

MARK WILLIAM SPONG



Business Address:

Lars Magnus Ericsson Chair and Dean
Erik Jonsson School of Engineering and Computer Science
Excellence in Education Chair, Department of Electrical Engineering
University of Texas at Dallas
800 W. Campbell Rd.
Richardson, TX 75080
phone: (972) 883-2979
FAX: (972) 883-2813
e-mail: mpong@utdallas.edu
URL: www.utdallas.edu/~mpong

Home Address:

1003 Pampa Drive
Allen, TX 75013
phone: (469) 675-3448

Mark W. Spong was born on November 5, 1952, in Warren, Ohio. He received the B.A. degree, magna cum laude and Phi Beta Kappa, in mathematics and physics from Hiram College, Hiram, Ohio in 1975, the M.S. degree in mathematics from New Mexico State University in 1977, and the M.S. and D.Sc. degrees in systems science and mathematics in 1979 and 1981, respectively, from Washington University in St. Louis.

From 1981 to 1982 he was with the Department of Electrical Engineering at Lehigh University. From 1982 to 1984 he was with the School of Electrical Engineering at Cornell University. From 1984 to 2008 he was at the University of Illinois at Urbana-Champaign. Currently he is Dean of the Erik Jonsson School of Engineering and Computer Science and holder of the Lars Magnus Ericsson Chair and the Excellence in Education Chair in the Department of Electrical Engineering at the University of Texas at Dallas.

He has held visiting positions at the University of Waterloo, Canada, the CINVESTAV del IPN, Mexico City, the Lund Institute of Technology, Sweden, the Laboratoire d'Automatique de Grenoble, France, the Université de Technologie de Compiègne, France, the Katholieke Universiteit, Leuven, Belgium, the National University of Singapore, and the Technische Universität, München, and has served as a consultant to industry and government.

Dr. Spong is Past President of the IEEE Control Systems Society, a Fellow of the IEEE and has served as both Editor-in-Chief and Associate Editor of the IEEE Transactions on Control System Technology, and as Associate Editor of the IEEE Transactions on Robotics and Automation, the IEEE Control Systems Magazine, and the IEEE Transactions on Automatic Control. He served as Vice President for Publication Activities from 2000-2002 and is a member of the Board of Governors of the IEEE Control Systems Society.

Dr. Spong's main research interests are in robotics, mechatronics, and nonlinear control theory. He has authored or coauthored more than 250 technical articles in control and robotics, four books and holds one patent.

His recent awards include the first IROS Fumio Harashima Award for Innovative Technologies, the IEEE Transactions on Control Systems Technology Outstanding Paper Award, the Automatica Best Paper Award, the Senior Scientist Research Award from the Alexander von Humboldt Foundation, the Distinguished Member Award from the IEEE Control Systems Society, the IEEE Third Millennium Medal, and the John R. Ragazzini from the American Automatic Control Council. In addition, he has twice received the O. Hugo Schuck Award from the American Automatic Control Council.

Dr. Spong currently lives in Allen, Texas, with his wife Lila and has two children, Matthew (28) and John (24).

CURRICULUM VITAE

EMPLOYMENT HISTORY

- 2008— University of Texas at Dallas
Dean, Erik Jonsson School of Engineering and Computer Science
Lars Magnus Ericsson Chair and Excellence in Education Chair
Professor, Department of Electrical Engineering
Director, LARS (Laboratory for Autonomous and Robotic Systems)
- 1996—2005 Mechatronic Systems, Incorporated. Founder and President.
Products licensed to Quanser, Inc. in 2005.
- 1984— University of Illinois at Urbana-Champaign
Professor Emeritus, Electrical and Computer Engineering (2008—)
Adjunct Professor, Electrical and Computer Engineering (2008—)
Adjunct Research Professor, Coordinated Science Laboratory (2008—)
Adjunct Research Professor, Information Trust Institute (2008—)
- Professor of Electrical and Computer Engineering (2005-2008)
Donald Biggar Willett Professor of Engineering (2003-2008)
Interim Head, Department of General Engineering (2003-2005)
Acting Director, Coordinated Science Laboratory (2002)
Professor, Department of General Engineering (1990-2008)
- Research Professor, Coordinated Science Laboratory (1990-2008)
Research Professor, Information Trust Institute (2006-2008)
Director, Robotics and Automation Laboratory (1987-2008)
Director, John Deere Mechatronics Laboratory (1995-2008)
Director, Center for Autonomous Engineering Systems and Robotics (2006-2008)
- Assistant Professor from 1984-1986
Associate Professor from 1986-1990
- 1984 General Electric Company, Schenectady, NY
Engineering Consultant, Control Technology Branch,
Corporate Research and Development
- 1982-1984 Cornell University, Ithaca, NY
Assistant Professor, School of Electrical Engineering
- 1981-1982 Lehigh University, Bethlehem, PA
Assistant Professor, Department of Electrical and Computer Engineering
- 1977-1981 Washington University, St. Louis, MO
Teaching Assistant/Research Assistant
Department of Systems Science and Mathematics
- 1975-1977 New Mexico State University, Las Cruces, NM
Teaching Assistant, Department of Mathematics

EDUCATION

- 1977-1981 Washington University, St. Louis, MO
Master of Science in Systems Science and Mathematics, December 1979
Doctor of Science in Systems Science and Mathematics, May 1981
- 1975-1977 New Mexico State University, Las Cruces, NM
Master of Science in Mathematics, June 1977
- 1971-1975 Hiram College, Hiram, OH
Bachelor of Arts, Magna Cum Laude, Phi Beta Kappa
Major: mathematics, Minor: physics
Departmental honors in mathematics

HONORS AND AWARDS

1. Named Lars Magnus Ericsson Chair at UT Dallas, 2008
2. *IEEE Transactions on Control Systems Technology* Outstanding Paper Award, 2008
3. *American Control Conference* co-author of Best Student Paper, 2008
4. *Automatica* Best Survey/Tutorial Paper, 2008
5. IROS Fumio Harashima Award for Innovative Technologies, 2007
6. Achievement Hall of Fame, Champion High School, Warren, OH, 2007
7. John R. Ragazzini Award, American Automatic Control Council, 2004
8. Named Donald Biggar Willett Professor of Engineering at UIUC, 2003
9. O. Hugo Schuck Award, American Automatic Control Council, 2002
10. Distinguished Member Award, IEEE Control Systems Society, 2002
11. Alexander von Humboldt Foundation Senior U.S. Scientist Research Award, 1999
12. IEEE Third Millennium Medal, 2000
13. Fellow of the IEEE, 1996
14. NSF Research Initiation Award, 1982
15. Phi Beta Kappa, 1975
16. IFAC Triennial Control Engineering Textbook Award Finalist, 1996
17. Best Paper Award, Robotics and Expert Systems Symposium, Pittsburgh, PA, June 1987
18. Best Paper Award, IEEE Conference on Decision and Control, Austin, TX, Dec. 1988
19. Best Video Award, IEEE International Conference on Robotics and Automation, Leuven, Belgium, 1998
20. Featured Speaker at the RIST International Forum on Intelligent Systems, Kumamoto, Japan, December, 1995.
21. List of Teachers Rated Excellent by their Students, Spring, 1989, 2001, 2006
22. Southwest Mechanics Lecture Series Invited Speaker, 2001.
23. UIUC Outstanding Advisor Award, 1999, 2005

PROFESSIONAL ACTIVITIES

Editorships

1. Editor-in-Chief, *IEEE Transactions on Control Systems Technology*, 1997–2000
2. Associate Editor, *IEEE Transactions on Control Systems Technology*, 1992-1996
3. Associate Editor, *IEEE Transactions on Robotics and Automation*, 1992-1994

4. Associate Editor, *IEEE Transactions on Automatic Control*, 1988-1991
5. Associate Editor, *IEEE Control Systems Magazine*, 1986-1988
6. Associate Editor, *International J. of Robotics Research*, 2000-present
7. Associate Editor, *J. of Systems Science and Complexity*, 2005-present
8. Advisory Editor, *J. of Control Theory and Applications*, 2008-present
9. *Automatica* Best Paper Award Evaluation Committee, 1998, 2005

IEEE Activities

1. President, IEEE Control Systems Society, 2005
2. Vice President for Publication Activities, IEEE Control Systems Society, 2000-2002.
3. Board of Governors, IEEE Control Systems Society, 1994-2002 and 2004-2007.
4. Executive Committee, IEEE Control Systems Society, 1997-2002 and 2004-2007.
5. Nominating Committee, IEEE Control Systems Society, 2006-2008.
6. Chair, Technical Committee on Manufacturing Automation and Robot Control, IEEE Control Systems Society, 1993-1996
7. General Chair, 2010 IEEE Conference on Decision and Control
8. Program Co-Chair, 2009 IEEE Conference on Decision and Control
9. General Chair, 2001 IEEE Conference on Control Applications
10. IEEE CSS Task Force on Control Education, 1997
11. IEEE CSS Task Force on Impact Publications, 1997
12. IEEE CSS/IFAC Joint Task Force on Control Applications, 1997
13. CSS Publications Activity Board, 1997-2007
14. IEEE Int'l Conf. on Robotics and Automation Best Paper Award Evaluation Committee, 1998
15. IEEE Int'l Conf. on Robotics and Automation Best Video Award Evaluation Committee, 1999
16. Organizer of the NSF/CSS Workshop on New Directions in Control Engineering Education, 1998
17. Publicity Chair, 1985 IEEE International Conference on Robotics and Automation.

Invited Plenary Addresses

1. Opening Plenary Address at the 6th Euromech Conference ENOC08, St. Petersburg, Russia, July, 2008.
2. Plenary Address at the IEEE Multiconference on Systems and Control, Singapore, October, 2007.
3. Plenary Address at the 4th IEEE International Conference on Informatics in Control, Automation and Robotics (ICINCO'07), Angers, France, May, 2007.
4. Plenary Address at the 3rd IFAC Workshop on Lagrangian and Hamiltonian Methods for Nonlinear Control (LHMNLC'06), Nagoya, Japan, July, 2006.
5. Keynote Speaker at The Eighth IASTED International Conference on Control and Applications (CA 2006), Montreal, Canada, May, 2006
6. Plenary Address at the 2005 Chinese Automatic Control Conference, Tainan, Taiwan, November, 2005.
7. Plenary Address at the International Conference on Electrical Engineering, Mexico City, September, 2005.
8. Semi-Plenary at the NOLCOS (Nonlinear Control Symposium), Stuttgart, Germany, September, 2004.
9. Plenary Address at the 2004 International Conference on Dynamics, Instrumentation and Control, Nanjing China, August, 2004.
10. Plenary Address at the 2004 Chinese Control Conference, Wuxi, China, August, 2004.

