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Name: Anthony A. Maciejewski

Address: Colorado State University
Electrical and Computer Engineering
Fort Collins, CO 80523-1373, USA

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Personal

Date of Birth: July 19, 1960
Place of Birth: Cleveland, Ohio
Citizenship: U.S.A.
Marital Status: Married
Wife's Name: Margaret D.
Children's names
and Birthdates: Melissa - 2/9/89
Matthew - 2/20/92

Education

<i>Degree</i>	<i>Date</i>	<i>School</i>
BSEE	1982	The Ohio State University
MS	1984	The Ohio State University
PhD	1987	The Ohio State University

MS Thesis: Obstacle Avoidance for Kinematically Redundant Manipulators

Dissertation: The Analysis and Control of Robotic Manipulators
Operating at or Near Kinematically Singular Configurations

Honorary Society Memberships

Eta Kappa Nu electrical engineering honorary society

Honors and Awards

1981-1982 Kodak Scholar
1982-1985 National Science Foundation Fellowship
1985-1986 American Electronics Association Japan Research Fellow
1986-1987 Litton Industrial Fellow

- 1988 Ruth and Joel Spira Outstanding Teacher Award
- 1989 William H. Hayt Outstanding Teacher Award (from Eta Kappa Nu)
- 1989-1991 NEC Faculty Fellow
- 1990 American Control Conference “Best Presentation in Session” Award
- 1990 D. D. Ewing Best Teacher Award
- 1991-1993 TRW Faculty Fellow
- 1994 D. D. Ewing Best Teacher Award
- 1994 Tektronix President’s Award (\$5,000 Equipment Donation)
- 2001 Best paper award, CALICO Journal (Journal of the Computer Assisted Language Instruction Consortium), Vol. 18, (see Article [35])
- 2005 Fellow of the IEEE “for contributions to the design and control of kinematically redundant robots.”
- 2010-2011 Visiting Scholar, University of Macau
- 2012-2014 Honorary Professor, Deakin University

Professional Experience

- June 1981 – Sept. 1981 Technical Engineer, Eastman Kodak Co., Rochester, New York.
- Oct. 1985 – Sept. 1986 Visiting Researcher, Hitachi Central Research Laboratory, Tokyo, Japan.
- March 1982 – Dec. 1987 Research Assistant, The Ohio State University, Columbus, Ohio.
- May 1989 – Aug. 1989 University Summer Faculty, Sandia National Laboratory, Albuquerque, New Mexico.
- May 1990 – Aug. 1990 University Summer Faculty, Sandia National Laboratory, Albuquerque, New Mexico.
- Jan. 1988 – July 1993 Assistant Professor, Purdue University, West Lafayette, Indiana.
- July 1993 – Aug. 1998 Associate Professor, Purdue University, West Lafayette, Indiana.
- Aug. 1998 – Aug. 2001 Professor, Purdue University, West Lafayette, Indiana.
- Aug. 2001 – Professor, Colorado State University, Fort Collins, Colorado.

July 2003 – Head, Department of Electrical and Computer Engineering, Colorado State University, Fort Collins, Colorado.

Consulting Activities

- 1988 – MTD Products Inc., Cleveland, OH.
- 1991 – University of Tsukuba, Tsukuba, Japan.
- 1993 – Sandia National Laboratories, Albuquerque, NM.
- 1995 – JMC Technology Group, Indianapolis, IN.
- 1997 – Caterpillar, Inc., Peoria, IL.

Research Grants and Contracts Received

- [1] Principal Investigator: National Science Foundation, “A Computer Tutor to Assist in Technical Japanese Language Instruction,” Grant No. INT-8818039, Aug. 15, 1988 to July 31, 1992, \$128,971.
- [2] Principal Investigator: David Ross Grant, Purdue Research Foundation, “Utilizing the Kinematically Singular Configurations of Robots in Work Cell Design and Manipulator Motion Planning,” Jan. 1, 1989 to Dec. 31, 1990, \$16,470.
- [3] Principal Investigator: NEC Corporation Faculty Fellowship, “Computer Graphic Simulation of Robotic Systems,” Aug. 1, 1989 to July 31, 1991, \$50,000.
- [4] Co-Principal Investigator: 1989 AT&T University Equipment Donation Program and AT&T Pixel Machines, Pixel Machine Donation, \$146,385 (Principal Investigator: Leah H. Jamieson, additional Co-Principal Investigators: Edward J. Delp, George B. Adams III).
- [5] Principal Investigator: Purdue Global Initiative Faculty Grant, “Technical Japanese Language Instruction for Engineers,” Spring 1991, \$2,500.
- [6] Principal Investigator: TRW Faculty Assistant Grant, “Motion Control of Redundant Manipulators,” Jan. 1, 1991 to Dec. 31, 1993, \$45,000.
- [7] Principal Investigator: National Science Foundation, “Supplement to Grant INT-8818039: A Computer Tutor to Assist in Technical Japanese Language Instruction,” March 5, 1991 to July 31, 1992, \$28,607.
- [8] Principal Investigator: Sandia National Laboratories, “Fault Tolerant Robot Design,” Contract No. 27-3215, June 1, 1991 to Aug. 31, 1991, \$16,000.
- [9] Principal Investigator: Sandia National Laboratories, “Impact of Kinematic and Actuator Redundancy on Robot System Reliability,” Contract No. 18-4379B, Oct. 4, 1991 to Aug. 30, 1993, \$61,799.
- [10] Co-Principal Investigator: NSF-Purdue Engineering Research Center for Intelligent Manufacturing Systems, “Intelligent Assembly Systems,” Sept. 1, 1991 to Aug. 31,

- 1992, \$44,220 (Principal Investigator: C. S. George Lee, additional Co-Principal Investigator: Rahmat Shoureshi, total award: \$201,581).
- [11] Principal Investigator: Purdue Global Initiative Faculty Grant, "Technical Japanese Language Instruction for Engineers II," Spring 1992, \$2,500.
 - [12] Principal Investigator: Purdue Research Foundation International Travel Grant, "1992 IEEE International Conference on Robotics and Automation," Nice, France, May 10-15, 1992, \$920.
 - [13] Principal Investigator: Sandia National Laboratories, "Failure Tolerant Control of Robotic Manipulators," Contract No. AC0077, May 25, 1992 to Aug. 31, 1992, \$24,945.
 - [14] Principal Investigator: NEC Corporation, "The Design of a Cooperation Controller for Multiple Robot Coordination," Aug. 1, 1992 to July 31, 1993, \$49,000 (Co-Principal Investigator: Charles A. Bouman, total award: \$70,000).
 - [15] Co-Principal Investigator: NSF-Purdue Engineering Research Center for Intelligent Manufacturing Systems, "Intelligent Assembly Systems," Aug. 17, 1992 to Aug. 16, 1993, \$45,516 (Principal Investigator: C. S. George Lee, additional Co-Principal Investigator: Rahmat Shoureshi, total award: \$193,094).
 - [16] Principal Investigator: Sandia National Laboratories, supplement to Contract No. 18-4379B, May 17, 1993 to Aug. 30, 1993, \$32,842.
 - [17] Principal Investigator: Sandia National Laboratories, supplement to Contract No. 18-4379B, Sept. 1, 1993 to Aug. 31, 1994, \$77,656.
 - [18] Principal Investigator: NEC Corporation, "The Design of a Cooperation Controller for Multiple Robot Coordination: Phase II," Aug. 1, 1993 to July 31, 1994, \$63,000
 - [19] Principal Investigator: Purdue Global Initiative Faculty Grant, "Development of a Course Entitled: Introduction to Japanese Information Processing," Spring 1994, \$2,500.
 - [20] Principal Investigator: Purdue Research Foundation International Travel Grant, "1994 International Conference on Intelligent Robots and Systems," Munich, Germany, Sept. 12-16, 1994, \$892.
 - [21] Principal Investigator: Sandia National Laboratories, supplement to Contract No. 18-4379B, May 16, 1994 to Sept. 30, 1994, \$48,000.
 - [22] Principal Investigator: Sandia National Laboratories, "Fault Tolerance and Kinematically Redundant Robots," Contract No. AL-3011, Sept. 1, 1994 to Aug. 30, 1995, \$117,851.
 - [23] Principal Investigator: NEC Corporation, "Automated Failure Detection," Jan. 1, 1995 to Dec. 31, 1995, \$31,500 (Co-Principal Investigator: Charles A. Bouman, total award: \$63,000).
 - [24] Principal Investigator: NASA, "Failure-Tolerant Control of Space-Based Robotic Manipulators," Grant No. NAG 9-793, July 1, 1995 to June 30, 1996, \$22,000 (training grant for James D. English III).

