, Moscow (Plenary Talk)

- "Vehicle Lateral Control for Automated Highway Systems," Fourth International Symposium on Advanced Vehicle Control (AVEC'98), September 14-18, Nagoya, Japan (Keynote Speech).
- "Overview and Challenges in Mechatronics Research and Education," 1998 International Conference on Mechatronic Technology (ICMT'98), November 30- December 1, 1998, Hsinchu, Taiwan (Keynote Speech)
- "Force Control without Force Sensor at the End Effector," The Second Flexible Robot Workshop in Kumamoto, Kumamoto, Japan, December 8, 1998.
- "Looking Back 28 Years in USA," Keio University, Yokohama, Japan, December 10, 1998.
- "Lateral Control of Automated Heavy-Duty Vehicles," University of Southern California, Feb. 10, 1999
- "Mechatronics for Motion and Vibration Control: Research and Educational Challenges," Pioneering International Symposium on Motion and Vibration Control in Mechatronics, April 6-7, 1999, Tokyo, Japan (Keynote Address)
- "Challenges in Mechatronics Research and Education," 2nd International Conference on Recent Advances in Mechatronics, May 24-26, 1999, Istanbul, Turkey (Plenary Talk)
- "Mechanical Engineering and Information Technology," Feddersen Distinguished Lecture Series, Purdue University, November 22, 1999.
- "Precision Motion Control for Hard Disk Drives: towards higher storage density and shorter seek time," University of Michigan, January 21, 2000; University of Washington, February 18, 2000; TITech COE Super Mechano Systems Symposium 2000, Tokyo Institute of Technology, March 2-3, 2000.
- "Control System Research for Intelligent Transportation Systems (ITS)," *Keynote speech at* the 2000 Automatic Control Conference, Hsinchu, Taiwan, March 10, 2000.
- "Mechatronics: A Y2K Status Report," *Mechanical Engineering in the Information Age,* MIT, Cambridge, MA, April 8-9, 2000.
- "Mechatronics: A Y2K (Year 2000) Report," Japan-USA-Vietnam Workshop on Research and Education in Systems, Computation and Control Engineering, HoChiMing City, Vietnam, June 7-9 2000 (Plenary Talk).
- Mechatronics: From the 20th to 21st Century (Plenary Talk), 1st IFAC Conference on Mechartronic Systems, September 18-20, 2000, Darmstadt, Germany
- Reengineering Engineering Education and Research for the 21st Century, Chiba University, October 30, 2000
- Mechatronics – A Year 2001 Report, Faculty of Engineering, Kobe University, February 5, 2001; (Plenary Talk), 2001 IEEE International Symposium on Industrial Electronics, Pusan, Korea, June 14, 2001.
- Servo Controls for Hard Disk Drives with Higher Storage Densities and Shorter Seek Times, University of Colorado, February 28, 2001; also at Postech, Pohang, Korea, June 15, 2001.
- Vehicle Lateral Control for Automated Highway Systems, International Workshop on Control, "Optimization, Signal Processing and Computer Communications, Hong Kong, May 5-6, 2001.
- Mechatronics at the Dawn of the 21st Century (Keynote Speech), 5th International Conference on Mechatronics Technology, Singapore, June 6-8, 2001.
- Servo Control for Hard Disk Drives with Higher Storage Densities and Shorter Seek-Times, Woodruff Colloquium, Georgia Institute of Technology, January 2002.