11. Plenary Address at the International Symposium on Robotics and Automation (ISRA'98), Saltillo, Mexico, December, 1998.
12. Opening Address at The First International Conference on Mechatronics, Mexico City, January, 1994
13. Opening Address at The Workshop on Nonlinear and Adaptive Control, Grenoble, France, November 1990

Invited Short Courses

1. Short Course on Robot Control, CINVESTAV del IPN, Mexico City, November, 1987
2. Short Course on Robot Control, Lund Institute of Technology, Sweden, May, 1991
3. Stability Analysis of Adaptive Control of Robot Manipulators, National Video Teleconference. Broadcast to various universities in Sweden from Lund, May, 1991
4. Short Course on Robot Control, University of Grenoble, Laboratoire d'Automatique, April, 1991
5. DISC Summer School on Nonlinear Control Theory, Zeist, Holland, June, 1996

Invited Workshop Presentations

1. Workshop on Nonlinear Control and Learning Systems, Hyderabad, India, January, 2008.
2. Cyber-Physical Systems, NSF US-Brazil Collaborative Workshop, San Diego, CA, December, 2006
3. A Future Vision of Robotics, NSF Cyber-Physical Systems Workshop, Austin, TX, October, 2006
4. Feedback Control of Biped Walking Robots, IEEE Conference on Decision and Control, Maui, HI, December, 2003
5. Super-Mechano Systems Workshop, Tokyo, Japan, February, 1999
6. Japan-U.S.A. Symposium on Flexible Automation, July, 1998
7. 3rd International Conference on Advanced Mechatronics, Okoyama, Japan August, 1998
8. 5th IFAC Workshop on Algorithms and Architectures for Real-Time Control, Cancun, Mexico, April, 1998
9. Workshop on Control Using Logic and Switching, IEEE Conference on Decision and Control, San Diego, CA, December, 1997
10. International Workshop on Control Problems in Robotics and Automation: Future Directions, San Diego, CA, December, 1997
11. Workshop on Nonlinear Systems and Robot Control, Ensenada, Mexico, December, 1997
12. Block Island Workshop on Vision and Control, Block Island, RI, June, 1997
13. Pre-IFAC Workshop on Nonlinear Control, Santa Barbara, July, 1996
14. Block Island Workshop on Control Using Logic Based Switching, Block Island, RI, June, 1997
15. National Research Council Office of Japan Affairs Workshop on Robotics, May, 1993.
16. Symposium on Implicit and Nonlinear Systems, The Automation & Robotics Research Institute, Arlington, Texas, December, 1992
17. Workshop on Nonlinear and Adaptive Control of Robot Manipulators, Merida, Mexico, May, 1989
18. National Science Foundation Workshop on Educating Students in Robotics and Automation, Purdue University, June 1986

Student Supervision

Ph.D. Theses

1. Anderson, R.J., *A Network Approach to Force Control in Robotics and Teleoperation*, Department of Electrical and Computer Engineering, 1988.

2. Hung, J.Y., *Robust Control of Flexible Joint Manipulators*, Department of Electrical and Computer Engineering, 1989.
3. Ghorbel, J.Y., *Adaptive Control of Flexible Joint Manipulators: A Singular Perturbation Approach*, Dept. of Mechanical and Industrial Engineering, 1990.
4. Bortoff, S.A., *Pseudolinearization of Nonlinear Systems with Applications to the Acrobot*, Department of Electrical and Computer Engineering, 1992.
5. Bishop, B., *Intelligent Visual Servo Control of an Air Hockey Playing Robot*, Department of Electrical and Computer Engineering, 1997.
6. Chopra, N., *Output Synchronization of Networked Passive Systems*, Department of Industrial and Enterprise Systems Engineering, August, 2006.
7. Hokayem, P., *Reliable Control of Multiagent Systems*, Department of Electrical and Computer Engineering, August, 2007.
8. Mastellone, S., *Interaction and Configuration Control for Networks of Dynamical Systems*, Department of Industrial and Enterprise Systems Engineering, May, 2008.
9. Holm, J., *Control of Bipedal Locomotion*, Department of Electrical and Computer Engineering, May, 2008.
10. Martinez-Palafox, O., *Multi-Robot Teleoperation*, Department of Industrial and Enterprise Systems Engineering, December, 2008.
11. Gregg, Robert, *Geometric Reduction and Bipedal Locomotion*, Department of Electrical and Computer Engineering, in progress.
12. Rodriguez, Erick, *Bilateral Teleoperation*, Department of Electrical and Computer Engineering, in progress.
13. Moon, Jae-Sung, *Simulation of Bipedal Locomotion*, Department of Industrial and Enterprise Systems Engineering, in progress.

M.S. Theses

1. Kindler, R., *A Motorola MC68000 Based Microcomputer Controller for the Stanford Manipulator*, Department of Electrical and Computer Engineering, 1986.
2. Sharp, D.J., *Computer-Aided Robot Simulation*, Department of Computer Science, 1986.
3. Anderson, R.J., *Hybrid Admittance/Impedance Force Control of Robotic Manipulators*, Department of Electrical and Computer Engineering, 1986.
4. Scheid, W.M., *XRSIM: A Real-Time Robot Kinematics Simulator*, Department of General Engineering, 1988.
5. Grajales, L., *A Microcomputer Controller for the Rhino XR-3 Robot*, Department of Electrical and Computer Engineering, 1988.
6. Tirpak, T., *A Simulation Study of Adaptive Control Laws for Robot Manipulators*, Department of General Engineering, 1989.
7. Moll, R., *Redundant Robot Programming via Computer Animation*, Department of Electrical and Computer Engineering, 1989.
8. Bhatia, P., *Coordination and Adaptive Control of Cooperating Manipulators*, Department of Electrical and Computer Engineering, 1990.
9. Glasser, G.J., *An Experimental Study of Impedance Control of Robotic Manipulators*, Department of Electrical and Computer Engineering, 1991.
10. Shern, Yihshih, *An X-Windows Graphic Animation Package for Dynamical Systems*, Department of General Engineering, 1992.
11. Fitzmorris, A., *Adaptive Control of Flexible Joint Robots*, Department of Electrical and Computer Engineering, 1992.
12. Thomas, R., *A Robust-Adaptive Approach to the Robot Motion Control Problem*, Department of Electrical and Computer Engineering, 1993.

13. Nethery, J., *Robotica: A Mathematica Package for Computer-Aided Analysis and Design of Robots*, Department of Electrical and Computer Engineering, 1993.
14. Bishop, B., *Camera Modeling for Visual Servoing*, Department of Electrical and Computer Engineering, 1993.
15. Walsh, P.J., *Design and Control of a Two-Link Direct Drive Robot Arm*, Department of Mechanical and Industrial Engineering, 1994.
16. Shirkey, P.A., *Testbed for Intelligent Control*, Department of Electrical and Computer Engineering, 1996.
17. Block, D., *Mechanical Design and Control of the Pendubot*, Department of General Engineering, 1996.
18. Lohmar, J., *Kinemator: An Animation Package for Mechanical Systems*, Department of General Engineering, 1996.
19. Whitmore, B., *Optimal Placement of a Robotic Manipulator Within an Automated Workcell*, Department of General Engineering, 1996.
20. Makhlin, A., *Design and Nonlinear Control of Inverted Pendulum*, Department of Mechanical Engineering, August, 1998.
21. Partridge, C., *Vision-Based Prediction of Planar Rigid Body Sliding with Impacts and Friction*, Department of Electrical and Computer Engineering, December, 1998.
22. Wagner, Rex, *Real-Time Control of a Novel Ball and Beam Design*, Department of General Engineering, December, 1998.
23. Bunchongchuitr, S., *Development of the Air Hockey Playing Robot*, Department of General Engineering, 1999.
24. Lee, Adrian, *Design and Control of the Gyrobot*, Department of Mechanical Engineering, May, 2000.
25. Kuo, Steven, *Experimental Evaluation of the Routh 2-D Impact Model*, Department of General Engineering, December, 2000.
26. Valuzzi, Jason, *Internet Based Robot Control*, Department of Mechanical Engineering, December, 2000.
27. Martinez, Edgar, *Modeling and Control of Biped Robots*, Department of Mechanical Engineering, May, 2001.
28. Bhatia, Gagandeep, *Passivity Based Control of Biped Robots* Department of Nuclear Engineering, December, 2002.
29. Chopra, Nikhil, *Internet Based Teleoperation* Department of General Engineering, May, 2003.
30. Chakravarty, Joydip, *Internet Based Teleoperation* Department of Electrical and Computer Engineering, May, 2003
31. Prasad, P., *Java Based Networked Control Systems* Department of Mechanical Engineering, May, 2003.
32. Prashanth, V., *Simulation and Control of Robots over the Internet* Department of Mechanical Engineering, May, 2003
33. Sammis, Adam, *Design of a Water Rescue Robot* Department of General Engineering, August, 2003.
34. Martinez-Palafox, O., *Obstacle Avoidance in Virtual Teleoperation of Mobile Robots by Artificial Potential Fields*, Department of General Engineering, 2004.
35. Berestesky, P., *Teleoperation with Time Varying Delay* Department of Electrical and Computer Engineering, 2004.
36. Gilliam, A., *A Networked Control System Testbed: Bilateral Teleoperation over the Internet*, Department of Electrical and Computer Engineering, 2004.
37. Holm, J., *Bipedal Locomotion Control*, Department of Electrical and Computer Engineering, 2004.
38. Herring, D., *Bipedal Locomotion Control*, Department of Electrical and Computer Engineering, 2004.
39. Sinha, K., *Telesupervised Multiagent Simulator*, Department of General Engineering, 2004.
40. Johnson, D., *Design and Control of the Segway Robot*, Department of General Engineering, 2005.
41. Rodriguez-Seda, E. *Bilateral Teleoperation with Time Delay*, Department of Electrical and Computer Engineering, August, 2007

42. Block, A. *Design of a Biped Robot*, Department of General Engineering, May, 2007.
43. Lakshmi, R. *The Overvoltage Problem in AC-Motor Drives*, Department of Electrical and Computer Engineering, May 2006.
44. Gregg, R. *Subrobots: Reduction-Based Control with Application to Three-Dimensional Bipedal Walking Robots*, Department of Electrical and Computer Engineering, October, 2007.