- [25] Co-Principal Investigator: NSF CISE Research Instrumentation Grant, "VIADUCT: A Testbed to Study Video, Image, Audio and Data Traffic on a High-Speed Network," Grant No. CDA-9422250, May 1, 1995 to April 30, 1996, \$120,811 (Principal Investigator: Edward J. Coyle; additional Co-Principal Investigators: Ness Shroff, Edwin K. P. Chong, Edward Delp).
- [26] Principal Investigator: Sandia National Laboratories, "Fault Tolerance and Kinematically Redundant Robots," Contract No. AL-3011, Sept. 1, 1995 to Aug. 31, 1996, \$115,700 (Co-Principal Investigator: Venkataramanan Balakrishnan, \$37,088).
- [27.1] Co-Principal Investigator: Hewlett-Packard Company Voluntary Support, Gift No. 30009.1 "Infrastructure for a New Curriculum in Video and Image Systems Engineering," March 1, 1996, \$29,170 (Principal Investigator: Jan P. Allebach, additional Co-Principal Investigators: C. A. Bouman, E. J. Coyle, E. J. Delp, Z. Pizlo, N. B. Shroff).
- [27.2] Co-Principal Investigator: Hewlett-Packard Company Voluntary Support, Gift No. 30009.2 "Infrastructure for a New Curriculum in Video and Image Systems Engineering," Aug. 22, 1996, \$6,000 (Principal Investigator: Jan P. Allebach, additional Co-Principal Investigators: C. A. Bouman, E. J. Coyle, E. J. Delp, Z. Pizlo, N. B. Shroff).
- [27.3] Co-Principal Investigator: Hewlett-Packard Company Voluntary Support, Gift No. 32322 "Infrastructure for a New Curriculum in Video and Image Systems Engineering," Sept. 6, 1996, \$479,609 (Principal Investigator: Jan P. Allebach, additional Co-Principal Investigators: C. A. Bouman, E. J. Coyle, E. J. Delp, Z. Pizlo, N. B. Shroff).
- [27.4] Co-Principal Investigator: Hewlett-Packard Company Voluntary Support, Gift No. 30009.3 "Infrastructure for a New Curriculum in Video and Image Systems Engineering," Dec. 17, 1996, \$201,000 (Principal Investigator: Jan P. Allebach, additional Co-Principal Investigators: C. A. Bouman, E. J. Coyle, E. J. Delp, Z. Pizlo, N. B. Shroff).
- [28] Faculty Collaborator: Purdue Reinvestment Program, "Center for Computational Image Analysis and Visualization," Jan. 1, 1996 to Dec. 31, 1996, \$100,000 (additional Faculty Collaborators: C. Bajaj, E. Sacks, J. Turek, P. Robinson, G. Blaisdell, G. Coppoc, G. Oglesby, E. Delp, A. Chaturvedi, S. Abhyankar, B. Lucier, B. Hillberry, S. Gupta)
- [29] Principal Investigator: NASA, "Failure-Tolerant Control of Space-Based Robotic Manipulators," Grant No. NGT 9-2, July 1, 1996 to Dec. 22, 1996, \$22,000 (training grant renewal for James D. English III).
- [30] Principal Investigator: Sandia National Laboratories, "Fault Tolerance and Kinematically Redundant Robots," Contract No. AL-3011, Sept. 1, 1996 to Jan. 7, 1997, \$51,424 (Co-Principal Investigator: Venkataramanan Balakrishnan, \$25,712).
- [31] Co-Principal Investigator: Caterpillar, Inc., "Prognostics Project," Jan. 1, 1997 to June 30, 1997, \$34,162 (Principal Investigator: Gary Krutz, additional Co-Principal

Investigator: Patricia Davies, total award: \$55,077).

- [32] Co-Principal Investigator: Sze Tsao Chang Memorial Engineering Fund, "Optimization of Industrial Assembly Workcells Using the Chou H. Li Self-Optimization System," April 1, 1997 to March 31, 1998, \$46,279 (Principal Investigator: A. Kak, additional Co-Principal Investigator: C. S. G. Lee, total award: \$155,000).
- [33] Co-Principal Investigator: Caterpillar, Inc., "Smart Cylinders," June 27, 1997 to Aug. 26, 1997, \$5,000 (Principal Investigator: Gary Krutz, total award: \$10,000).
- [34] Co-Principal Investigator: part of Intel/Purdue equipment grant, "Optimization and Visualization for Network-Based Assembly Workcells for Advanced Manufacturing," part B.04 of parent Intel equipment grant to Purdue University (entitled "Utilization of Advanced Intel Based Platforms in Computationally Demanding Tasks"), July. 1, 1997 to June 30, 1998, \$147,876 (Principal Investigator of this part: A. Kak, additional Co-Principal Investigator: of this part C. S. G. Lee).
- [35] Collaborator: Research Grant Council of Hong Kong, "Mapping Applications to Heterogeneous Computing Systems Using Artificial Genetic Life and State-Space Pruning," Sept. 1, 1997 to Aug. 31, 1999, HK\$360,000 (US\$47,000) (Principal Investigator: Ishfaq Ahmad, Additional Collaborators: H. J. Siegel, Y.-K. Kwok)
- [36] Associate Deputy Director (Co-Principal Investigator): Caterpillar, Inc., "Electrohydraulics Center," Sept. 1, 1997 to March 31, 2000, \$250,000 (Director: Gary Krutz, Deputy Director: Matthew Franchek).
- [37] Principal Investigator: Sandia National Laboratories, "OpenGL Accelerated Robot Graphic Animation Program," DSP No. 0CO42, Aug. 3, 1999 to Aug. 31, 1999, \$4,626.
- [38] Principal Investigator: DARPA Information Technology Office (ITO) Quorum Program through the Office of Naval Research, Math, Computer, and Information Sciences Division, "Adapting MSHN Scheduling Technology for HiPer-D," Grant No. N00014-00-1-0599, May 1, 2000 to Sept. 30, 2001, \$758,997. (Other Principal Investigator: H. J. Siegel)
- [39] Principal Investigator: National Imagery and Mapping Agency (NIMA) "SVD-Based Analysis of Images, Video, and Multidimensional Data," Grant No. NMA201-00-1-1003, July 1, 2000 to June 30, 2003, \$64,539. (Subcontract through Florida A&M / Florida State University, total award: \$132,340, Principal Investigator: Rodney G. Roberts)
- [40] Co-Principal Investigator: National Science Foundation, "Haptic Texture Perception and Rendering for Personal Robotics," Award No. IIS-0098443, Aug. 1, 2001 to July 31, 2004, \$310,101. (Principal Investigator: Hong Tan, Other Co-Principal Investigators: David S. Ebert, Edwin D. Hirtleman, and Zygmunt Pizlo)
- [41] Principal Investigator: Non-lethal Technology Innovation Center (NTIC), "The Impact of Autonomous Robots on Crowd Behavior," Jan. 1, 2003 to Dec. 31, 2003, \$48,000.

- [42] Co-Principal Investigator: The Johns Hopkins University Applied Physics Laboratory (subcontract for jointly funded DARPA contract), “Adaptive and Reflective Middleware Systems ARMS,” Contract No. 876378, Oct. 30, 2003 to Mar. 29, 2005, \$200,000. (Principal Investigator: H.J. Siegel)
- [43] Principal Investigator: Colorado Commission on Higher Education (CCHE) Technology Advancement Group (TAG), through the Colorado Institute of Technology (CIT), “Center for Robustness in Computer Systems,” May 17, 2004 to May 16, 2005, \$250,000. (Co-Principal Investigators: H.J. Siegel and Ralph H. Castain)
- [44] Principal Investigator: Wolf Robotics, “Development of a Novel Weld Tracking System for Robotic Arc Welding,” Aug. 15, 2005 to May 14, 2006, \$17,525.
- [45] Co-Principal Investigator: The Johns Hopkins University Applied Physics Laboratory (subcontract for jointly funded DARPA contract), “Allocation Algorithm Support for System Fault Tolerance,” Contract No. 901410, Sept. 12, 2005 to Feb. 28, 2006, \$75,000. (Principal Investigator: H.J. Siegel)
- [46] Principal Investigator: Missile Defense Agency (MDA) “SVD-Based Processing of Images and Video for Target Identification and Real-Time Visual Tracking,” Award No. HQ0006-05-C-0035, September 30, 2005 to June 30, 2007, \$145,178. (Subcontract through Florida A&M / Florida State University, total award: \$295,037, Principal Investigator: Rodney G. Roberts)
- [47] Co-Principal Investigator: National Science Foundation, “Robust Parallel and Distributed Computing Systems,” Award CNS-0615170, June 15, 2006 to May 31, 2010, \$585,821. (Principal Investigator: H.J. Siegel)
- [48] Principal Investigator: National Science Foundation, “The Design of Fault-Tolerant Robotic Systems for Robust Performance in Hazardous/Remote Environments,” Award IIS-0812437, August 1, 2008 to July 31, 2012, \$399,479.
- [49] Co-Principal Investigator: National Science Foundation, “CSR:Medium:Collaborative: Stochastically Robust Resource Allocation for Computing,” Award CNS-0905399, September 1, 2009 to August 31, 2012, \$1,042,470. (Principal Investigator: H.J. Siegel, Additional Co-PIs: Arnold L. Rosenberg and James T. Smith)
- [50] Co-Principal Investigator: Oak Ridge National Laboratory, for the Department of Energy (DoE), “Research on Resource Management Models and Methods for Heterogeneous Parallel and Distributed Computing Systems,” Subcontract Number 4000094858, June 10, 2010 to Dec. 31, 2010, \$150,000. (Principal Investigator: H.J. Siegel)
- [51] Co-Principal Investigator: Oak Ridge National Laboratory, for the Department of Energy (DoE), “Resource Management Models and Methods for Heterogeneous Parallel and Distributed Computing Systems,” Subcontract Number 40000108022, August 15, 2011 to September 15, 2012, \$286,316. (Principal Investigator: H.J. Siegel)