- “Automated Steering Systems for Ground Vehicles: Normal, Fault Tolerant and Degraded Mode Control,” The Fourth World Congress on Intelligent Control and Automation, Shanghai, China, June 10-14, 2002.
- “Multi-Rate Digital Control with Interlacing for Saving of Computation,” Institute of Industrial Science, University of Tokyo, January 14, 2003“Multi-Rate Digital Control with Interlacing for Saving of Computation,” University of Delaware, Feb. 21, 2003
- “Multi-Rate Digital Control with Interlacing for Saving of Computation,” University of Missouri-Rolla, Feb 27, 2003
- “Multi-Rate Digital Control of Hard Disk Drives for Computation Saving,” University of Colorado, Boulder, March 21, 2003
- “Mechatronics at the University of California, Berkeley,” Mechatronics and Microsystems, Delft University of Technology, The Netherlands, April 10, 2003
- "Deterministic Future vs. Uncertain Future - Preview vs. Prediction," Rufus Oldenburger Distinguished Lecture on Automatic Control, Purdue University, April 24, 2003
- "Some Considerations on the Desgin of Digital Controllers with Application to Hard Disk Drive," Massachusetts Institute of Technology, May 2, 2003
- "Multi-Rate Digital Control with Interlacing for Saving of Computation," University of Maryland at Baltimore County, September 12, 2003
- "Opportunities for NSF Support of Fluid Power Related Research," NFPA (National Fluid Power Association) Educators' Summit, Indianapolis, October 2003.
- "Overview of Dynamic Systems, and Control: DSC Research Examples and NSF DSC Program," 1st International Conf. on Structural Health Monitoring & Intelligent Infrastructure, Tokyo, Japan, November 2003.
- "NSF Dynamic Systems, and Control Program and Sensors Initiative," U.S.-Europe Workshop on Sensors and Smart Structure Technology," Strasbourg, France, October 2003; 2003 ASME International Mechanical Engineering Congress, November 2003, Washington, D.C.
- "SENSORS AND SENSOR NETWORKS FOR INFORMATION, DECISION AND ACTION," Virginia Tech, Blacksburg, September 2003; National Research Council's Committee Meeting Geological and Geotechnical Engineering, Washington, D.C., September 2003; 2003 ASME International Mechanical Engineering Congress, November 2003, Washington, D.C.
- "Dynamic Systems, Modeling, Sensing and Control Program at the National Science Foundation," International Workshop on Advanced Sensors, Structural Health Monitoring, and Smart Structure, Nov 10-11, Keio University, Japan
- "Industry-Universtiy Collaborations - Xerox Example 2," Special Industry Session, 2004 IEEE Conference on Decision and Control, Maui, Hawaii, December 2003.
- "NSF Dynamic Systems, Modeling, Sensing and Control Program and Some Mechatronics Research at the University of California, Berkeley," University of Virginia, December 4, 2003; University of Michigan, February 5, 2004; University of California at Irvine, March 16, 2004; Rensselaer Polytechnic Institute, April 7, 2004; Carnegie-Mellon University, April 2004; University of Pittsburgh, April 2004; Duke University, May 2004.
- "Research in Dynamic Systems, Modeling, Sensing and Control," Advanced Smart Materials and Smart Structure Technology, January 12-14, 2004, Hawaii.
- "NSF Funding Activities and Awards,” Symposium on Trans-Disciplinary Science and Technology, March 4, 2004, Tokyo, Japan
- "Multi-Rate Control for Motion Control Applications," The 8th IEEE International Workshop on Advanced Motion Control (AMC'04), Kawasaki, Japan, March 2004 (Plenary Talk)