External Examiner on Theses

1. Mills, J., *Nonlinear Control of Flexible Joint Robots*, Department of Mechanical Engineering, University of Toronto, 1988.
2. Carelli, R., *Adaptive Control of Robot Manipulators*, Department of Electrical Engineering, National Autonomous University of Mexico, 1990, (in spanish)
3. Dahl, O., *Optimal Control of Robot Manipulators*, Department of Automatic Control, Lund Institute of Technology, Sweden, 1992 (thesis opponent)
4. Nielson, K., *Real-Time Architectures for Robot Control*, Department of Automatic Control, Lund Institute of Technology, Sweden, 1994 (thesis opponent)
5. Lu, G., *Robust Control of Robot Manipulators*, Department of Mechanical Engineering, University of Toronto, 1995.
6. Khraief, Nahla, *Nearly Passive Walking in Biped Robots*, University of Versailles, 2003.

RESEARCH SUPPORT

- | | |
|------|--|
| 1982 | 1. Generalized Linear Dynamical Systems over Commutative Rings
National Science Foundation ECS-8214262 (Research Initiation Grant)
Amount: \$44,450 Duration: 2 years |
| 1983 | 2. Advanced Control Theory Applied to Robot Manipulators
Cornell University Manufacturing Engineering Program (COMEP)
Amount: \$17,500 Duration: 6 months |
| 1985 | 3. Generalized Linear Dynamical Systems over Commutative Rings
National Science Foundation ECS-8500762
Amount: \$6,500 Duration: 1 year |
| | 4. A Microprocessor Based Controller for the Stanford Manipulator
University of Illinois Research Board
Amount: \$13,000 Duration: 1 year |
| 1986 | 5. Nonlinear Methods in Robotic Control
National Science Foundation DMC-8516091
Amount: \$142,000 Duration: 2 years |
| | 6. Robotics Equipment
University of Illinois Research Board
Amount: \$40,000 Duration: 1 year |
| | 7. Robotic Forging
U.S. Army Construction Engineering Research Lab (CERL), Champaign, IL
Amount: \$50,000 Duration: 1 year |
| 1987 | 8. Design and Control of Robotic Manipulators
U.S. Army Materials Technology Laboratory, Watertown, MA
Amount: \$50,000 Duration: 1 year |

- 1988 9. REU supplement to DMC-8516091
National Science Foundation
Amount: \$4,000 Duration: 1 year
10. Prototype for a Robotic Pipe Inspection System
U.S. Army Construction Engineering Research Lab (CERL), Champaign, IL
Amount: \$16,000 Duration: 1 year
- 1989 11. Adaptive Control of Robot Manipulators
National Science Foundation INT-8902476 (US-Mexico Cooperative Program)
Amount: \$8,297 Duration: 2 years
12. Feedback Linearization of Flexible Joint Robots
University of Illinois Research Board
Amount: \$10,000 Duration: 1 year
13. Teleoperator Control for Space Applications
Illinois Space Institute
Amount: \$14,000 Duration: 1 year
- 1990 14. Force Feedback for Robotic Assembly Applications
University of Illinois Manufacturing Research Center
Amount: \$40,000 Duration: 1 year
- 1991 15. Instability Mechanisms in Adaptive Control of Robots and Teleoperators
National Science Foundation MSM-9100618
Amount: \$127,511 Duration: 2 years
- 1992 16. Robotics and Automation Laboratory Development
National Science Foundation USE-9251154
Amount: \$133,614 Duration: 2 years
17. Nonlinear Control of Robots and Teleoperators
National Science Foundation INT-912399 (US-Mexico Cooperative Program)
Amount: \$12,358 Duration: 2 years
18. Vision System For Real-Time Control of A Robotic Manipulator
National Science Foundation MSM-REG 92-12376
Amount: \$48,000 Duration: 2 years
19. Integration of Machine Learning and Sensor-Based
Control in Intelligent Robotic Systems
National Science Foundation IRI-9216428
Amount: \$200,000 duration: 3 years
20. Intelligent Robotic Systems
Electric Power Research Institute RP8030-14
Amount: \$100,000 Duration: 3 years
- 1994 21. Control of Underactuated Mechanical Systems
National Science Foundation CMS-94-02229
Amount: \$150,000 Duration: 3 years
- 1995 22. Adaptive Control of Underactuated Mechanical Systems
National Science Foundation INT-9415757 (US-France Cooperative Program)
Amount: \$ 10,100 Duration: 2 years
23. Mechatronics Laboratory Development
John Deere Corp.
Amount: \$ 125,000 Duration: 5 years

24. Block Travel: Participation in the 1995 International Symposium on Intelligent Robotic Systems
National Science Foundation ECS-9525832
Amount: \$10,000 Duration: 1 year
- 1997 25. Nonlinear Control of Underactuated Mechanical Systems
National Science Foundation CMS-9712222
Amount: \$191,000 Duration: 3 years
- 1998 26. REU supplement to Nonlinear Control of Underactuated Mechanical Systems
National Science Foundation CMS-9840985
Amount: \$4,200 Duration: 1 years
27. Workshop on New Directions in Control Engineering Education,
National Science Foundation
Amount: \$35,000 Dates: October 1-3, 1998.
28. Learning Sensorimotor Control of Balance and Locomotion
National Science Foundation ECS-9812591
Amount: \$500,000 Dates: 9/1/98-8/31/01
- 1999 29. Vision System for the CSL Air Hockey Robot
University of Illinois Research Board
Amount: \$12,000 Dates: 5/1/99-4/30/2000
- 2000 30. Internet Based Control Education Laboratories
Sloan Center for Asynchronous Learning Environments (SCALE), University of Illinois (matching funds from the College of Engineering)
Amount: \$40,000 Dates: 5/1/2000-8/20/2001
31. Remote Laboratories for Control Education
National Science Foundation ECS-9812591SPL
Amount: \$59,000 Dates: 9/1/99-8/31/01
- 2001 32. Layered Architectures for Complex Networked Control Systems
National Science Foundation ECS-0122412
Amount: \$270,000 Dates: 9/1/01-8/31/04
33. Bilateral Teleoperation over the Internet
Office of Naval Research N00014-02-01-0011
Amount: \$360,000 Dates: 10/1/01-9/30/04
- 2002 33. Passivity Based Control of Networked Control Systems
National Science Foundation INT-0128656
Amount: \$18,000 Dates: 2/15/02-1/31/05
34. Flexible and Survivable Embedded Systems
National Science Foundation CCR-0209202
Amount: \$100,000 Dates: 09/01/02-08/31/03
35. Collaborative Research: Teleautonomy in Networked Control Systems
National Science Foundation IIS-0233314
Amount: \$180,000 Dates: 09/01/02-08/30/05
36. Workshop on Future Directions in Nonlinear Control of Mechanical Systems
National Science Foundation ECS-0228869
Amount: \$5,000 Dates: 09/01/02-08/30/03
36. Workshop on Future Directions in Nonlinear Control of Mechanical Systems
Office of Naval Research N00014-02-01-0762
Amount: \$5,000 Dates: 09/01/02-08/30/03

- 2005 37. Telemanipulation in Multi-Robot Networks
Office of Naval Research N00014-05-10186
Amount: \$360,000 Dates: 01/01/05-12/31/08
38. Passivity-Based Control in Bipedal Locomotion
National Science Foundation CMS-0510119
Amount: \$250,000 Dates: 09/01/05-08/31/08
39. Multivehicle Coordination and Control (co-PI)
Boeing Corporation (through ITI-UIUC).
Amount: \$600,000 Dates: 09/01/05-08/31/10
- 2007 40. Control of Multi-Agent and Networked Systems
National Science Foundation ECCS 07-25433
Amount: \$ 308,000 Dates: 09/01/07-08/31/10

Patents and Invention Disclosures

1. "Method and System of Compensating Wave Reflections in Transmissions Lines", U.S. Patent 7245102 issued June, 2007. Joint with R. Ortega.
2. "Bilateral Teleoperation over Communication Media," Invention Disclosure, University of Illinois, January 7, 2004. Joint with N. Chopra and R. Lozano.

PUBLICATIONS

Complete List of Publications of Professor Mark W. Spong (1981-2008)

Books

1. Block, D.J., Åström, K.J., and Spong, M.W., *The Reaction Wheel Pendulum*, Morgan & Claypool Publishers, 2007.
2. Spong, M.W., Hutchinson, S., and Vidyasagar, M., *Robot Modeling and Control*, John Wiley & Sons, New York, 2006.
3. Spong, M.W., Lewis, F., and Abdallah, C., eds. *Robot Control Theory*, IEEE Press, 1992.
4. Spong, M.W., and Vidyasagar, M., *Robot Dynamics and Control*, John Wiley & Sons, New York, 1989.

Book Chapters

1. N. Chopra and Mark W. Spong, "Output Synchronization of Nonlinear Systems with Relative Degree One," V. Blondel, et.al. eds. pp. 51-64, *Springer-Verlag*, 2008.
2. M.W. Spong and N. Chopra, "Synchronization of Networked Lagrangian Systems," In *Lagrangian and Hamiltonian Methods for Nonlinear Control 2006*, F. Bullo and K. Fujimoto (Eds.), *Lecture Notes in Control and Information Sciences*, Vol. 366, Springer Verlag, pp. 47-59, 2007.
3. N. Chopra and Mark W. Spong, "Adaptive Synchronization of Teleoperators with Time Delay," *Advances in Telerobotics*, M. Buss, ed., Springer-Verlag, pages 357-370, 2007.
4. N. Chopra and Mark W. Spong, "Passivity-Based Control of Multi-Agent Systems," in *Advances in Robot Control: From Everyday Physics to Human-Like Movements*, Sadao Kawamura and Mikhail Svinin, Editors, pp. 107-134, Springer-Verlag, Berlin, 2006.
5. Spong, M.W., "Robust and Adaptive Motion Control of Manipulators," *Robotics and Automation Handbook*, Chapter 17: pages 1-23, Thomas R. Kurfess, Editor, CRC Press, Boca Raton, FL, 2005.
6. Chopra, N., Spong, Mark W., Ortega, R., and Barabanov, Nikita E., "Position and Force Tracking in Bilateral Teleoperation," in *Advances in Communication Control Networks*, Sophie Tarbouriech, Chaouki T. Abdallah, and John Chiasson, Editors, *Lecture Notes in Control and Information Sciences*, Vol. LNCIS 308, pp. 269-280, Springer-Verlag, Berlin, 2005.
7. M.W. Spong, "Motion Control of Robot Manipulators," in *Control System Applications*, W.S. Levine, Editor, CRC Press, Boca Raton, Florida, 2000.
8. B.E. Bishop and M.W. Spong, "Vision-Based Objective Selection for Robust Ballistic Manipulation," in *Robust Vision for Vision-Based Control of Motion*, M. Vincze and G.D. Hager, Editors, IEEE Press, Piscataway, NJ, 2000.
9. Spong, M.W., "On Feedback Linearization of Robot Manipulators and Riemannian Curvature," *IMA Volumes in Mathematics and its Applications*, Vol. 104 *Essays on Mathematical Robotics*, J. Baillieul, S.S. Sastry, and H.J. Sussman, Editors, Springer-Verlag, pp. 185-202, 1998.
10. Spong, M.W., and Praly, L., "Energy Based Control of Underactuated Mechanical Systems," *Control Using Logic Based Switching*, A. Stephen Morse, Ed., *Lecture Notes in Control and Information Sciences 222*, Springer-Verlag, pp. 162-172, London, 1997.
11. Spong, M.W., "Underactuated Mechanical Systems," *Control Problems in Robotics and Automation*, B. Siciliano and K.P. Valavanis (Eds), *Lecture Notes in Control and Information Sciences 230*, Spinger-Verlag, London, UK, 1997.