Journal Editorial Positions

- [1] Associate Editor: *International Journal of Robotics and Automation*, a journal of the International Association of Science and Technology for Development (IASTED) published by ACTA Press, from March 1994 to Feb. 1998.
- [2] Associate Editor: *Intelligent Automation and Soft Computing*, the journal of the World Automation Congress (WAC) published by AutoSoft Press, from June 1994 to Dec. 1996.
- [3] Regional Editor: *Intelligent Automation and Soft Computing*, the journal of the World Automation Congress (WAC) published by AutoSoft Press, from Dec. 1996 to July 2008.
- [4] Co-Guest Editor: *Journal of Intelligent and Robotic Systems*, Special Issue on Kinetically Redundant Manipulators, Kluwer Academic Publishers, Vol. 19, No. 1, May 1997.
- [5] Associate Editor: *IEEE Transactions on Robotics and Automation*, from Dec. 1998 to Dec. 2003.
- [6] Editorial Board: *Pattern Analysis and Applications*, from Jan. 2002 to Jan. 2006.
- [7] Associate Editor: *IEEE Transactions on Systems, Man, and Cybernetics, Part A: Systems and Humans*, from July 2003 to Dec. 2011.
- [8] Editorial Board: *Journal of Automation and Mobile Robotics*, from Feb. 2007 to present.
- [9] Editorial Board: *Journal of Robotics*, from Sep. 2008 to present.

Conference Organizing Committees

- Conference: IEEE Int'l Conf. on Robotics and Automation (ICRA)
 Chair of Technical Program: 2002
 Co-Chair of Technical Program: 1997
 Member of Technical Program Committee: 1990, 1996-2006, 2008
- Conference: IEEE/RSJ Int'l Conf. on Intelligent Robots and Systems (IROS)
 Member of Technical Program Committee:
 1994, 1996, 1998, 1999, 2002-2004, 2007-2010
- Conference: IEEE Int'l Conf. on Systems, Man, and Cybernetics (SMC)
 Member of Technical Program Committee: 2005-2011
- Conference: IEEE Int'l Heterogeneous Computing Workshop (HCW)
 Member of Technical Program Committee: 2003-2012
- Conference: Int'l Conf. on Advanced Engineering Computing and Applications in Sciences (ADVCOMP)
 Member of Technical Program Committee: 2007-2012

- Conference: Int'l Conf. on Informatics in Control, Automation and Robotics (ICINCO)
Member of Program Committee: 2005-2012
- Conference: IEEE Conf. on Systems of Systems Engineering (ICSoSE)
Member of Program Committee: 2007-2009
- Conference: Int'l Symposium on Robotics and Automation (ISRA)
Member of Technical Program Committee: 1998, 2000, 2002, 2004, 2006
- Conference: IASTED Int'l Conf. on Robotics and Manufacturing
Member of Technical Program Committee: 1995-1998, 2001
- Conference: IASTED Int'l Conf. on Robotics and Applications
Member of International Program Committee: 2000, 2001, 2003-2007, 2010-2011
- Conference: IASTED Int'l Conf. on Robotics
Member of Technical Program Committee: 1999, 2010-2011
- Conference: Int'l Conf. on Advanced Robotics (ICAR)
Member of Technical Program Committee: 2001, 2003, 2005
- Conference: World Manufacturing Congress (WMC)
Member of Technical Program Committee: 1997, 1999, 2001
- Conference: World Automation Congress (WAC)
Chair for Robotics Program: ISORA 2000
Co-Chair for Robotics Program: ISORA 1998
Member of Robotics Program Committee: ISORA 2004
- Conference: Int'l Symp. on Robotics and Manufacturing (ISRAM)
Member of Technical Program Committee: 1994, 1996
- Conference: Workshop on Optimization Issues in Grid and
Parallel Computing Environments (part of HPCS)
Member of Technical Program Committee: 2008, 2009
- Conference: American Nuclear Society 4th Topical Meeting on Robotics
Member of Technical Program Committee: 1991
- Conference: 1st IEEE Conf. on Control Applications
Member of Technical Program Committee: 1992
- Conference: 7th Int'l Conf. on Human-Computer Interaction
Member of Human-Computer Interaction Board: 1997
- Conference: Third Int'l ICSC Symp. on Intelligent Industrial Automation (IIA'99)
Member of Technical Program Committee: 1999
- Conference: 3rd IMACS Int'l Multiconference Circuits,
Systems, Communications and Computers (CSCC'99)
Member of International Scientific Committee: 1999

- Conference: Int'l Symp. on Robotics (ISR 2000)
Member of International Program Committee: 2000
- Conference: Fourth Int'l ICSC Symp. on
Soft Computing and Intelligent Systems for Industry
Member of Technical Program Committee: 2001
- Conference: IEEE Int'l Conf. on Industrial Technology (ICIT 2001)
Member of International Advisory Committee: 2001
- Conference: 2002 Japan-USA Symp. on Flexible Automation (2002JUSFA)
Int'l Conf. on New Technological Innovation for the 21st Century
Member of Organizing Committee: 2002
- Conference: Mosharaka Int'l Conf. on Control, Robotics and Automation (M-CRA 2007)
Member of Technical Program Committee: 2007
- Conference: Mosharaka Int'l Conf. on
Communication and Information Technology (M-CIT 2007)
Member of Technical Program Committee: 2007
- Conference: IEEE Workshop on Advanced Robotics and its Social Impacts (ARSO 2007)
Member of International Advisory Committee: 2007
- Conference: Mosharaka Int'l Conf. on Communications,
Networking and Information Technology (MIC-CNIT 2008)
Member of Technical Program Committee: 2008
- Conference: Mosharaka Int'l Conf. on Communications,
Propagation and Electronics (MIC-CPE 2009)
Member of Technical Program Committee: 2009
- Conference: Mosharaka Int'l Conf. on Communications, Signals and Coding (MIC-CSC 2009)
Member of Technical Program Committee: 2009
- Conference: Int'l Conf. on Informatics on
Applied Bionics and Biomechanics (ICABB-2010)
Member of Program Committee: 2010
- Conference: IEEE Int'l Conf. on Automation and Logistics (ICAL)
Member of Technical Program Committee: 2010-2012
- Conference: SICE Annual Conference (SICE 2010)
Member of Technical Program Committee: 2010
- Conference: IEEE Int'l Conf. on Intelligent Robotics, Automation and Applications (IRoA-11)
Member of Technical Program Committee: 2011

Conference: First Int'l Workshop on Extreme Scale Parallel Architectures and Systems (ESPAS 2012)
Member of Technical Program Committee: 2012

Conference: Int'l Workshop on Heterogeneous Architectures and Computing (HAC 2012)
Member of Technical Program Committee: 2012

Professional Society Activities

Organization: IEEE (Institute of Electrical and Electronics Engineers)
Activity: Student Member, 1982 to 1987
Member, 1987 to 2000
Senior Member, 2000 to 2004
Fellow, 2005 to present

Organization: IEEE Robotics and Automation Society
Activity: Secretary, 1996 to 1999
Constitution & Bylaws Comm., Chair 1996 to 1999; Member 2011
Administrative Committee Member, 2000 to 2004
Vice President for Finances, 2004 to 2006, 2012 to
Publications Board Member, 2002 to 2006
Financial Activities Board Member, 2002 to 2006
Fellow Nominations Committee Member, 2008, 2012
Fellow Evaluations Committee Member, 2010, 2011
Parliamentarian, 2010 to 2012

Organization: IEEE Systems, Man, and Cybernetics Society
Activity: Board of Governors Member, 2011 to present
Human Machine Systems sector Coordinator, 2012 to present

Organization: ACM (Association for Computing Machinery)
Activity: Member, 1983 to present

Organization: SCS (Society for Computer Simulation)
Activity: Member, 1988 to 1990

Organization: CALICO (Computer Assisted Language Learning Consortium)
Activity: Member, 1988 to present

Organization: AIAA (American Institute of Aeronautics and Astronautics)
Activity: Member, 1994 to 1995