- "NSF Dynamic Systems, Modeling, Sensing and Control Program and Mechanical Systems Control Laboratory at the University of California, Berkeley," U. S. Army Research Office, Research Triangle Park, May 27, 2004
- "Dynamic Systems, Modeling, Sensing and Control Program," 4th International Workshop on Structural Control, June 10-11, 2004, Columbia University
- "Sensor Technologies in the Engineering of Modern Mechatronic Systems," 2004 International Conference on Information Acquisition, Heifei, China, June 21 (Plenary Talk)
- "SENSING AND CONTROL TECHNOLOGIES FOR THE ENGINEERING OF MODERN CIVIL AND MECHANICAL SYSTEMS" SE'04 International Symposium on Network and Center-Based Research for
- Smart Structures Technology and Earthquake Engineering, July 6-9, 2004, Osaka University
- "Funding and R&D Status of Sensor Technologies at NSF," Workshop on Future Sensor Technologies, July 9, 2004, Osaka, Japan
- "Sensors in the Engineering of Modern Mechatronic Systems," Preprints of the 3rd IFAC Symposium on Mechatronic Systems, Sydney, Australia, September 6-8
- "Sensing and Control Technologies for the Engineering of Modern Civil and Mechanical Systems," The 3rd International Conference in Earthquake Engineering: New Frontier and Research transformation, Nanjing University of Technology, Nanjing, P. R. C., October 20, 2004.
- "Control and Sensing Technologies for the Engineering of Modern Mechanical Systems - NSF Program and Research at UC Berkeley," Ristsumeikan University, Kyoto, Japan, November 12, 2004.
- "Dynamic Systems, Modeling, Sensing and Control Program at the National Science Foundation," 2004 International Mechanical Engineering Congress and Exposition, Anaheim, CA, November 15, 2004.
- "New Paradigm for Mechanical Engineering Education: A Perspective from USA," IMS Forum 2004 - Paradigm Shift in Manufacturing Engineering Education at Universities -Capitol Tokyu Hotel, Tokyo, Japan, November 30, 2004
- "On the Design of Digital Controllers," January 12, 2005, University of Concepcion, Concepcion, Chile
- "Sensor and Control Technologies in the Engineering of Modern Civil and Mechanical Systems," University of California, Berkeley, January 31, 2005; Clemson University, February 4, 2005.
- "Repetitive Control: fundamental issues and new challenges," Philips Conference on Application of Control Technology, February 15-16, 2005, Hilvarenbeek, The Netherlands
- "Repetitive Control for Modern Mechatronic Systems: Past, Present and Future," May 16, 2005, Distinguished Seminar Series, University of Maryland
- "Research and Education at Universities in the United States," June 14, 2005, Keio University, Tokyo, Japan
- "Sensing Rich Approach to the Design of Modern Mechatronic Systems," July 22, 2005, The second ANCRiSST Workshop on Advanced Smart Materials and Smart Structure Technology, Gyeongju, Korea.
- "Sensing Rich Approach to the Design of Modern Mechatronic Systems," (Plenary Talk), U.S.-China workshop on Integrated Sensing Systems, Mechatronics and Smart Structures Technologies, Jinan, China, October 2005
- "Intelligent Power Assist Systems: Mechatronic Systems Auto-Adaptive to Varying Human Characteristics and Environmental Conditions," (Plenary Talk), The 2006 IEEE International Conference on Mechatronics and Automation, Luoyang, China, June 25-28, 2006.

- “Mechatronics for Flexible Automation Environment," 2006 International Symposium on Flexible Automation, Osaka, Japan July 10-12, 2006 (Plenary Talk)
- "Control Applications in Mechatronic Systems," 2006 Asian Control Conference, Bali, July 19-21, 2006 (Plenary Talk)
- "Recent Developments on Control Applications to Mecharonic Systems," National Taiwan University, Taipei, Taiwan, August 21, 2006
- "Repetitive Control for Modern Mechatronic Systems: Past, Present and Future," International Symposium on Advanced Robotics and Machine Intelligence, Beijing, China, October 9-10, 2006 (Distinguished Talk)
- "Distributed Sensor Applications for Civil Infrastructure Monitoring and Sensing Rich Approach to the Design of Modern Mechatronic Systems," (with Gregory Fenves), 4th International Conference on Earthquake Engineering, Taipei, Taiwan, October 12-13, 2006 (Keynote Lecture)
- "On Exploitation of Sensor Signals in the Control and Monitoring of Modern Mechatronic Systems," 4th China-Japan-US Symposium on Structural Control and Monitoring, Hangzhou, China, Oct. 16-17, 2006 (Keynote Lecture).
- "Vehicle Lateral Control for Automated Highway Systems," PATH@Twenty Symposium, Berkeley, CA, October 26, 2006.
- .“Compensation of Dominant Frequency Component of Non-Repeatable Runout in Hard Disk Drives,” Asia Pacific Magnetic Recording Conference 2006 (APMRC 2006) Singapore, November 30-December 2, 2006 (Invited talk).
- "Sensing Rich Drive Trains for Modern Mechatronic Systems," Tongji University, Shanghai, China, may 28, 2007.
- "Application of Sensing Technologies to Mechatronic Drive Trains," Matsuura Machinery Corporation, Fukui, Japan, June 2007.
- "Dealing with Periodic Disturbances in Controls of Mechanical Systems," 3rd IFAC Workshop on Periodic Control Systems, PSYCO 2007, Saint Petersburg, Russia, August 29-31, 2007 (Plenary Talk).
- "Sensing Rich Approaches to the Design and Operation of Mechatronic Systems," 2nd International Forum on Systems and Mechatronics, IFSM 2007, Tainan, Taiwan, Dec. 3-6, 2007 (Keynote Talk)
- "Learning at Universities in the United States," National Tainan University,Tainan, Taiwan, Dec 3, 2007.
- "Sensing Rich Approaches to the Design and Operation of Mechatronic Systems," National Chiao Tong University, Hsinchu, Taiwan, Dec 6, 2007
- "Mechatronics Research at the Mechanical Systems Control Laoratory of UC Berkeley," Zhejiang University, Hanzhou; Tsinghua University, Beijing; SAE Magnetics, Dongguan, China, January 2008."
- "Using Accelerometers for Enhanced Tuning and Operation of Drive Trains for Modern Mechatronic Systems," North Carolina State University, April 4, 2008 and University of Illinoiis at Urbana-Champaign, April 15, 2008
- "Human Assist Technologies," Wuhan National Laboratory for Optoelectronics, HUST, Wuhan, China, May 12, 2008