12. J. De Schutter, H. Bruyninckx, W-H. Zhu, M. W. Spong, "Force Control: A Bird's Eye View," *Control Problems in Robotics and Automation*, B. Siciliano and K.P. Valavanis (Eds), *Lecture Notes in Control and Information Sciences 230*, Springer-Verlag, London, UK, 1997.
13. Spong, M.W., "Motion Control of Robot Manipulators," in *Handbook of Control*, W. Levine, ed., CRC Press, pp. 1339-1350, 1996.
14. Ghorbel, F., Fitzmorris, A., and Spong, M.W., "Robustness of Adaptive Control of Robot Manipulators: Theory and Experiment," *Advanced Robot Control*, C. Canudas de Wit, Ed., *Lecture Notes in Control and Information Sciences 162*, Springer-Verlag, pp. 1-29, London, 1991.
15. Spong, M.W., "The Control of Flexible Joint Robots: A Survey," *New Trends and Applications of Distributed Parameter Control Systems*, Lecture Notes in Pure and Applied Mathematics, G. Chen, E.B. Lee, W. Littman, and L. Markus, Eds., Chapter 12, pp. 355-383, Marcel Dekker Publishers, New York, 1990.
16. Spong, M.W., "Robust Stabilization for a Class of Nonlinear Systems", *Theory and Applications of Nonlinear Control Systems*, C.I. Byrnes, and A. Lindquist, eds., North-Holland, Amsterdam, pp. 155-166, 1986.

Journal Articles

1. Leonid B. Freidovich, Uwe Mettin, Anton S. Shiriaev, Mark W. Spong, "A Passive 2DOF Walker: Hunting for Gaits Using Virtual Holonomic Constraints," *IEEE Transactions on Robotics*, submitted, 2009.
2. Silvia Mastellone, Dusan M. Stipanovic, Mark W. Spong, "Systems with Switching Equilibria: Modeling, Control and Applications," *Automatica*, submitted, 2008.
3. Jonathan K. Holm and Mark W. Spong, "Kinetic Energy Shaping and Symmetry in Bipedal Locomotion," *IEEE Transactions on Robotics*, submitted 2008.
4. Leonid B. Freidovich, Uwe Mettin, Anton S. Shiriaev, Mark W. Spong, "A Passive 2DOF Walker: a Hunt for Gaits using Virtual Holonomic Constraints," *IEEE Transactions on Robotics*, submitted 2008.
5. Peter F. Hokayem, Dusan M. Stipanovic, and Mark W. Spong, "Coordination and Collision Avoidance for Lagrangian Systems with Disturbances," *Automatica*, submitted 2008.
6. Robert D. Gregg and Mark W. Spong, "Reduction-based Control with Applications to Three-Dimensional Bipedal Walking Robots," *IEEE Transactions on Robotics*, submitted, 2008.
7. Silvia Mastellone, Juan S. Mejia, Dusan M. Stipanovic, Mark W. Spong, "Formation Control and Coordinated Tracking via Asymptotic Decoupling for Lagrangian Multi-Agent Systems," *Automatica*, submitted, 2008.
8. Erick J. Rodriguez-Seda, Dongjun Lee, and Mark W. Spong, "Experimental Comparison Study of Control Architectures for Bilateral Teleoperators," *IEEE Transactions on Robotics*, submitted, 2008.
9. Peter F. Hokayem, Dusan M. Stipanovic, and Mark W. Spong, "Networked Semiautonomous Control of Multiple Lagrangian Systems," *Int. J. of Robust and Nonlinear Control*, submitted, 2008.
10. Emmanuel Nuno, Luis Basanez, Romeo Ortega and Mark W. Spong, "On Position Tracking for Nonlinear Teleoperators with Variable Time-Delay," *Int. J. Robotics Research*, submitted, 2008.
11. Emmanuel Nuno, Luis Basanez, Romeo Ortega, and Mark W. Spong, "Bilateral Teleoperation: Liapunov Stability Analysis," *Automatica*, submitted, 2008.
12. Yuji Igarashi, Takeshi Hatanaka, Masayuki Fujita and Mark W. Spong, "Passivity-Based Motion Coordination in SE(3)," *IEEE Trans. Cont. Systems Technology*, submitted, 2008.
13. Peter Hokayem, Mark W. Spong and Erick Rodriguez-Seda, "Stability of Quantized and Delayed Bilateral Teleoperators," *IEEE Transactions on Robotics*, submitted, 2007.

14. Mastellone, S., and Mark W. Spong, "Stability and Tracking for Systems with Time-Varying Delay," *Systems and Control Letters*, submitted, August, 2006.
15. Nikhil Chopra, Mark W. Spong and Rogelio Lozano, "Adaptive Coordination Control of Bilateral Teleoperators with Time Delay," *Automatica*, Vol. 44, No. 8, pp. 2142-2148, 2008.
16. Chopra, N., and Spong, M.W., "On Exponential Synchronization of Kuramoto Oscillators," *IEEE Trans. Aut. Cont.*, to appear, 2008.
17. Chopra, N., Berestesky, P., and Spong, M.W., "Bilateral Teleoperation over Unreliable Communication Networks," *IEEE Transactions on Control Systems Technology*, Vol. 16, No. 2, pp 304-313, March, 2008.
18. D.M. Stipanović, Peter Hokayem, Mark W. Spong, and D. Siljak, "Cooperative Avoidance Control for Multiagent Systems," *J. Dynamic Systems, Measurement, and Control*, Vol. 129, pages 699-707, September, 2007.
19. Silvia Mastellone, D. M. Stipanović, Christopher Graunke, Koji Intlekofer and Mark W. Spong, "Formation Control and Collision Avoidance for Multi-Agent Nonholonomic Systems: Theory and Experiments," *Int. J. Robotics Research*, Vol. 27, No. 1, pp. 107-126, January, 2008.
20. Lee, D-J. and Spong, M.W., "Stable Flocking of Inertial Agents on Balanced Communication Graphs," *IEEE Trans. Aut. Cont.*, Volume 52, Issue 8, Aug. 2007 Page(s):1469 - 1475.
21. Fujita, M., Kawai, H., and Spong, M.W., "Passivity-Based Dynamic Visual Feedback Control for Three Dimensional Target Tracking: Stability and L_2 -Gain Performance Analysis," *IEEE Transactions on Control Systems Technology*, Vol. 15, No. 1, pp 40-52, January, 2007. (Winner of the 2008 IEEE TCST Outstanding Paper Award).
22. Hokayem, P.F., and Spong, M.W., "Bilateral Teleoperation: An Historical Survey," *Automatica*, Vol. 49, No. 12, December, 2006.
23. Alessandro de Rinaldis, Romeo Ortega, and Mark W. Spong, "A Compensator for Attenuation of Wave Reflections in Long Cable Actuator-Plant Interconnections with Guaranteed Transient Performance," *Automatica*, Volume 42, Issue 10, October 2006, Pages 1621-1635.
24. Chopra, N., Spong, M.W., Ortega, R., and Barabanov, N., "On Tracking Performance in Bilateral Teleoperation," *IEEE Transactions on Robotics*, Vol. 22, No. 4, pp. 861-866, August, 2006.
25. D. Lee and M.W. Spong, "Passive Bilateral Control of Teleoperators under Constant Time Delay," *IEEE Transactions on Robotics*, Vol. 22, No. 2, pp: 269-281, April, 2006.
26. Spong, M.W., and Bullo, F., "Controlled Symmetries and Passive Walking," *IEEE Transactions on Automatic Control*, Vol. 50, No. 7, pp: 1025-1031, July, 2005.
27. Ortega, R., de Rinaldis, A., Spong, M.W., Lee, S., and Nam, K., "On Compensation of Wave Reflections in Transmission Lines and Applications to the Overvoltage Problem in AC Motor Drives," *IEEE Trans. Aut. Control*, Volume 49, No. 10, pp. 1757-1763, October, 2004.
28. Ortega, R., Spong, M.W., Gomez-Estern, F., "Stabilization of Underactuated Mechanical Systems via Interconnection and Damping Assignment," *IEEE Trans. Aut. Control*, Vol. 47, No. 8, pp. 1281-1233, June, 2002.
29. Mareczek, Joerg, Buss, M., and Spong, M.W., "Invariance Control for a Class of Cascade Nonlinear Systems," *IEEE Trans. Aut. Control*, Vol 47, No.4, pp. 636-640, April, 2002.
30. Zhao Jun, and Spong, M.W., "Hybrid Control for Global Stabilization of the Cart-Pendulum System," *Automatica*, 37(12):1941-1951, December, 2001.