Ph.D. Supervision Completed

<i>Name</i>	<i>Date</i>	<i>Thesis Title</i>
Q. Xue	May 1990	“Path Planning for Mobile Robots with Manipulator” (Co-Advisor: P. Sheu) (Publications: Journal [10],[26])
R. G. Roberts	May 1992	“The Design of Repeatable Control Strategies for Kinematically Redundant Manipulators” (Publications: Journal [8],[12],[14],[19]; Conference [11],[17],[18],[20],[23], [25],[28])
Y.-S. Kang	May 1994	“Knowledge Base Acquisition for a Japanese Language Intelligent Tutoring System” (Publications: Journal [17],[21],[24],[35]; Conference [19],[26]; Report [7])
C. L. Lewis	Aug. 1994	“Fault Tolerance for Kinematically Redundant Robotic Manipulators” (Publications: Journal [15],[27]; Conference [29],[30],[36],[50])
J. J. Fox	Dec. 1994	“Path Planning for Articulated Manipulators” (Publications: Journal [13], [36]; Conference [27],[37])
K. W. Khawaja	Dec. 1995	“Generation of Synthetic Images for Training Automated Inspection Algorithms” (Publications: Book [3]; Journal [20],[25]; Conference [31],[34],[41])
J. D. English	Dec. 1996	“Free-Swinging Failure Tolerance for Robotic Manipulators” (Publications: Journal [28],[30],[32],[34],[38]; Conference [39],[42],[44],[50])
K. N. Groom	Sept. 1997	“Real-Time Failure Tolerant Control of Kinematically Redundant Robotic Manipulators” (Co-Advisor: V. Balakrishnan) (Publications: Journal [31]; Conference [46],[47],[50])
M. Goel	Dec. 1998	“Tolerating Undetected Failures in Robotic Manipulators” (Co-Advisor: V. Balakrishnan) (Publications: Journal [40]; Conference [45],[50],[51],[55],[56])

- C.-Y. Chang Dec. 1999 “Eigenspace Methods for Correlated Images”
(Publications: Journal [33],[50];
Conference [52],[54],[61])
- T. D. Braun May 2001 “Heterogeneous Distributed Computing:
Off-line Mapping Heuristics for Independent
Tasks and for Tasks with Dependencies,
Priorities, Deadlines, and Multiple Versions”
(Co-Advisor: H. J. Siegel)
(Publications: Book [2],[4]; Journal [51],[58];
Conference [60], [61], [64], [68])
- S. Ali Aug. 2003 “Robust Resource Allocation in Dynamic
Distributed Heterogeneous Computing
Systems” (Co-Advisor: H. J. Siegel)
(Publications: Book [4]; Journal [39],[41],[54];
Conference [61], [63], [65], [66], [69], [73], [79])
- J.-K. Kim Aug. 2004 “Resource Management in Heterogeneous
Computing Systems: Continuously Running
Applications, Tasks with Priorities and
Deadlines, and Power Constrained Mobile
Devices” (Co-Advisor: H. J. Siegel)
(Publications: Journal [39],[41],[51],[54],[59];
Conference [63], [65], [66], [68], [69], [79])
- K. Saitwal Aug. 2006 “Fast Eigenspace Decomposition of Correlated
Images Using Their Spatial and Temporal
Properties”
(Publications: Journal [46],[50],[57];
Conference [67],[71],[76],[81],[86],[91])
- J. Smith Aug. 2008 “Robust Resource Allocation in Heterogeneous
Parallel and Distributed Computing Systems”
(Co-Advisor: H. J. Siegel)
(Publications: Book Chapter [6];
Journal [44],[52],[55],[64];
Conference [92],[93],[94],[95],[98],[99],
[101],[106],[111],[112],[121])

V. Shestak	Dec. 2008	<p>“Robust Resource Allocation Methods for QoS-Constrained Parallel and Distributed Computing Systems” (Co-Advisor: H. J. Siegel) (Publications: Journal [48],[53],[55],[68]; Conference [84],[85],[88],[89],[90] [92],[95],[98],[99])</p>
R. Hoover	Aug. 2009	<p>“Pose Estimation of Spherically Correlated Images Using Eigenspace Decomposition in Conjunction with Spectral Theory (Publications: Journal [60],[61]; Conference [103],[108],[109],[110],[114], [122],[123])</p>
L. Briceno	Aug. 2010	<p>“Resource Allocation for Heterogeneous Computing Systems: Performance Criteria, Robustness Measures, Optimization Heuristics, and Properties” (Co-Advisor: H. J. Siegel) (Publications: Journal [62]; Conference [99],[100],[107],[117],[126])</p>
P. Maxwell	May 2012	<p>“Robust Resource Allocation Heuristics for Military Village Search Missions” (Co-Advisor: H. J. Siegel) (Publications: Journal [70]; Conference [119],[126],[127],[130],[139])</p>

M.S.E.E. Supervision Completed

<i>Name</i>	<i>Date</i>	<i>Thesis Title</i>
K.-W. Leung	May 1990	<p>“The Nihongo Tutorial System for Learning Technical Japanese” (Publications: Journal [9]; Conference [15], [22]; Reports [3],[4],[5])</p>
C. L. Lewis	Aug. 1990	<p>“On-Line Trajectory Generation for Robots Cooperating to Perform an Assembly Task” (Publications: Conference [13])</p>
J. M. Reagin	May 1991	<p>“An Algorithm for the Parallel Computation of the Kinematic Equations of Motion for a Robot Manipulator” (Publications: Journal [16]; Conference [24])</p>

T. D. Braun	Dec. 1997	“Parallel Algorithms for Singular Value Decomposition as Applied to Failure Tolerant Manipulators” (Co-Advisor: H. J. Siegel) (Publications: Journal [37]; Conference [53])
J. A. Kirkland	May 2004	“The Impact of Social Robots on Pedestrian Dynamics” (Publications: Conference [70],[78])
A. Mehta	May 2006	“Robust Resource Allocation in a Dynamic Heterogeneous Environment using Deterministic Execution Time Estimates” (Co-Advisor: H. J. Siegel) (Publications: Journal [48]; Conference [84],[88],[93],[94])
M. Oltikar	May 2006	“Heuristics for Robust Resource Allocation in a Weather Data Processing System” (Co-Advisor: H. J. Siegel) (Publications: Journal [48], [62]; Conference [84],[88],[96],[100])
R. Jamisola	Dec. 2006	“Failure Tolerant Path Planning for Kinematically Redundant Manipulators” (Publications: Journal [49]; Conference [72],[75],[77])

M.S. and Ph.D. Thesis Students Currently Being Supervised

B. Khemka	Ph.D.	(Co-Advisor: H. J. Siegel) (Publications: Journal [67]; Conference [137],[138],[140])
P. Maxwell	Ph.D.	(Co-Advisor: H. J. Siegel) (Publications: Journal [70]; Conference [119],[126],[127],[130],[139])
A. Al-Qawasmeh	Ph.D.	(Co-Advisor: H. J. Siegel) (Publications: Journal [63]; Conference [120], [124], [126], [136], [142])
D. Young	Ph.D.	(Co-Advisor: H. J. Siegel) (Publications: Journal [67]; Conference [138],[140])
R. Friese	Ph.D.	(Co-Advisor: H. J. Siegel) (Publications: Journal ; Conference [130],[139])
M. Oxley	Ph.D.	(Co-Advisor: H. J. Siegel)

		(Publications: Journal ; Conference)
T. Hansen	Ph.D.	(Co-Advisor: H. J. Siegel) (Publications: Journal ; Conference [143])
D. Brake	Ph.D.	(Co-Advisor: V. Putkaradze) (Publications: Journal ; Conference [132])
K. Ben-Gharbia	Ph.D.	(Publications: Journal ; Conference [131], [135], [141])
K. Tarplee	Ph.D.	(Publications: Journal ; Conference)
K. Mishra	Ph.D.	(Publications: Journal ; Conference)
P. Naik	MS	(Publications: Journal ; Conference)
K. Kadappan	MS	(Publications: Journal ; Conference)

Courses Developed

- EE660W (1 cr. hr.) Computer Graphic Simulation and Visualization (Spring 1990)
- EE628 (3 cr. hrs.) Computer Graphic Simulation and Visualization (Spring 1991)
- EE660U (1 cr. hr.) Image Synthesis: Ray Tracing (Spring 1994)
- EE660V (1 cr. hr.) Image Synthesis: Aliasing and Texture (Spring 1994)
- EE660W (1 cr. hr.) Image Synthesis: Advanced Rendering (Spring 1994)
- EE576 (3 cr. hr.) Image Synthesis (Fall 1995)
- EE495T (3 cr. hrs.) Introduction to Japanese Information Processing (Fall 1994)
- EE402 (3 cr. hrs.) EE Design Projects (Fall 1997)
(with J. A. Nyenhuis, L. L. Ogborn, and B. F. Robinson)
- ECE501 (3 cr. hrs.) Foundations of Systems Engineering (Fall 2008)
(with Ron Sega)

Courses “In Charge Of”

- EE266 – Digital Logic Design (1998 to 2000)
- EE267 – Digital Logic Design Laboratory (1998 to 2000)
- EE365 – Introduction to the Design of Digital Computers (1997 to 1998)
- EE466 – Introduction to the Design of Digital Computers (1989 to 1996)
- EE576 – Image Synthesis (1995 to 2001)
- EE628 – Computer Graphic Simulation and Visualization (1991 to 2001)