University Service

Committees of the Academic Senate

- Committee on Student Affairs (Member, 1990-1993; Chair, Fall 1991 and Fall 1992)
- Committee on Courses and Instruction (1993-1994)
- Committee on Committees (1994-1996; Fall 1999)
- Committee on Budget and Interdepartmental Relations (1996-1999)

College of Engineering

- Joint Engineering/BA Ad-Hoc Committee (1986-1997)
- College Planning Committee (1993)
- Interdisciplinary Program Committee on Control (1991-1998)
- Engineering Systems Research Center Advisory Committee (Chair, 1993-1996)
- Graduate Study Committee (Chair, 1995-96)
- ITS (Institute of Transportation Studies) Executive Committee (Member, 1997-1998)
- PATH Executive Committee (1996- 2002)
- Dean's Confidential Ad-hoc Committee (2001 – 2002; 2004 -)

Department of Mechanical Engineering

- Undergraduate Study Committee (Chair, 1989-1992)
- ME Department Policy Committee (1989-2002)
- Graduate Study Committee (Chair, 1995-1996)
- ME Award Committee (1999 - 2002)
- Chair's Advisory Committee (2005 -)
- ME ABET Committee (Chair) (2005-2008)

Ph. D. Dissertations

1977-78 Academic year
• D. R. Gunewardana, "Preview Control Applied to Cooling Systems of Power Plant"

1980-81
• S. A. Zaghlool, "Time-Domain Vibration-Testing Techniques in Stochastic Environment Model Reference Adaptive Approach"

1982-83
• C. S. Lin, "Adaptive Digital Control of Multi-Input, Multi-Output Industrial Processes"

1983-84
• R. Horowitz, "Model Reference Adaptive Control of Mechanical Manipulators"

1984-85
• J-H. Oh, "Model Reference Adaptive Control of the Milling Process"

1985-86
• C-F. Chen, "Modern Digital Motion Control for a Two Dimensional Welding Table"
• Q-S. Zhang, "Multivariable Adaptive Control with Multi-rate Sampling"

1986-87
• T-L. A. Yeh, "A Unified Approach to Recursive Identification of Physical System Dynamics"

1987-88
• Han-Shue Tan, "Adaptive and Robust Controls with Application to Vehicle Traction Control"
• Chee-Leong Teo, "Frequency Reshaped Linear Quadratic Regulator with Application to the Controls of a Flexible Arm"
• Tsu-Chin Tsao, "Digital Tracking Control and Its Application to Noncircular Machining"
• S-S. Yang, "Pulse Control Positioning of Mechanical Systems"

1988-89
• Min-Shin Chen, "On the Design of Nonlinear Robust Controllers for Linear Systems"
• Kok-Kia Chew, "Digital Repetitive and External Model Controllers"
• Gun Bok Lee, "Digital Control for Burr Minimization in Drilling"
• Alfredo Ong Chingcuanco, "Modelling and Control of a Balloon Borne Stabilized Platform"