31. Spong, M.W., "Impact Controllability of an Air Hockey Puck," *Systems and Control Letters*, Vol.42, pp. 333-345, 2001.
32. Spong, M.W., Corke, P., and Lozano, R., "Nonlinear Control of the Inertia Wheel Pendulum," *Automatica*, Vol. 37, pp. 1845-1851, 2001.
33. S.S. Ge, Z. Sun, T.H. Lee, M.W. Spong, "Linearization and Stabilization of Second-Order Nonholonomic Chained Systems," *International Journal of Control*, Vol. 74, No. 14, pl 1383-1392, 2001.
34. Park, Jung-il, Partridge, C.B., and Spong, M.W., "Neural Network Based State Prediction for Strategy Planning of an Air Hockey Robot," *Journal of Robotic Systems*, Vol. 18, No. 4, pp. 187-196, April, 2001.
35. Ghorbel, F., and Spong, M.W., "Integral Manifolds of Singularly Perturbed Systems with Application to Rigid-Link Flexible-Joint Multibody Systems," *International Journal of Non-linear Mechanics*, 34 (2000) pp. 133-155.
36. Spong, M.W., "Some Aspects of Switching Control in Robot Locomotion," *at-Automatisierungs Technik*, Oldenbourg Verlag, Vol. 4, pp. 157-164, April, 2000.
37. Partridge, C.B., and Spong, M.W., "Control of Planar Rigid Body Sliding with Impacts and Friction," *International Journal of Robotics Research*, pp. 336-348, April, 2000.
38. Fantoni, I., Lozano, R., and Spong, M.W. "Energy based control of the Pendubot," *IEEE Transactions on Automatic Control*, AC-45, No. 4 , pp. 725 -729, April 2000.
39. Bishop, B.E., and Spong, M.W., "Adaptive Calibration and Control of 2D Monocular Visual Servo Systems," *Control Engineering Practice*, Vol. 7, pp. 423-430, 1999.
40. Ghorbel, F., Srinivasan, B., Spong., M.W., "On the Uniform Boundedness of the Inertia Matrix of Serial Robot Manipulators", *Journal of Robotic Systems*, Vol. 15, No. 1, January, 1998.
41. Alvarez-Gallegos, J., Cortés D., and Spong, M.W., "A Stable Control Scheme for Teleoperators with Time Delay," *International Journal of Robotic Systems*, Vol. 12, No. 3, pp. 73-79, December, 1997.
42. Bishop, B., Hutchinson, S., and Spong, M.W., "Camera Modeling for Visual Servo Control Applications," *Mathematical and Computer Modeling Journal*, special issue on Modeling Issues in Visual Sensing, Vol. 24, No. 5/6, pp. 79-102, 1996.
43. Jaritz, A. and Spong, M.W., "An Experimental Comparison of Robust Control Algorithms on a Direct Drive Manipulator," *IEEE Trans. Control Systems Technology*, Vol. 4, No. 6, December, 1996.
44. Nethery, J., and Spong, M.W., "A MathLink-Based Front End for the Robotica Package," *The Mathematica Journal*, pp. 72-79, Spring, 1995.
45. Bedrossian, N.S., and Spong, M.W., "Feedback Linearization of Robot Manipulators and Riemannian Curvature," *Journal of Robotic Systems*, Vol. 12, No. 8, pp. 541-552, 1995.
46. Satya, S.M, Ferreira, P.M., Spong, M.W., "Hybrid Control of a Planar 3-DOF Parallel Manipulator for Machining Operations," *Transactions of NAMRI/SME*, Vol. XXIII, pp. 273-280, 1995.
47. Spong, M.W., "Adaptive Control of Flexible Joint Manipulators: Comments on Two Papers," *Automatica*, Vol. 31, No. 4, pp. 585-590, 1995.
48. Ghorbel, F., and Spong, M.W., "Correction to 'Robustness of Adaptive Control of Robots,'" *Journal of Intelligent and Robotic Systems*, Vol. 10, pp. 209-215, 1994
49. Spong, M.W., "Communication Delay and Control in Telerobotics," *Journal of the Japan Robotics Society*, Special Issue on the Theory of Telerobotics, Vol. 11, No. 6, Sep., 1993.

50. Spong, M.W., "On the Robust Control of Robot Manipulators," *IEEE Transactions on Automatic Control*, Vol. AC-37, no. 11, pp. 1782–1786, Nov., 1992.
51. Anderson, R.J., and Spong, M.W., "Asymptotic Stability for Force Reflecting Teleoperators with Time Delay," *The International Journal on Robotics Research*, Vol. 11, No. 2, pp. 135–149, Apr., 1992.
52. Ghorbel, F., and Spong, M.W., "Robustness of Adaptive Control of Robots," *JIRSTA*, Special Issue on Control of Robots and Manufacturing Systems, Vol. 6, pp. 3–15, 1992.
53. Spong, M.W. and Ortega, R., Authors Reply to 'Comments on "On Adaptive Inverse Dynamics Control of Rigid Robots",' *IEEE Transactions on Automatic Control*, Vol. AC-36, No. 10, pp. 1216, Oct., 1991.
54. Kumar, A., Odeh, A., Ghorbel, F., and Spong, M.W., "Robotic Corrosion Inspection Crawler," *Materials Performance*, Vol. 30, No. 4, pp. 29–32, Apr., 1991.
55. Spong, M.W., Ortega, R., and Kelly, R., "Comments on 'Adaptive Manipulator Control: A Case Study'," *IEEE Transactions on Automatic Control*, AC-35, No. 6, pp. 761–762, Jun., 1990.
56. Spong, M.W., and Ortega, R., "On Adaptive Inverse Dynamics Control of Rigid Robots," *IEEE Transactions on Automatic Control*, Vol. AC-35, No. 1, pp. 92–95, Jan., 1990.
57. Spong, M.W., and Thorp, J.S., Authors' Reply to 'Comments on "The Control of Robot Manipulators with Bounded Input,"' *IEEE Transactions on Automatic Control*, AC-34, No. 9, pp. 1023, Sep., 1989.
58. Spong, M.W., "Adaptive Control of Flexible Joint Robots," *Systems and Control Letters*, Vol. 13. No. 1, Jul., 1989, pp. 15–21.
59. Ortega, R., and Spong, M.W., "Adaptive Motion Control of Rigid Robots: A Tutorial," *Automatica*, Vol. 25, No. 6, pp. 877–888, 1989.
60. Anderson, R.J., and Spong, M.W., "Bilateral Control of Teleoperators with Time Delay," *IEEE Transactions on Automatic Control*, AC-34, No. 5, pp. 494–501, May, 1989.
61. Spong, M.W., "On the Force Control Problem for Flexible Joint Manipulators", *IEEE Transactions on Automatic Control*, Vol. 34, No. 1, pp. 107–111, Jan., 1989.
62. Sira-Ramirez, H., and Spong, M.W., "Variable Structure Control of Flexible Joint Robot Manipulators", *IASTED Journal of Robotics and Automation*, Vol. 3, No. 2, pp. 57–64, 1988.
63. Anderson, R.J., and Spong, M.W., "Hybrid Impedance Control of Robots", *IEEE Journal of Robotics and Automation*, Vol. 4, No. 5, pp. 549–556, Oct., 1988.
64. Spong, M.W., "Modeling and Control of Elastic Joint Robots", *Transactions on ASME, J. Dynamic Systems, Measurement and Control*, Vol. 109, pp. 310–319, Dec., 1987.
65. Spong, M.W., Thorp, J.S., and Kleinwaks, J.M., "Robust Microprocessor Control of Robot Manipulators", *Automatica*, Vol. 23, No. 3, pp. 373–397, 1987.
66. Spong, M.W., and Vidyasagar, M., "Robust Linear Compensator Design for Nonlinear Robotic Control", *IEEE Journal of Robotics and Automation*, Vol. RA-3, No. 4, pp. 345–350, Aug., 1987.
67. Spong, M.W., Khorasani, K., and Kokotovic, P.V., "An Integral Manifold Approach to the Control of Robot Manipulators with Flexible Joints", *IEEE Journal of Robotics and Automation*, Vol. RA-3, No. 4, pp. 291–300, Aug., 1987.
68. Spong, M.W., Thorp, J.S., and Kleinwaks, J.M., "The Control of Robot Manipulators with Bounded Input," *IEEE Transactions on Automatic Control*, Vol. AC-31, No. 6, pp. 483–490, Jun., 1986.
69. Spong, M.W., "A Semi-state Approach to Feedback Stabilization of Linear Neutral Delay Systems", *Circuits, Systems and Signal Processing*, special issue on Semi-state equations, Vol. 5, No. 1, pp. 70–85, 1986.

70. Ilic-Spong, M., Thorp, J.S., and Spong, M.W., "Localized Response Performance of the Decoupled Q-V Network," *IEEE Transactions on Circuits and Systems*, Vol. CAS-33, No. 3, pp. 316–322, Mar., 1986.
71. Ilic-Spong, M., Spong, M.W., and Fischl, R., "The No-Gain Theorem and Localized Response for the Decoupled P- Θ Power Network with Active Losses Included", *IEEE Transactions on Circuits and Systems*, Vol. CAS-32, No. 2, pp. 170–176, Feb., 1985.
72. Slotine, J.J., and Spong, M.W., "The Robust Control of Robot Manipulators with Bounded Input," *International Journal of Robotic Systems*, Vol. 2, No. 3, Sep. 1985.
73. Spong, M.W., "A Theorem on Neutral Delay Systems", *Systems and Control Letters*, Vol. 6, No. 5, pp. 291–294, Oct., 1985.
74. Byrnes, C.I., Spong, M.W., and Tarn, T.J., "A Several Complex-Variables Approach to Feedback Stabilization of Linear Neutral Delay-Differential Systems", *Mathematical Systems Theory*, Vol. 17, pp. 97–133, 1984.
75. Spong, M.W., "Hereditary Realizations of Linear Neutral Delay-Differential Systems," *Systems and Control Letters*, Vol. 4, No. 1, pp. 47–56, Feb., 1984.
76. Spong, M.W., and Tarn, T.J., "On the Spectral Controllability of Delay-Differential Equations," *IEEE Transactions on Automatic Control*, Vol. AC-26, No. 2, pp. 527–528, Apr., 1981.