Purdue Electrical Engineering Industrial Institute (PEEII) Workshops

- Fall 88: Presentation
“Computer Graphic Simulation of Motion Planning for Robotic Systems”
Anthony A. Maciejewski
- Fall 92: Poster
“Fault Tolerance for Robotic Manipulators”
Christopher L. Lewis and Anthony A. Maciejewski
- Spring 93: Organizer for theme
“Robotics Research at Purdue”
Presentation
“Applications of Computer Graphics for Robotics and Automation”
Anthony A. Maciejewski
Presentation
“Path Planning for Articulated Robots”
John J. Fox (presenter) and Anthony A. Maciejewski
Presentation
“Generation of Synthetic Images for Training Assembly Error Detection Algorithms”
Khalid W. Khawaja (presenter) and Anthony A. Maciejewski
- Spring 94: Poster
“A CAD Driven Multiscale Approach to Automated Inspection”
Daniel Tretter, Khalid W. Khawaja,
Charles A. Bouman, and Anthony A. Maciejewski
Poster
“The Design of Failure Tolerant Robots”
Christopher L. Lewis, James D. English,
Maithreyi Ramabadran, and Anthony A. Maciejewski
- Spring 95: Organizer for theme
“Engineering Our Future”
- Spring 97: Poster
“Locked-Joint Failures in Robotic Manipulators”
Kenneth Groom, Anthony A. Maciejewski,
and Venkataramanan Balakrishnan
Poster
“Undetected Failures in Robotic Manipulators”
Manish Goel, Anthony A. Maciejewski,
and Venkataramanan Balakrishnan

Spring 98: Presentation

“Failure Tolerant Operation of Articulated Machinery
Anthony A. Maciejewski

University Committee Activities

Committee:	Study Abroad Program at Nanzan University, Japan
Activity:	Member of Selection Committee, 1991, 1992
Committee:	Committee on Duplication in CS and ECE Curriculum and Courses
Activity:	Member, 1995
Committee:	International Educational Programs Committee
Activity:	Member, 1995 to 1998
Committee:	Campus Grievance Steering Committee
Activity:	Member, 1998 to 2000
Committee:	Industrial Research Activities Committee
Activity:	Member, 1999 to 2001
Committee:	Center for Image Analysis and Data Visualization
Activity:	Advisory Board, 1999 to 2001
Committee:	Associate Dean of Academic Affairs Search Committee
Activity:	Member, 2002
Committee:	Chemical and Biological Engineering Head Search Committee
Activity:	Chair, 2006 to 2007
Committee:	Faculty Council Committee on Scholarship, Research, and Graduate Education
Activity:	Chair, 2008 to 2009; Member, 2007 to 2010
Committee:	College of Engineering Diversity Committee
Activity:	Member, 2007 to
Committee:	Department of Physics University Review Committee
Activity:	Member, 2008
Committee:	Honorary Degree Committee
Activity:	Member, 2008 to 2009
Committee:	Vice-President for Research’s Strategic Plan Area Review Committee (SPARC)
Activity:	Member, 2008 to 2010
Committee:	Department of Statistics University Review Committee
Activity:	Member, 2009
Committee:	Responsible Conduct of Research Training Working Group (for NSF compliance)
Activity:	Member, 2009
Committee:	Faculty Council Committee on Strategic and Financial Planning
Activity:	Chair, 2011 to 2012; Member, 2009 to 2012

Committee: Vice-President for Diversity's Strategic Plan Area Review Committee (SPAR)
 Activity: Member, 2010 to

Committee: Department of Computer and Information Systems University Review Comm
 Activity: Member, 2012

Committee: Monfort Professor Selection Committee
 Activity: Member, 2012

School Committee Activities at Purdue University

Committee: Automatic Control Area Committee
 Activity: Member, 1988 to 2001
 Chairman, 1990 to 1992, 1999 to 2001

Committee: Computer Engineering Area Committee
 Activity: Member, 1988 to 2001

Committee: Computer Engineering Area Seminar Series
 Activity: Co-Organizer, 1989 to 1990

Committee: Graduate Committee
 Activity: Member, 1989 to 1992, 1998 to 2001
 Interim Chairman, Spring 2000

Committee: Purdue Chapter of Eta Kappa Nu Advisory Committee
 Activity: Member, 1989 to 2001

Committee: B.S. in Computer Engineering Degree Program
 Activity: Member, 1991 to 1992

Committee: Curriculum Committee
 Activity: Member, 1993 to 1999

Committee: Computer Engineering Area Seminar Series
 Activity: Co-Organizer, 1995 to 1996

Committee: ECE School Head Search Committee
 Activity: Member, 1995 to 1996

Committee: Computer Engineering Area Chaired Professorship Search Committee
 Activity: Member, 1995 to 1999

Committee: ABET Design Criteria Committee
 Activity: Member, 1996 to 1997

Committee: Computer Engineering Area Faculty Recruiting Committee
 Activity: Member, 1996 to 2001

Committee: National Technical University (NTU)
 Activity: Purdue EE representative, 1996 to 2001

Committee: ECE School Head Evaluation Committee

Activity: Member, 1999 to 2000

Research Book Contributions

- [1] C. A. Klein and A. A. Maciejewski, "Simulators, Graphic," in the *International Encyclopedia of Robotics: Applications and Automation*, John Wiley and Sons, New York, pp. 1599–1608, 1988. (Also included in the *Concise International Encyclopedia of Robotics: Applications and Automation*, John Wiley and Sons, New York, pp. 923–929, 1990.)
- [2] M. D. Theys, T. D. Braun, Yu-Kwong Kwok, H. J. Siegel, and A. A. Maciejewski, "Mapping of Tasks onto Distributed Heterogeneous Computing Systems Using a Genetic Algorithm Approach," in *Solutions to Parallel and Distributed Computing Problems: Lessons from Biological Sciences*, Albert Y. Zomaya (ed.), John Wiley & Sons, New York, NY, 2001, pp. 135-178.
- [3] K. W. Khawaja, D. Tretter, A. A. Maciejewski and C. A. Bouman, "Automated Visual Assembly Inspection," in *Expert Systems: The Technology of Knowledge Management and Decision Making for the 21st Century*, C. T. Leondes, (ed.), Academic Press, Vol. 3, 2002, pp. 661-700.
- [4] S. Ali, T. D. Braun, H. J. Siegel, A. A. Maciejewski, N. Beck, L. Boloni, M. Maheswaran, A. I. Reuther, J. P. Robertson, M. D. Theys, and B. Yao, "Characterizing resource allocation heuristics for heterogeneous computing systems," in *Computer Architecture*, A. R. Hurson, ed., vol. 63 of *Advances in Computers*, Elsevier, New York, NY, pp. 93-128, 2005.
- [5] S. Ali, A. A. Maciejewski, and H. J. Siegel, "Perspectives on Robust Resource Allocation for Heterogeneous Parallel Systems," in *Handbook of Parallel Computing: Models, Algorithms, and Applications*, edited by S. Rajasekaran and J. Reif, Chapman & Hall/CRC Press, Boca Raton, FL, pp. 41.1-41.30, 2008.
- [6] J. Smith, H. J. Siegel, and A. A. Maciejewski, "Robust Resource Allocation in Heterogeneous Parallel and Distributed Computing Systems," in *Wiley Encyclopedia of Computer Engineering*, edited by Benjamin W. Wah, John Wiley & Sons, Hoboken, NJ, Vol. 4, pp. 2461-2470, 2009.

Serial Journal Articles

- [1] A. A. Maciejewski and C. A. Klein, "Obstacle avoidance for kinematically redundant manipulators in dynamically varying environments," *International Journal of Robotics Research*, Vol. 4, No. 3, pp. 109–117, Fall 1985.
- [2] A. A. Maciejewski and C. A. Klein, "SAM: Animation software for simulating articulated motion," *Computers and Graphics*, Vol. 9, No. 4, pp. 383–391, 1985.
- [3] A. A. Maciejewski, "Computationally efficient ray tracing of parametric surfaces," *Jyohou Syori Gakkai Kenkyuu Houkoku*, Information Processing Society of Japan, Vol. 86, No. 43, pp. 1–9, July 1986.