1989-90
• Ming-Chang Tsai, "Theory and Implementation of Adaptive and Repetitive Control for Robot Manipulators"
• Jack Butler, "Minimum Time Trajectory Planning for Torque Limited Multiple Axis Contouring Systems"
• Jiun-Haur Tarn, "Frequency Domain Linear Quadratic Optimal Control Problem"
• Wei-Chi Yang, "On the Design of Discrete Time Robust Control Systems"
1990-91
• Jwu-Sheng Hu, "Adaptive Regulation and Tracking Under Periodic Disturbances"
• George Anwar, "Repetitive Control and Its Application to Direct Drive Robot Manipulators"

• Gholmareza Langari, "A Framework for Analysis and Synthesis of Fuzzy Linguistic Control Systems"
• Doyoung Jeon, "Force and Position Control of Robot Manipulators: Learning and Repetitive Control Approach"

1991-92
• Alireza Jabbari, "Robust Discrete Time Control of Uncertain Continuous Time Plants"
• Huei Peng, "Vehicle Steering Control for Highway Automation"

1992-93
• Pin-Yuang Jacob Pien, "Adaptive Force Control for Two-Dimensional Milling"
• Kurt Hallamasek, "Optimized Repetitive Control for Track Curvature Correction in Helical-Scan Tape Recording"

1993-94
• Yean-Ren Hwang, "Analysis and Controller Design for Semi-Active Suspension Systems: From the Viewpoint of Variable Structure Systems"
• Eugene David Tung, "Identification and Control of High-Speed Machine Tools"
• Eric M. Gross, "A Feedforward Stable Approximation to Uncancellable Inverse Dynamics in Discrete Time Systems"
• Pushkin Kachroo, "Nonlinear Control Strategies and Vehicle Traction Control"
• Tsu-Chih Chiu, "Coordination Control of Multiple Axes Mechanical Systems: Theory and Applications to Machining and Computer Disk File Systems"
• Liang-Jong Huang, "On the Use of Fuzzy Logic in Self-Paced Tracking Controller Design"
• Satyajit N. Patwardhan, "Fault Detection and Tolerant Control for Lateral Guidance of Vehicles in Automoted Highways"
• Addisu Tesfaye, "Theory and Implementation of Robust Performance Digital Servo Controllers"
• Wei-Hsin Yao, "Robust Servo Controller Designs for Positioning Systems based on H-infinity Controller Synthesis"

1994-95
• Carl Kempf, "Design of Servo Systems for Disturbance Rejection and Applications to Disk File Storage Systems"
• Ho-Seong Lee, "Robust Digital Tracking Controllers for High-Speed/High-Accuracy Positioning Systems"
• Thomas M. Hessburg, "Fuzzy Logic Control with Adaptive Methods for Vehicle Lateral Guidance"
• Ping-Wei Chang, "The Parameterization of a Fuzzy Inference System and its Application to Control"
• Richard S. Paden, "Robust Discrete Time State Feedback Control of Nonlinear Systems with Parametric Uncertainties"

1995-96
• Tony Phillips, "Multirate and Variable-Rate Estimation and Control of Systems with Limited Measurement with Applications to Information Storage Devices," Fall 1995
• Bin Yao, "Adaptive Robust Control of Nonlinear Systems with Application to Control of Mechanical Systems," Spring 1996
• Prabhakar Pagilla, "Control of Constrained Nonlinear Mechanical Systems: Applications to Robot Manipulators," Spring 1996
• Lin Guo,"Improved Parameterization for System Identification and Digital Control: Theory and Applications to Motion Control Systems," Spring 1996

• Robert Bickel, "Disturbance Observer Based Robot Control with Applications to Force Control," Spring 1966

1996-97
• John Tenny, "Repetitive Position and Force Tracking Servomechanisms," Fall 1996.
• Victor Chu, "Sliding Mode Control with Nonlinear Sliding Surfaces: A B-Spline Fuzzy Logic Approach," Fall 1996.
• Chieh Chen, "Backstepping Design of Nonlinear Control Systems and Its Applications to Vehicle Lateral Control in Automated Highway Systems," Fall 1997
• Wonshik Chee, "Unified Approach to Vehicle Lateral Guidance," Spring 1997
• Sujit Saraf, "Advanced Steering Control of Road Vehicles," Spring 1997
• Matthew White, "Control Techniques for Increased Disturbance Rejection and Tracking Accuracy in Magnetic Disk Drives," Spring 1997.
• Hyeongcheol Lee, "Adaptive Robust Control Using a Universal Approximator to Vehicle Motion Control for IVHS," Spring 1997.