Conference Proceedings and Invited Papers

1. Oscar Martinez-Palafox and Mark W. Spong, "Bilateral Teleoperation of a Formation of Nonholonomic Mobile Robots Under Constant Time Delay: Experiments," *18th IEEE International Symposium on Robot and Human Interactive Communication*, Toyama, Japan, Sep. 27-Oct. 2, 2009.
2. Oscar Martinez-Palafox and Mark W. Spong, "Bilateral Teleoperation of a Formation of Nonholonomic Mobile Robots Under Constant Time Delay," *IEEE International Conference on Intelligent Robots and Systems (IROS)*, St. Louis, Missouri, Oct. 11 - 15, 2009.
3. Erick J. Rodriguez-Seda and Mark W. Spong, "A Time-Varying Wave Impedance Approach for Transparency Compensation in Bilateral Teleoperation," *IEEE International Conference on Intelligent Robots and Systems (IROS)*, St. Louis, Missouri, Oct. 11 - 15, 2009.
4. Robert Gregg and Mark W. Spong, "Bringing the Compass-Gait Bipedal Walker to Three Dimensions," *IEEE International Conference on Intelligent Robots and Systems (IROS)*, St. Louis, Missouri, Oct. 11 - 15, 2009.
5. Leonid B. Freidovich, Anton S. Shiriaev, Uwe Mettin, Mark W. Spong, "A Passive 2DOF Walker: Finding Gait Cycles using Virtual Holonomic Constraints," *IEEE Conference on Decision and Control*, 5214-5219, Cancun, Mexico, December, 2008.
6. R. Lozano, Mark W. Spong, J.A. Guerrero, and Nikhil Chopra, "Controllability and Observability of Leader-Based Multi-Agent Systems," *IEEE Conference on Decision and Control*, pp. 3713-3718, Cancun, Mexico, December, 2008.
7. Yuji Igarashi, Takeshi Hatanaka, Masayuki Fujita and Mark W. Spong, "Passivity-based Output Synchronization and Flocking Algorithm in SE(3)," *IEEE Conference on Decision and Control*, pp. 1024-1029, Cancun, Mexico, December, 2008.
8. Silvia Mastellone and M.W. Spong, "Stabilization of Delayed Linear Systems via Signal Reconstruction," *IEEE Conference on Decision and Control*, 2087-2092, Cancun, Mexico, December, 2008.
9. Chopra, N. and Spong, M.W., "Output Synchronization on Strongly Connected Graphs," *Mathematical Theory of Networks and Systems Symposium*, Blacksburg, VA., 2008.

10. Jonathan K. Holm and M.W. Spong, "Kinetic Energy Shaping for Gait Regulation of Underactuated Biped", Multiconference on Systems and Control, pp. 1232-1238, San Antonio, TX, 2008.
11. Emmanuel Nuno, Luis Basanez, Romeo Ortega and Mark W. Spong, "On the Asymptotic Zero-Convergence of Position Error for Teleoperated Robots with Variable Time-Delay," Proc. Workshop on Telerobotics, IEEE Intl. Conference on Robotics and Automation, Los Angeles, CA, May 19-23, 2008.
12. Emmanuel Nuño, Luis Basañez, Erick Rodríguez-Seda and Mark W. Spong, "Bilateral Teleoperation: Linking Scattering Transformation and Passive Output Synchronization," Proc. IFAC World Congress, Seoul, Korea, July, 2008, to appear.
13. Nikhil Chopra, D.M. Stipanović and M.W. Spong, "On Synchronization and Collision Avoidance for Mechanical Systems," *Proc. American Control Conference*, pp. 3713-3718, Seattle, WA, June 11-13, 2008.
14. R. Gregg and M.W. Spong, "Reduction-based Control with Application to Three-Dimensional Bipedal Walking Robots," *Proc. American Control Conference*, pp. 880-887, Seattle, WA, June 11-13, 2008.
15. Yuji Igarashi, Takeshi Hatanaka, Masayuki Fujita and M.W. Spong, "Passivity-based Output Synchronization in SE(3)," *Proc. American Control Conference*, 723-728, Seattle, WA, June 11-13, 2008.
16. Kunal Srivastava and M.W. Spong, "Multi-Agent Coordination under Connectivity Constraints," *Proc. American Control Conference*, pp. 2648-2653, Seattle, WA, June 11-13, 2008.
17. Peter F. Hokayem, D.M. Stipanović, and Mark W. Spong, "On Persistent Coverage Control," *IEEE Conf. on Decision and Control*, New Orleans, LA, December, 2007.
18. Silvia Mastellone, D.M. Stipanović, and Mark W. Spong, "Stability and Convergence for Systems with Switching Equilibria," *IEEE Conf. on Decision and Control*, New Orleans, LA, December, 2007.
19. Yuji Igarashi, Masayuki Fujita, and Mark W. Spong, "Passivity-based 3D Attitude Coordination: Convergence and Connectivity," *IEEE Conf. on Decision and Control*, New Orleans, LA, December, 2007.
20. Nikhil Chopra and Mark W. Spong, "Delay-Independent Stability of Interconnected Systems with Finite L_2 -Gain," *IEEE Conf. on Decision and Control*, 3847-3852, New Orleans, LA, December, 2007.
21. Aaron D. Ames, Robert D. Gregg, and Mark W. Spong, "A Geometric Approach to Three-Dimensional Hipped Bipedal Robotic Walking," *IEEE Conf. on Decision and Control*, New Orleans, LA, December, 2007.
22. Silvia Mastellone, Mark W. Spong, and D.M. Stipanovic, "Multi-Agent Formation Control and Trajectory Tracking Via Singular Perturbation," *IEE Multiconference on Systems and Control*, Singapore, October 1-3, 2007.
23. Peter Hokayem, D.M. Stipanović, Mark W. Spong, "Reliable Control of Multi-Agent Formations," *American Control Conference*, New York, NY, July, 2007.
24. Rogelio Lozano, Nikhil Chopra, Mark W. Spong, "Convergence Analysis of Bilateral Teleoperation with Constant Human Input," *American Control Conference*, New York, 1443-1448, NY, July, 2007.
25. Peter Hokayem, D.M. Stipanović, and Mark W. Spong, "Dynamic Coverage Control with Limited Information," *American Control Conference*, New York, NY, July, 2007.
26. Joohyung Kim, Chong-Ho Choi, and Mark W. Spong, "Passive Dynamic Walking with Symmetric Fixed Flat Feet," *Proc. ICCA'07*, Guangzhou, China, May 30-June 1, 2007.
27. Jonathan K. Holm, Dongjun Lee, and Mark W. Spong, "Time Scaling for Speed Regulation in Bipedal Locomotion," *IEEE Int. Conf. on Robotics and Automation*, Rome, Italy, April, 2007.
28. Silvia Mastellone, D.M. Stipanović, and Mark W. Spong, Remote Formation Control and Collision Avoidance for Multi-Agent Nonholonomic Systems, *IEEE Int. Conf. on Robotics and Automation*, Rome, Italy, April, 2007.

29. Peter Hokayem and Mark W. Spong, "Stability of Quantized and Delayed Bilateral Teleoperators," *IEEE Conference on Decision and Control*, San Diego, CA, Dec 2006.
30. Chopra, N., and Spong, M.W., "Output Synchronization of Nonlinear Systems with Time Delay in Communication," *IEEE Conference on Decision and Control*, San Diego, CA, Dec 2006.
31. Oscar Martinez-Palafox, Dongjun Lee, Mark W. Spong, Ivan Lopez, and Chaouki Abdallah, "Bilateral Teleoperation of Mobile Robots over Delayed Communication Network: Implementation," *IROS 2006*, Beijing, China, October, 2006.
32. Erick Joel Rodriguez-Seda, Dongjun Lee, Mark W. Spong, "An Experimental Comparison of Bilateral Internet-Based Teleoperation," *IEEE Conference on Control Applications*, Munich, Germany, October, 2006.
33. Nikhil Chopra and Mark W. Spong, "Synchronization of Multiple Lagrangian Systems," *3rd IFAC Workshop on Lagrangian and Hamiltonian Methods for Nonlinear Control (LHMNLC'06)*, Nagoya, Japan, July 19-21, 2006.
34. Mark W. Spong, "Project-Based Control Education," *7th IFAC Symposium on Advances in Control Education*, Madrid, Spain, June, 21-23, 2006.
35. Silvia Mastellone, Dongjun Lee, and Mark W. Spong, "Master-slave synchronization with switching communication through passive model-based control design," In *Proceeding of American Control Conference*, Minneapolis, MN, Page(s):6 pp.3203-3208, June 14-16, 2006.
36. D. J. Lee and M. W. Spong. "Stable flocking of inertial agents on balanced communication graphs. In *Proceedings of the American Control Conference*, Minneapolis, MN, June 14-16, 2006.
37. Lee, D.J. and Spong, M.W., "Linear Agreement Protocol over Delayed Communication Networks," In *Proceedings of the American Control Conference*, Minneapolis, MN, June 14-16, 2006
38. Hokayem, P.F., Stipanović, D., and Spong, M.W., "Suboptimal Master-Slave Teleoperation Control with Delays," In *Proceedings of the American Control Conference*, Minneapolis, MN, June 14-16, 2006.
39. Lopez-Hurtado*, I., Piovesan, J., Abdallah, C.T., Lee, D.J., Martinez-Palafox, O., Spong, M.W., Sandoval-Rodriguez, R., "Practical Issues in Networked Control Systems," In *Proceedings of the American Control Conference*, Minneapolis, MN, June 14-16, 2006.
40. Mark W. Spong, "Coordination of Multi-Agent Systems", *IASTED International Conference on Control and Applications*, Montreal, Canada, May 24-26, 2006.
41. D. J. Lee and M. W. Spong. Passive Bilateral Teleoperation with Constant Time-Delays. In *Proceedings of IEEE International Conf. on Robotics & Automation*, pp. 2902-2907, Orlando, FL. May, 2006.
42. Dongjun Lee, Martinez-Palafox, O., and Spong, M.W., "Bilateral Teleoperation of a Wheeled Mobile Robot over a Delayed Communication Network," *IEEE Int. Conf. on Robotics and Automation*, pp:3298-3303, Orlando, FL, May 15-19, 2006.
43. Dongjun Lee, and Mark W. Spong, "Semi-Autonomous Teleoperation of Multiple Cooperative Robots for Human-Robot Lunar Exploration," *2006 AAAI Spring Symposium*, Palo Alto, CA., April, 2006.
44. de Rinaldis, A., Astolfi, A., Ortega, R., and Spong, M.W., "A Switched-Resistors Implementation of Compensators for Wave Reflections in Transmission Lines", *IEEE Conference on Decision and Control*, Seville, Spain, December 11-14, 2005.
45. N. Chopra and M. W. Spong. On Synchronization of Kuramoto Oscillators. In *Proceedings of the IEEE Conference on Decision and Control*, pp. 3916-3922, Barcelona, Spain, December, 11-14, 2005.
46. N. Chopra and M. W. Spong. On Synchronization of Networked Passive Systems with Time Delays. In *Annual Conference of Society of Instrument and Control Engineers*, Okyama, Japan, August, 2005.