- [4] A. A. Maciejewski and C. A. Klein, "Numerical filtering for the operation of robotic manipulators through kinematically singular configurations," *Journal of Robotic Systems*, Vol. 5, No. 6, pp. 527-552, Dec. 1988.
- [5] A. A. Maciejewski and C. A. Klein, "The singular value decomposition: Computation and applications to robotics," *International Journal of Robotics Research*, Vol. 8, No. 6, pp. 63-79, Dec. 1989.
- [6] A. A. Maciejewski, "Dealing with the ill-conditioned equations of motion for articulated figures," *IEEE Computer Graphics and Applications*, Vol. 10, No. 3, pp. 63-71, May 1990.
- [7] A. A. Maciejewski, "Kinetic limitations on the use of redundancy in robotic manipulators," *IEEE Transactions on Robotics and Automation*, Vol. 7, No. 2, pp. 205-210, April 1991.
- [8] R. G. Roberts and A. A. Maciejewski, "Nearest optimal repeatable control strategies for kinematically redundant manipulators," *IEEE Transactions on Robotics and Automation*, Vol. 8, No. 3, pp. 327-337, June 1992.
- [9] A. A. Maciejewski and N. K. Leung, "The Nihongo Tutorial System: An intelligent tutoring system for technical Japanese language instruction," *Computer Assisted Language Instruction Consortium (CALICO) Journal*, Vol. 9, No. 3, pp. 5-25, Spring 1992.
- [10] Q. Xue, A. A. Maciejewski, and P.C-Y. Sheu, "Determining the collision-free joint space graph for two cooperating manipulators," *IEEE Transactions on Systems, Man, and Cybernetics*, Vol. 23, No. 1, pp. 285-294, Jan./Feb. 1993.
- [11] W. G. Nation, A. A. Maciejewski, and H. J. Siegel, "A methodology for exploiting concurrency among independent tasks in partitionable parallel processing systems," *Journal of Parallel and Distributed Computing*, Special Issue on Performance of Supercomputers, Vol. 19, No. 3, pp. 271-278, 1993.
- [12] R. G. Roberts and A. A. Maciejewski, "Repeatable generalized inverse control strategies for kinematically redundant manipulators," *IEEE Transactions on Automatic Control*, Vol. 38, No. 5, pp. 689-699, May 1993.
- [13] A. A. Maciejewski and J. J. Fox, "Path planning and the topology of configuration space," *IEEE Transactions on Robotics and Automation*, Vol. 9, No. 4, pp. 444-456, Aug. 1993.
- [14] R. G. Roberts and A. A. Maciejewski, "Singularities, stable surfaces, and the repeatable behavior of kinematically redundant manipulators," *International Journal of Robotics Research*, Vol. 13, No. 1, pp. 70-81, Feb. 1994.
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- Vangari, and S. S. Yellampalli, "Dynamically Mapping Tasks with Priorities and Multiple Deadlines in a Heterogeneous Environment," *Journal of Parallel and Distributed Computing*, Vol. 67, No. 2, pp. 154-169, Feb. 2007.
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- [121] J. Smith, E. K. P. Chong, A. A. Maciejewski, and H. J. Siegel, "Stochastic-Based Robust Dynamic Resource Allocation in a Heterogeneous Computing System" *38th International Conference on Parallel Processing (ICPP-2009)*, pp. 188-195, Vienna, Austria, Sept. 22-25, 2009.
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- [131] K. M. Ben-Gharbia, A. A. Maciejewski, and R. G. Roberts, "An illustration of generating robots from optimal fault-tolerant Jacobians," *15th IASTED International Conference on Robotics and Applications*, pp. 453-460, Cambridge, MA, Nov. 1-3, 2010.
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- [133] Q. Gao, X. Zhang, P-L. Rau, A. A. Maciejewski, and H. J. Siegel, "Performance visualization for large-scale systems: A literature review," *14th International Conference*

- on *Human-Computer Interaction (HCHI 2011)*, pp. 450-460, Orlando, FL, July 9-14, 2011.
- [134] H. Abdi, S. Nahavandi, and A. A. Maciejewski, "Optimal fault tolerant Jacobian matrix generators for redundant manipulators," *IEEE International Conference on Robotics and Automation*, pp. 4688-4693, Shanghai, China, May 9-13, 2011.
- [135] K. M. Ben-Gharbia, R. G. Roberts, and A. A. Maciejewski, "Examples of planar robot kinematic designs from optimally fault-tolerant Jacobians," *IEEE International Conference on Robotics and Automation*, pp. 4710-4715, Shanghai, China, May 9-13, 2011.
- [136] A. M. Al-Qawasmeh, A. A. Maciejewski, R. G. Roberts, and H. J. Siegel, "Characterizing Task-Machine Affinity in Heterogeneous Computing Environments," *20th International Heterogeneity in Computing Workshop (HCW'11)*, pp. 33-43, Anchorage, Alaska, May 16, 2011.
- [137] L. D. Briceno, B. Khemka, H. J. Siegel, A. A. Maciejewski, C. Groer, G. Koenig, G. Okonski, and S. Poole "Time Utility Functions for Modeling and Evaluating Resource Allocations in a Heterogeneous Computing System," *20th International Heterogeneity in Computing Workshop (HCW'11)*, pp. 7-19, Anchorage, Alaska, May 16, 2011.
- [138] J. Apodaca, D. Young, L. Briceno, J. Smith, S. Pasricha, A. A. Maciejewski, H. J. Siegel, S. Bahirat, B. Khemka, A. Ramirez, and Y. Zou, "Stochastically Robust Static Resource Allocation for Energy Minimization with a Makespan Constraint in a Heterogeneous Computing Environment," *9TH ACS/IEEE International Conference on Computer Systems and Applications (AICCSA 2011)*, pp. 22-31, Sharm El-Sheikh, Egypt, Dec. 27-30, 2011. (Co-Winner of Best Paper Award)
- [139] R. Friese, P. Maxwell, A. A. Maciejewski, and H. J. Siegel, "A Graphical User Interface for Simulating Military Village Searches," *International Conference on Modeling, Simulation and Visualization Methods (MSV'11)*, pp. 75-81, Las Vegas, NV, July 19, 2011.
- [140] D. Young, J. Apodaca, L. Briceno, J. Smith, S. Pasricha, A. A. Maciejewski, H. J. Siegel, B. Khemka, S. Bahirat, A. Ramirez, and Y. Zou, "Energy-Constrained Dynamic Resource Allocation in a Heterogeneous Computing Environment," *4th International Workshop on Parallel Programming Models and Systems Software for High-End Computing (P2S2)*, pp. 298-307, Taipei, Taiwan, Sept. 13, 2011.
- [141] K. M. Ben-Gharbia, A. A. Maciejewski, and R. G. Roberts, "Examples of spatial positioning redundant robotic manipulators that are optimally fault tolerant," *IEEE International Conference on Systems, Man, and Cybernetics*, pp. 1526-1531, Anchorage, Alaska, Oct. 9-12, 2011. (Finalist for Best Student Paper Award)
- [142] A. M. Al-Qawasmeh, S. Pasricha, A. A. Maciejewski, and H. J. Siegel, "Thermal-Aware Performance Optimization in Power Constrained Heterogeneous Data Cen-

ters,” accepted to appear in *21st International Heterogeneity in Computing Workshop (HCW'12)*, pp. -, Shanghai, China, May 21, 2012.

- [143] F. M. Ciorba, T. Hansen, S. Srivastava, I. Banicescu, A. A. Maciejewski, and H. J. Siegel, “A Combined Dual-Stage Framework for Robust Scheduling of Scientific Applications in Heterogeneous Environments with Unvertain Availability,” *21st International Heterogeneity in Computing Workshop (HCW'12)*, accepted to appear in pp. -, Shanghai, China, May 21, 2012.

Published Book Reviews

- [1] *Robotics and Remote Systems for Hazardous Environments*, edited by Mohammad Jamshidi and Patrick J. Eicker, Prentice-Hall, 1993, in *IEEE Transactions on Robotics and Automation*, vol. 10, no. 4, pp. 572-573, Aug. 1994.

Tutorials and Workshops

- [1] Tutorial Speaker: “Redundancy: Performance indices, singularity avoidance, and algorithmic implementations,” at *1992 IEEE International Conference on Robotics and Automation*, Nice, France, May 10–15, 1992.
- [2] Tutorial Speaker: “Automatic generation of vision recognition programs from CAD models,” at *Flexible Parts Feeding for Automated Handling and Assembly Workshop*, sponsored by Automated Imaging Association (AIA) and the Robotics Industries Association (RIA), Cincinnati, OH, Oct. 25-27, 1994.
- [3] Workshop Organizer and Speaker: “Fault tolerant robots,” at *1997 IEEE International Conference on Robotics and Automation*, Albuquerque, NM, April 20-25, 1997.

Invited Lectures

- [1] “Obstacle avoidance for redundant manipulators,” presented at Hitachi Ltd., Hitachi City, Japan, May 14, 1986.
- [2] “Japan and the current state of automated manufacturing,” presented at MTD Products Inc., Valley City, OH, Dec. 6, 1986.
- [3] “Future trends in automated manufacturing,” presented at MTD Products Inc., Huron, OH, July 11, 1988.
- [4] “Computer graphic simulations for analyzing kinematically redundant robotic systems,” presented at Wright Patterson Air Force Base, Dayton, OH, Dec. 1, 1989.
- [5] “An intelligent tutoring system for technical Japanese-language instruction,” presented at the National Science Foundation, Washington, DC, Jan. 24, 1990.
- [6] “Tutoring by computer in studying technical Japanese,” presented at the University of Wisconsin-Madison, Madison, WI, March 29, 1990.