1997-98
• Mohammed I. Al-Majed, "High Performance Machine Tool Controllers – A Control Theoretic Study and a PC-Based Realization," Fall 1997.
• Pushkar Hingwe, "Robustness and Performance Issues in the Lateral Control of Vehicles in Automated Highway Systems," Fall 1997.
• Weiguang Niu, "Coordinated Motion Control Subjected to Actuator Saturation," Spring 1998.

1999-2000
• Kai-Ten Feng, "Vehicle Lateral Control for Driver Assistance and Automated Driving," Spring 2000.
• Motoyoshi Ozaki, "Supervisory Control of Drilling of Composite Materials," Spring 2000.
• S. Craig Smith, "Cost Effective Repetitive Control and Its Application to Magnetic Disk Drives," Spring 2000.

2000-2001
• Yuping Gu, “Multi-rate Digital Control and Signal Processing: Theory and Applications to Motion Control Systems,” Fall 2000.
• Soichi Ibaraki, “Nonconvex Optimization Problems in H_∞ Optimization and Their Applications,” Fall 2000
• Jeng-Yu Wang, “Robust Lateral Control of Heavy Vehicles on Automated Highways,” Fall 2000
• Li Yi, “Two Degree of Freedom Control for Disk Drive Servo Systems,” Fall 2000
• Carlo Cloet, “A Mechatronics Approach to Copier Paperpath Design,” Spring 2001

2001-2002

• Meihua Tai, “Advanced Vehicle Control of Heavy Vehicles for Automated Highway Systems,” Fall 2001
• Bo Zhu, “Robust Tuning of Fixed Structure Controllers for Hard Disk Drive,” Fall 2001
• Erwin S. Budiman, “Toque Feedback and Saturation Compensation for Motion Control of an Indirect-Drive Unit using a Harmonic Drive,” Fall 2001

2002-2003

• Shashikanth Suryanarayanan, “Fault Tolerant Control and its Application to Lane-Keeping Control of Automated Vehicles,” Fall 2002
• Dong-Jun Lee, “Use of an Accelerometer in Precision Motion Control Systems Design and Its Applicatoins to Linear Motors,” Fall 2002

2003-2004

• Jiagen Ding, "Digital Control of Dual Actuator Hard Disk Drives," Fall 2003
• Ye Sheng, "Modeling and Control of Thrust Force in the Drilling of Composite Materials," Fall 2003
• Guang Lu, "Intelligent Sensing and Control for Autonomous Vehicle Following," Spring 2004

2004-2005

• Jihua Huang, “Vehicle Lateral Control Under Sensor Faults,” Fall 2004
• Kun Zhou, "Technology Development to Improve Safety and Efficiency of Transit Bus Operations,” Fall 2004

2005-2006
• Te-Sheng Hsiao, “Sensor Fault Detection and Fault Tolerant Control with Application to Vehicle Lateral Control Systems,” Fall 2005

2007-2008
• Shiang-Lung Koo, “Vehicle Control Using an Improved Model of Tire Contact Patch Kinematics,” Fall 2007.
• Soo Jeon, State Estimation Based on Kinematic Model and Relay Feedback Stability Arising in Controlled Mechanical Systems (F'07)
• Li Yang, Short Seeking and Settling Control for Single-Actuator and Dual-stage Actuator Hard Disk Drive Servo Systems (Sp'08)

2008-2009
• Sandipan Mishra, Fundamental Issues in Iterative Learning Controller Design: Convergence, Robustness and Steady State Performance (F’08)
• Chun-Chih Wang, Motion Control of Indirect-Drive Robots: Model Based Controller Design and Performance Enhancement Based on End Effector Sensors (F’08)
• Shang-Chen Wu, Precision Control for High-Density and Cost-Effective Hard Disk Drives (F'08)
• Mingyu Shi, Real Time Human Driver Identification for Improved Safety (F’08)
• Kiyonori Inaba, Iterative Learning Control for Industrial Robots with End Effector Sensing (F’08)