47. Dongjun Lee and M.W. Spong, "Bilateral Teleoperation of Multiple Cooperative Robots with Delayed Communication: Theory," *IEEE International Conference on Robotics and Automation*, pages 362–367, Barcelona, Spain, 2005.
48. Dongjun Lee, Martinez-Palafox, O., and M.W. Spong, "Bilateral Teleoperation of Multiple Cooperative Robots with Delayed Communication: Application," *IEEE International Conference on Robotics and Automation*, pages 366–371, Barcelona, Spain, 2005.
49. Dongjun Lee and M.W. Spong, "Passive Bilateral Control of Teleoperators under Constant Time-Delay," *IFAC World Congress*, Prague, July, 2005.
50. S.S. Ge and M.W. Spong, "Implicit Controller for Classes of Nonlinear Systems," *IFAC World Congress*, Prague, July, 2005.
51. Chopra, N., Spong, M.W., and Lozano, R., "Adaptive Coordination Control of Bilateral Teleoperators with Time Delay," *IEEE Conference on Decision and Control*, pages 4540–4547 The Bahamas, December, 2004.
52. Ortega, R., de Rinaldis, A., Escobar, G., and Spong, M.W., "A Hybrid Active Filter Implementation of an Overvoltage Suppression Scheme," *2004 IEEE International Symposium on Industrial Electronics* May 4-7, 2004, Palais des Congres Expositions, Ajaccio, France.
53. Spong, M.W., "Some New Results in Passivity Based Control of Robots," *NOLCOS04*, Stuttgart, Germany, September, 2004.
54. Spong, M.W., "The Passivity Paradigm in Bipedal Locomotion," *CLAWAR*, Madrid, Spain, September, 2004.
55. Spong, M.W., "The Passivity Paradigm in Robot," *Chinese Control Conference*, Wuxi, China, August, 2004.
56. Berestesky, P., Chopra, N., and Spong, M.W., "Theory and Experiments in Bilateral Teleoperation over the Internet," In *Proceedings of IEEE Conference on Control Applications*, pages 456–463, 2004., Taipei, Taiwan, August, 2004.
57. Thurston, D.L. and Spong, M.W., "A Graduate Program in Systems and Entrepreneurial Engineering at the University of Illinois at Urbana-Champaign," *MIT Engineering Systems Symposium*, Cambridge, MA, March, 2004.
58. Chopra, N., Spong, M.W., Ortega, R., and Barabanov, N.E., "On Position Tracking in Bilateral Teleoperation," *American Control Conference*, pages 5244–5249, Boston, MA, June, 2004.
59. Berestesky, P., Chopra, N., and Spong, M.W., "Discrete Time Passivity in Bilateral Teleoperation over the Internet", *IEEE International Conference on Robotics and Automation*, pages 4557–4564, New Orleans, LA, April 26-May 1, 2004.
60. Sheng, J. and Spong, M.W., "Model predictive control for bilateral teleoperation systems with time delays," *2004 Canadian Conference on Electrical and Computer Engineering*, Pages:1877 - 1880, 2-5 May 2004.
61. Cronin, B. and Spong, M.W., "Switching Control for Multi-Input Cascade Nonlinear Systems," *CDC 2003*, Maui, Hawaii, December, 2003.
62. Khraief, N., M'Sirdi, N.K., and Spong, M.W., "Nearly Passive Dynamic Walking of a Biped Robot", *European Control Conference*, Cambridge, UK, September 1-4, 2003.
63. Chopra, N., Spong, Hirche, S., Buss, M., "Bilateral Teleoperation over the Internet: the Time Varying Delay Problem," *Proceedings of the American Control Conference*, pages 155–160, Denver, CO, June 4-6, 2003.
64. Spong, M.W. and Bhatia, G., "Further Results on Control of the Compass Gait Biped," *IROS 2003*, Las Vegas, Nevada, October, 2003.

65. Spong, M.W., and Bullo, F., "Controlled Symmetries and Passive Walking," *IFAC World Congress*, Barcelona, Spain, July, 2002.
66. Lozano, R., Chopra, N., and Spong, M.W., "Passivation of Force Reflecting Bilateral Teleoperators with Time Varying Delay," *Mechatronics'02*, Enschede, Netherlands, June 24-26, 2002.
67. Spong, M.W., Block, D.J., and Astrom, K.J., "The Mechatronics Control Kit for Education and Research," *IEEE Conference on Control Applications*, Mexico City, pp. 105-110, Sept. 5-7, 2001.
68. McGee, T.G., and Spong, M.W., "Trajectory Planning and Control of a Novel Walking Biped," *IEEE Conference on Control Applications*, Mexico City, pp. 1099-1104, Sept.5-7, 2001.
69. Ge, S.S., Sun, Z., Lee, T.H., and Spong, M.W., "Feedback Linearization and Discontinuous Control of Second-Order Nonholonomic Chained Systems," *IEEE Conference on Control Applications*, Mexico City, pp. 990-995, Sept.5-7, 2001.
70. Mareczek, J., Buss, M., and Spong, M.W., "Invariance Control of Noncascade Nonlinear Systems," *American Control Conference*, Arlington, VA., Vol. 5, pp. 3648-3563, June, 2001, (winner of the Hugo Schuck Best Paper Award).
71. Spong, M.W., Lozano, R., and Mahony, R., "An Almost Linear Biped," *IEEE Conference on Decision and Control*, Sydney, Australia, Vol. 5, pp. 4803-4808, December, 2000.
72. Hahn, H., and Spong, M.W., "Remote Labs for Control Education," *IEEE Conference on Decision and Control*, Sydney, Australia, Vol. 5, 895-900, December, 2000.
73. Spong, M.W., "On the Controllability of an Air Hockey Puck," *IEEE Conference on Control Applications*, Anchorage, AL, pp. 32-37, September, 2000.
74. Ortega, R., and Spong, M.W., "Stabilization of underactuated mechanical systems via interconnection and damping assignment," *IFAC Workshop on Lagrangian and Hamiltonian Methods for Nonlinear Control* Princeton, NJ, March 16-18, 2000.
75. Spong, M.W., and Tsao, T.-C., "Mechatronics Education at the University of Illinois," *IFAC Triennial World Congress*, Beijing, China, July, 1999.
76. Spong, M.W., "Passivity Based Control of the Compass Gait Biped," *IFAC Triennial World Congress*, Beijing, China, July, 1999.
77. Spong, M.W., "Applications of Switching Control in Robot Locomotion," *Proc. Workshop on Intelligent Control in Robotics and Automation*, IFAC World Congress, Beijing, China, July,4, 1999.
78. Spong, M.W., "Control Education Crossing Department Boundaries," *Proc. American Control Conference*, pp. 992-996, San Diego, June, 1999.
79. Fantoni, I., Lozano, R., and Spong, M.W., "Passivity Based Control of the Pendubot," *Proc. American Control Conference*, pp. 268-272, San Diego, June, 1999.
80. Spong, M.W., "Bipedal Locomotion, Robot Gymnastics, and Robot Air Hockey: A Rapprochement," *Proc. Super-Mechano Systems (SMS'99) Workshop*, Tokyo, Japan, February 4,5, 1999.
81. Bishop, B.E., and Spong, M.W., "Control of Redundant Manipulators Using Logic-Based Switching," *IEEE Conference on Decision and Control*, Tampa, Florida, Dec. 1998.
82. Fantoni, I., Lozano, R., and Spong, M.W., "Passivity based control of the pendubot," *The 6th IEEE Mediterranean Conference on Control and Automation*, Sardinia, Italy, June 1998.
83. Bishop, B.E., and Spong, M.W., "Toward Uncalibrated 3D Monocular Visual Servo," *Proceedings of the 1998 IEEE International Conference on Robotics and Automation*, pp. 2664-2669, Leuven, Belgium, May 1998.

84. Spong, M.W. and Bishop, B.E., "Development of a Three Degree of Freedom Air Hockey Playing Robot," *IEEE International Conference on Robotics and Automation, Video Proceedings, Segment 19, Leuven, Belgium, May 1998.*
85. Bishop, B. and Spong, M.W., "Adaptive Calibration and Control of 2D Monocular Visual Servo Systems, SYROCO'97, Nantes, France, Vol. 2, pp. 525-530, September, 1997.
86. Spong, M.W., and Groeneveld, T., "An Experimental Evaluation of Riemannian Curvature Based Feedback Linearization for a Direct Drive Manipulator" *IFAC-IFIP-IMACS Conference on Control of Industrial Systems, Belfort, France, Vol. 3., pp. 643-647, May, 1997.*
87. Alleyne, A., Bamieh, B., Block, D., Meyn, S., Perkins, W., Sreenivas, R.S., Spong, M.W., Tsao, T.-C., and Voulgaris, P., "A Collegewide Laboratory-Based Program in Control Systems Technology at The University of Illinois at Urbana-Champaign *1996 Conference on Decision and Control, Kobe, Japan, Dec. 1996.*
88. Spong, M.W., "Undergraduate Research in Robotics and Automation at the University of Illinois at Urbana-Champaign," *1996 IEEE Conference on Decision and Control, Kobe, Japan, Dec. 1996.*
89. Spong, M.W., and Praly, L., "Control of Underactuated Mechanical Systems Using Switching and Saturation," *Proc. Block Island Workshop on Control Using Logic Based Switching, Springer-Verlag, 1996.*
90. Spong, M.W., "Energy Based Control of A Class of Underactuated Mechanical Systems," *1996 IFAC Triennial World Congress, San Francisco, July, 1996.*
91. Chodavarapu, P.A., and Spong, M.W., "On Noncollocated Control of a Single Flexible Link, *IEEE Int'l. Conference on Robotics and Automation, Minneapolis, MN, 1996.*
92. Kelly, R., Shirkey, P. and Spong, M.W., "Fixed Camera Visual Servo Control for Planar Robots," *IEEE Int'l. Conference on Robotics and Automation, Minneapolis, MN, 1996.*
93. Spong, M.W., and Block, D.J., "The Pendubot: A Mechatronic System for Control Research and Education," *34th IEEE CDC, New Orleans, Dec. 1995.*
94. B. Bishop, A. Castano, S. Hutchinson, R. Sharma, P. Shirkey, M. W. Spong, N. Srinivasa, "Some Experiments in Vision-Based Robotics at the University of Illinois," *Proc. IEEE Vision for Robotics Workshop, 1995.*
95. Bishop, B., Shirkey, P., and Spong, M.W., "An Experimental Testbed for Intelligent Control," *Proc. American Control Conference, Seattle, WA, May, 1995.*
96. Block, D.J., and Spong, M.W., "Mechanical Design & Control of the Pendubot," *SAE Earthmoving Industry Conference, Peoria, IL, April 4-5, 1995.*
97. Spong, M.W., "The Control of Underactuated Mechanical System," *First International Conference on Mechatronics, Mexico City, Jan. 26-29, 1994.*
98. Spong, M.W., "Partial Feedback Linearization of Underactuated Mechanical Systems," *IROS'94, Munich, Germany, Sep., 1994.*
99. Spong, M.W., "Swing Up Control of the Acrobot Using Partial Feedback Linearization," *SYROCO'94, Capri, Italy, Sep., 1994.*
100. Spong, M.W., and DeJong, G., "Standing the Acrobot: An Example of Intelligent Control," *Proceedings of the American Control Conference, 1994.*
101. Johansson, R., and Spong, M.W., "Quadratic Optimization of Impedance Control," *1994 IEEE International Conference on Robotics and Automation, San Diego, CA, May, 1994.*
102. Bishop, B., Hutchinson, S., and Spong, M.W., "On the Performance of Direct Visual Servo Systems," *1994 IEEE International Conference on Robotics and Automation, San Diego, CA, May, 1994.*