- [7] "Motion control of kinematically redundant manipulators," presented at Oak Ridge National Laboratory, Oak Ridge, TN, May 25, 1990.
- [8] "Computer aided instruction of Japanese," presented at NEC International Convention, Tokyo, Japan, Oct. 23, 1990.
- [9] "Computer graphic simulations for analyzing kinematically redundant manipulators," presented at NEC International Convention, Tokyo, Japan, Oct. 23, 1990.
- [10] "Failure tolerant design and control of robotic manipulators," presented at NEC International Convention, Tokyo, Japan, Oct. 22, 1991.
- [11] "Computer graphic simulation of motion planning for robotic systems," presented at TRW Ross Gear Division, Lafayette, IN, March 19, 1992.
- [12] "Impact of redundancy on robot reliability," presented at Lawrence Livermore National Laboratory, Livermore, CA, Oct. 12, 1992.
- [13] "Design of a cooperation controller for multiple robot coordination," presented at NEC Kawasaki Engineering Research Center, Tokyo, Japan, Oct. 20, 1992.
- [14] "Impact of redundancy on robot reliability," presented at Sandia National Laboratory, Albuquerque, NM, Nov. 9, 1992.
- [15] "Impact of redundancy on robot reliability," presented at Los Alamos National Laboratory, Los Alamos, NM, Nov. 10, 1992.
- [16] "Failure tolerant robotic systems through the use of kinematic redundancy," presented at Wright Patterson Air Force Base, Dayton, Ohio, April 29, 1993.
- [17] "Multiple robot coordination," presented at NEC Kawasaki Engineering Research Center, Tokyo, Japan, Nov. 16, 1993.
- [18] "The design of failure tolerant robotic systems," presented at IEEE Control System Society Seminar, University of Dayton, Dayton, OH, Dec. 3, 1993.
- [19] "Failure tolerant design and control of kinematically redundant manipulators," presented at University of Waterloo, Waterloo, Canada, Aug. 22, 1994.
- [20] "Kinematics and motion control for robots," presented at NEC Kawasaki Engineering Research Center, Tokyo, Japan, Oct. 19, 1994.
- [21] "Applications of Singular Value Decomposition to the Motion Control of Kinematically Redundant Manipulators," presented at Purdue University, Computer Science Dept., West Lafayette IN, Feb. 3, 1999.
- [22] "The Use of Kinematic Redundancy for Failure Tolerant Robotic Systems," presented at Colorado State University, Ft. Collins CO, Sept. 22, 2000.
- [23] "The Use of Kinematic Redundancy for Failure Tolerant Robotic Systems," presented at New Mexico Highlands University, Las Vegas, NM, Sept. 29, 2000.
- [24] "The Use of Kinematic Redundancy for Failure Tolerant Robotic Systems," presented at University of New Mexico, Albuquerque, NM, Nov. 17, 2000.

- [25] “Kinematically redundant robots: The promise of human-like dexterity,” presented at Dean’s Lecturer Series, University of Wyoming, Laramie, WY, Dec. 13, 2002.
- [26] “Kinematically redundant robots: The promise of human-like dexterity,” presented at Ohio State University, Columbus, OH, Jan. 20, 2004.
- [27] “The Impact of Autonomous Robots on Crowd Behavior,” presented at Non-lethal Technology and Academic Research Symposium, Winston-Salem, NC, Nov. 15-17, 2004.
- [28] “Kinematically redundant robots: The promise of human-like dexterity,” presented at Colorado State University, Jan. 30, 2005.
- [29] “The Use of Kinematic Redundancy for Failure Tolerant Robotic Systems,” presented at Vanderbilt University, Nashville, TN, March 20, 2006.
- [30] “Kinematically redundant robots: The promise of human-like dexterity,” presented at University of Macau, China, June 29, 2006.
- [31] “Who will engineer our future: Engineering education in a global society,” presented at “IEEE Presents Engineering the Future of Colorado” sponsored by the IEEE Denver Section, Denver CO, Sept. 18, 2006.
- [32] “Robust Resource Allocation in a Client/Server Hybrid Network for Virtual World Environments and Massive Multiplayer Online Gaming,” presented at the University of Luxembourg, Luxembourg, Jan. 13, 2010.
- [33] “Expanding Semiconductor Job Opportunities in Northern Colorado: A Panel Discussion,” presented with M. Freeman, D. McGrath, D. Bartlett, and P. O’Neil, jointly sponsored by the IEEE High Plains Section and Solid-State Circuits Chapter, Fort Collins CO, June 8, 2011.

Symposia Attended (by invitation)

- [1] National Science Foundation (NSF) and Japanese Ministry of International Trade and Industry (MITI), “The Research and Development Activities of the Agency of Industrial Science and Technology (AIST),” Atlanta, GA, March 13, 1989.
- [2] Japan Information Center of Science and Technology (JICST) and National Technical Information Service (NTIS) conference on “Japanese Scientific and Technical Information,” Washington, DC, April 1-2, 1991.
- [3] Department of Energy (DOE) Office of Technology Development (OTD), “Workshop on Modular Robotics,” Park City, UT, May 12-13, 1993.

Technical Reports

- [1] A. A. Maciejewski, “Computationally efficient ray tracing of parametric surfaces,” Technical Report No. 16700, Hitachi Central Research Laboratory, Tokyo, Japan, Jan. 1986, 34 pages.

- [2] A. A. Maciejewski, "Parametric volume based modeling for the display of natural phenomena," Technical Report No. 16701, Hitachi Central Research Laboratory, Tokyo, Japan, Aug. 1986, 27 pages.
- [3] K. W. Leung and A. A. Maciejewski, "User's guide for the Nihongo tutorial system," Technical Report No. TR-EE 90-26, School of Electrical Engineering, Purdue University, April 1990, 90 pages.
- [4] K. W. Leung and A. A. Maciejewski, "Technical specifications of the Nihongo tutorial system," Technical Report No. TR-EE 90-27, School of Electrical Engineering, Purdue University, April 1990, 64 pages.
- [5] K. W. Leung and A. A. Maciejewski, "Source code for the Nihongo tutor," Technical Report No. TR-EE 90-28, School of Electrical Engineering, Purdue University, April 1990, 105 pages.
- [6] B.-L. Yeo, M. Yeung, and A. A. Maciejewski, "An X11-based Japanese language processing and learning environment," Technical Report No. TR-EE 92-33, School of Electrical Engineering, Purdue University, Aug. 1992, 37 pages.
- [7] Y.-S. Kang and A. A. Maciejewski, "Data on English to Japanese transliteration of technical terminology," Technical Report No. TR-EE 92-34, School of Electrical Engineering, Purdue University, Aug. 1992, 210 pages.
- [8] Y-K. Kwok, A. A. Maciejewski, H. J. Siegel, A. Ghafoor, and I. Ahmad, "Design and Analysis of A Semi-Static Approach to Mapping Dynamic Iterative Tasks onto Heterogeneous Computing Systems," Technical Report TR-2001-CSN-036, Department of Electrical and Electronic Engineering, The University of Hong Kong, September 20, 2001, 36 pages.

Conference Session Chairman

- [1] Session Chairman, "Path Planning in Known Environment," 1990 IEEE International Conference on Robotics and Automation, Cincinnati, OH, May 13-18, 1990.
- [2] Session Chairman, "Robotics III," 1990 IEEE International Conference on Systems Engineering, Pittsburgh, PA, Aug. 9-11, 1990.
- [3] Session Chairman, "Path Planning and Collision Avoidance," 1991 IEEE International Conference on Robotics and Automation, Sacramento, CA, April 7-12, 1991.
- [4] Session Co-Chairman, "Kinematics Analysis of Redundant Robots," 1992 IEEE International Conference on Robotics and Automation, Nice, France, May 10-15, 1992.
- [5] Session Co-Chairman, "Robotics I," 1st IEEE Conference on Control Applications, Dayton, OH, Sept. 13-16, 1992.
- [6] Session Co-Chairman, "Fault Detection and Error Recovery," 1994 IEEE International Conference on Robotics and Automation, San Diego, CA, May 8-13, 1994.

- [7] Session Co-Chairman, "Inspection," 1994 IEEE International Conference on Robotics and Automation, San Diego, CA, May 8-13, 1994.
- [8] Session Organizer and Chairman, "Applications of robotic redundancy," International Symposium on Robotics and Manufacturing, Maui, HI, Aug. 14-18, 1994.
- [9] Session Co-Chairman, "Multiple Manipulators: Planning & Control," IEEE/RSJ/GI International Conference on Intelligent Robots and Systems (IROS '94), München, Germany, Sept. 12-16, 1994.
- [10] Session Chairman, "Robot Kinematics," IASTED International Conference on Robotics and Manufacturing, Cancún, Mexico, June 14-17, 1995.
- [11] Session Co-Chairman, "Redundant Robots III," 1996 IEEE International Conference on Robotics and Automation, Minneapolis, MN, April 22-28, 1996.
- [12] Session Co-Chairman, "Flexible Robot Modeling and Simulation," 1996 IEEE International Conference on Robotics and Automation, Minneapolis, MN, April 22-28, 1996.
- [13] Session Chairman, "Fault Tolerance I," 1997 IEEE International Conference on Robotics and Automation, Albuquerque, NM, April 20-25, 1997.
- [14] Session Chairman, "Robot Programming," 1998 IEEE International Conference on Robotics and Automation, Leuven, Belgium, May 16-20, 1998.
- [15] Session Chairman, "Motion Control," 1998 IEEE International Conference on Robotics and Automation, Leuven, Belgium, May 16-20, 1998.
- [16] Session Chairman, "Fault-Tolerant Robots," 1999 IEEE International Conference on Robotics and Automation, Detroit, MI, May 10-15, 1999.
- [17] Session Chairman, "Hyper Redundant Robots," 1999 IEEE International Conference on Robotics and Automation, Detroit, MI, May 10-15, 1999.
- [18] Session Chairman, "Control Applications," Second International Conference on Recent Advances in Mechatronics, Istanbul, Turkey, May 24-26, 1999.
- [19] Session Chairman, "Redundant Manipulators," 2000 IEEE International Conference on Robotics and Automation, San Francisco, CA, April 24-28, 2000.
- [20] Session Chairman, "Manipulator Control," 2000 IEEE International Conference on Intelligent Robots and Systems, Takamatsu, Japan, Oct. 31 - Nov. 1, 2000.
- [21] Session Co-Chairman, "Vision Sensing and Algorithms I," 2001 IEEE International Conference on Intelligent Robots and Systems, Maui, Hawaii, Oct. 29 - Nov. 3, 2001.
- [22] Session Co-Chairman, "Redundant Robots," 2003 IEEE International Conference on Robotics and Automation, Taipei, Taiwan, Sep. 16-18, 2003.

- [23] Session Co-Chairman, "Motion and Path Planning," 2003 IEEE International Conference on Intelligent Robots and Systems, Las Vegas, NV, Oct. 27-31, 2003.
- [24] Session Co-Chairman, "Environmental Robots," 2004 IEEE International Conference on Robotics and Automation, New Orleans, LA, April 26-May 1, 2004.
- [25] Session Chairman, "Control Architectures and Human Interaction," 10th International Symposium on Robotics and Applications (ISORA 2004), Seville, Spain, June 28-July 1, 2004.
- [26] Session Co-Chairman, "Redundant Manipulators," 2004 IEEE International Conference on Intelligent Robots and Systems, Sendai, Japan, Sept. 28 - Oct. 2, 2004.
- [27] Session Chairman, "Scheduling and Load Balancing," 19th IEEE International Parallel and Distributed Processing Symposium (IPDPS 2005) Denver, CO, April 3-8, 2005
- [28] Session Chairman, "Tracking People," 2005 IEEE International Conference on Robotics and Automation, Barcelona, Spain, April 18-22, 2005.
- [29] Session Co-Chairman, "Haptics," 2005 IEEE International Conference on Robotics and Automation, Barcelona, Spain, April 18-22, 2005.
- [30] Session Co-Chairman, "Man-Machine Systems 3," 2005 IEEE International Conference on Systems, Man and Cybernetics, Hawaii, Oct. 10-12, 2005.
- [31] Session Co-Chairman, "Redundant Robots," 2006 IEEE International Conference on Robotics and Automation, Orlando, FL, May 17, 2006.
- [32] Session Chairman, "Continuum and Redundant Systems," 2007 IEEE International Conference on Robotics and Automation, Rome, Italy, April 11, 2007.
- [33] Session Chairman, "Redundant Manipulators and Mobility," 2007 IEEE International Conference on Intelligent Robots and Systems, San Diego, CA, Nov. 1, 2007.
- [34] Session Chairman, "Redundant and Parallel Robots," 2007 IEEE International Conference on Intelligent Robots and Systems, San Diego, CA, Nov. 1, 2007.
- [35] Session Co-Chairman, "Algorithmic Automation," The 4th Annual IEEE Conference on Automation Science and Engineering (CASE 2008), Washington, DC, Aug. 24, 2008.
- [36] Session Co-Chairman, "Machine Vision," 2009 IEEE International Conference on Systems, Man and Cybernetics, San Antonio, TX, Oct. 14, 2009.
- [37] Session Chairman, "Social Human-Robot Interaction II," 2010 IEEE International Conference on Intelligent Robots and Systems, Taipei, Taiwan, Oct. 21, 2010.
- [38] Session Co-Chairman, "Visual Navigation IV," 2011 IEEE International Conference on Robotics and Automation, Shanghai, China May 9-13, 2011.

- [39] Session Chairman, “Redundant Robots,” 2011 IEEE International Conference on Robotics and Automation, Shanghai, China May 9-13, 2011.
- [40] Session Chairman, “Scheduling and Resource Allocation in Heterogeneous Environments,” 20th International Heterogeneity in Computing Workshop, Anchorage, Alaska May 16, 2011.
- [41] Session Chairman, “Humanoid Robot and Redundant Manipulator Control,” IEEE International Conference on Systems, Man, and Cybernetics, Anchorage, Alaska, Oct. 11, 2011.

Activities as a Referee

Journals

IEEE Transactions on Robotics and Automation (1988-present)
IEEE Transactions on Systems, Man, and Cybernetics (1989-present)
IEEE Transactions on Industrial Electronics (1992-present)
IEEE Transactions on Control Systems Technology (1993-present)
IEEE Transactions on Automatic Control (1996-present)
IEEE Transactions on Parallel and Distributed Systems (2010)
IEEE Computer Graphics and Applications (1987-present)
IEEE Computer (1988-present)
IEEE Control Systems Magazine (1988-present)
IEEE Robotics and Automation Magazine (1994-present)
IEEE/ASME Transactions on Mechatronics (2001-present)
ASME Journal of Dynamic Systems, Measurement and Control (1990-present)
ASME Journal of Engineering for Industry (1992-present)
ASME Journal of Mechanical Design (2007)
International Journal of Robotics Research (1990-present)
International Journal of Robotics and Automation (1996-present)
International Journal of Computer Simulation (1990-present)
Intelligent Automation and Soft Computing (1996-present)
Optimal Control Applications and Methods (1990-present)
Journal of Robotic Systems (1991-present)
Robotics and Autonomous Systems (1995-present)
Robotics and Computer-Integrated Manufacturing (1995-present)
Journal of Intelligent and Fuzzy Systems (1993-present)
Journal of Intelligent and Robotic Systems (1992-present)
Computers and Electrical Engineering (1991-present)
Proceedings of the IEEE (1993)
Journal of Intelligent Manufacturing (1994)
CALICO Journal (1994)
Microcomputers in Civil Engineering (Special Issue on Robotics) (1994)

Autonomous Robots (1996)
Automation in Construction (1997-present)
Reliability Engineering and System Safety (2000)
Mechanism and Machine Theory (2004-present)
Robotica (2006)
Systems and Control Letters (2009)
Journal of Supercomputing (2009)

Conferences

IEEE Conference on Robotics and Automation (1989-present)
IEEE Conference on Decision and Control (1989-present)
IEEE Conference on Control Applications (1992-present)
IEEE/RSJ International Conference on Intelligent Robots and Systems (1992-present)
American Control Conference (1993-present)
American Nuclear Society Meeting Review Panel (1990)
18th Annual International Symposium on Computer Architecture (1991)
ISRAM Best Paper Review Panel (1994)
ICRA Best Paper Review Committee (2006)
IEEE CDC Best Student Paper Review Panel (1991)
IFAC Symposium on Robot Control (1997)
ASME Mechanisms Conference (1998)

Funding Agencies

National Science Foundation (1991-present)
National Science Foundation Japan Language Review Panel (1988,1990)
Natural Sciences and Engineering Research Council of Canada (1990, 2002, 2003, 2006, 2008)
State of Kentucky EPSCoR Program (1990)
Purdue Global Initiative Faculty Grants (1999)
U.S. Civilian Research and Development Foundation (2000)

Other Activities

- 1990 Presentation at President's Council Annual Weekend Back to Class Program, "Your own Japanese tutor—It's a computer!" Purdue University, West Lafayette, IN, Nov. 2, 1990.
- 1990- School of Electrical Engineering Undergraduate Academic Counseling Program (advising students on careers and research in the areas of robotics and computer graphics.)
- 1993 Presentation at President's Council Annual Weekend Back to Class Program, "Intelligent machines: What can they do for you?" Purdue University, West

Lafayette, IN, Nov. 12, 1993 (with Mary P. Harper, Leah H. Jamieson, and Avinash C. Kak).

1994 External Ph.D. Thesis Examiner for “Robot Motion Planning: A Geometric Reasoning Approach,” by King-Sun Ma, Department of Systems Design Engineering, University of Waterloo, Aug. 21, 1994.

1999 Boiler Goldrush sponsor

2000 Interview Freshman Engineering Merit Scholar applicants

2003 External Ph.D. Thesis Committee for Sumeet Aphale, Department of Electrical and Computer Engineering, University of Wyoming.

2006 External Ph.D. Thesis Committee for Yugang Liu, Department of Electromechanical Engineering, University of Macau, Macau, China.

2011 External Ph.D. Thesis Committee for Yuan Yun, Department of Electromechanical Engineering, University of Macau, Macau, China.