103. Spong, M.W., "Swing Up Control of the Acrobot," *1994 IEEE International Conference on Robotics and Automation*, San Diego, CA, May, 1994.
104. Ghorbel, F.; Srinivasan, B.; Spong, M.W., "On the positive definiteness and uniform boundedness of the inertia matrix of robot manipulators," *Proceeding of the IEEE CDC*, San Antonio, TX, December, 1993, pp 1103-1108.
105. Welton, E., Hutchinson, S., and Spong, M., "A Modular, Interdisciplinary Approach to Undergraduate Robotics Education," *Proceedings of the 1993 Frontiers in Education Conference*, pp. 714-719, Washington, DC, Nov., 1993.
106. Spong, M.W., "Robust Adaptive Control of Robots," *Proceedings of the American Control Conference*, San Francisco, CA, Jun., 1993.
107. DeJong, J., Hutchinson, S., and Spong, M.W., "Integration of Machine Learning and Sensor-Based Control in Intelligent Robotic Systems," *Proceedings of the American Control Conference*, San Francisco, CA, Jun., 1993.
108. Spong, M.W., "Feedback Linearization of Robot Manipulators and Riemannian Curvature," *IMA Workshop on Robotics*, Minneapolis, MN, Jan. 1993.
109. Bortoff, S., and Spong, M.W., "Pseudolinearization of the Acrobot Using Spline Functions," *IEEE Conference on Decision and Control*, Tucson, AZ, pp. 593-598, Dec., 1992.
110. Bortoff, S., and Spong, M.W., "Observer-Based Pseudo-Linearization using Splines: The Rolling Acrobot Example," *ASME Winter Annual Meeting*, Anaheim, CA, Dec., 1992.
111. Spong, M.W., "On the Robust Control of Robot Manipulators," *Japan-USA Symposium on Flexible Automation*, San Francisco, CA, Jul., 1992.
112. Bortoff, S., and Spong, M.W., "Pseudolinearization of the Acrobot Using Spline Functions," *Japan-USA Symposium on Flexible Automation*, San Francisco, CA, Jul., 1992.
113. Ghorbel, F. and Spong, M.W., "Adaptive Integral Manifold Control of Flexible Joint Robots with Configuration Invariant Inertia," *Proceedings of the American Control Conference*, Chicago, IL, Jun., 1992.
114. Ghorbel, F., and Spong, M.W., "Adaptive Integral Manifold Control of Flexible Joint Robot Manipulators," *IEEE International Conference on Robotics and Automation*, Nice, France, May, 1992.
115. Spong, M.W., "Remarks on Robot Dynamics: Canonical Transformations and Riemannian Geometry," *IEEE International Conference on Robotics and Automation*, Nice, France, May, 1992.
116. Ghorbel, F., and Spong, M.W., "Integral Manifold Control of Flexible Joint Robots: The Known Parameter Case," *ASME Winter Annual Meeting*, Atlanta, GA, Dec., 1991.
117. Spong, M.W., and Bhatia, Ponch, E., "Adaptive Control of Coordinating Robot Arms," *Proceedings of the Joint International Conference on Factory Automation and Information Management: FAIM'91*, University of Limerick, Ireland, Mar. 13-15, 1991.
118. Bortoff, S.A., and Spong, M.W., "Parameter Identification of Nonlinear Systems," *Proceedings of the IEEE Conference on Decision and Control*, Honolulu, HI, Dec., 1990.
119. Ghorbel, F., and Spong, M.W., "Stability Analysis of Adaptively Controlled Flexible Joint Robots," *Proceedings of the IEEE Conference on Decision and Control*, Honolulu, HI, Dec., 1990.
120. Ghorbel, F., Fitzmorris, A., and Spong, M.W., "Robustness of Adaptive Control of Robot Manipulators: Theory and Experiment," *Workshop on Nonlinear and Adaptive Control: Application to Robotics*, Grenoble, France, Nov. 21-23, 1990.

121. Ghorbel, F., and Spong, M.W., "Robustness of Adaptive Control of Robots," *Symposium on Robotics and Manufacturing Systems*, Dallas, TX, Nov. 9, 1990.
122. Bortoff, S.A. and Spong, M.W., "Parameter Estimation Using Nonlinear Observer Theory," *Proceedings of the American Control Conference*, San Diego, CA, May, 1990.
123. Bortoff, S.A. and Hung, J.Y., and Spong, M.W., "An Observer for Flexible Joint Robots," *IEEE Conference on Decision and Control*, Tampa, FL., pp. 2078–2082, Dec., 1989.
124. Spong, M.W., Hung, J.Y., Bortoff, S.A., and Ghorbel, F., "A Comparison of Feedback Linearization and Singular Perturbation Methods for Control of Flexible Joint Robots," *Proceedings of the American Control Conference*, Pittsburgh, PA., pp. 25–30, Jun., 1989.
125. Anderson, R.J. and Spong, M.W., "Asymptotic Stability of Force Reflecting Teleoperators," *IEEE International Conference on Robotics and Automation*, pp. 1618–1625, Phoenix, AZ, May, 1989.
126. Hung, J.Y., Bortoff, S. and Spong, M.W., "Observer-Based Control Guaranteeing Uniform Ultimate Boundedness for a Class of Feedback Linearizable Systems," *IEEE International Conference on Robotics and Automation*, pp. 1200, Phoenix, AZ, May, 1989.
127. Ghorbel, F., Hung, J., and Spong, M.W., "Adaptive Control of Flexible Joint Manipulators," *IEEE International Conference on Robotics and Automation*, pp. 1188–1193, Phoenix, AZ, May, 1989.
128. Anderson, R.J. and Spong, M.W., "Bilateral Control of Teleoperators with Time Delay," *Proceedings of the IEEE Conference on Decision and Control*, Austin, TX, Dec., 1988.
129. Anderson, R.J. and Spong, M.W., "A Network Representation for Robots," *ASME Winter Annual Meeting*, Chicago, IL, Dec., 1988.
130. Ortega, R. and Spong, M.W., "Adaptive Control of Rigid Robots: A Tutorial," *Proceedings of the IEEE Conference on Decision and Control*, Austin, TX, Dec., 1988.
131. Anderson, R.J. and Spong, M.W., "Bilateral Control of Teleoperators with Time Delay," *Proceedings of the IEEE Conference on Systems, Man, and Cybernetics*, Beijing, Aug., 1988.
132. Spong, M.W., "Force Control of Flexible Joint Robot Manipulators", *Proceedings of the 1987 ASME Winter Annual Meeting*, Boston, MA, Dec., 1987.
133. Bortoff, S. and Spong, M.W., "Feedback Linearization of Flexible Joint Robot Manipulators", *Proceedings of the IEEE Conference on Decision and Control*, Los Angeles, CA, Dec., 1987.
134. Albert, M., and Spong, M.W., "Compensator Design for Robot Manipulators with Flexible Joints", *International Conf. on Systems Engineering*, Dayton, Sep., 1987.
135. Spong, M.W., "Feedback Linearization Control of Flexible Joint Manipulators", *Robexs Symposium*, Pittsburgh, Jun., 1987.
136. Anderson, R.J., and Spong, M.W., "Hybrid Admittance /Impedance Force Control of Robotic Manipulators", *Proceedings of the 1987 IEEE Conference on Robotics and Automation*, Charlotte, NC, Mar., 1987.
137. Spong, M.W., "Modeling and Control of Elastic Joint Robots", *Proceedings of the 1986 ASME Winter Annual Meeting*, Anaheim, CA, Dec., 1986.
138. Spong, M.W., and Sira-Ramirez, H., "Robust Control of Nonlinear Systems", *Proceedings of the 1986 American Control Conference*, Seattle, Jun., 1986.
139. Marino, R., and Spong, M.W., "Modeling and Control of Elastic Joint Robots: A Single Link Case Study", *Proceedings of the 1986 IEEE International Conference on Robotics and Automation*, San Francisco, CA, Mar., 1986.

140. Spong, M.W., and Vidyasagar, M., "Robust Nonlinear Control of Robot Manipulators", *Proceedings of the 24th IEEE Conference on Decision and Control*, Fort Lauderdale, FL, Dec., 1985.
141. Spong, M.W., Khorasani, K., Kokotovic, P.V., "A Slow Manifold Approach to Feedback Control of Nonlinear Flexible Systems", *Proceedings of the American Control Conference*, Boston, Jun., 1985.
142. Spong, M.W., Thorp, J.S., and Kleinwaks, J., "Robust Microprocessor Control of Robot Manipulators", *Proceedings of the SYROCO*, Barcelona, Spain, 1985.
143. Spong, M.W., and Vidyasagar, M., "Robust Linear Compensator Design for Nonlinear Robotic Control," *1985 IEEE Conference on Robotics and Automation*, St. Louis, MO, Mar., 1985.
144. Khorasani, K., and Spong, M.W., "Invariant Manifolds and Their Application to Robot Manipulators with Flexible Joints," *1985 IEEE Conference on Robotics and Automation*, St. Louis, MO, Mar., 1985.
145. Spong, M.W., Thorp, J.S., and Kleinwaks, J.M., "The Control of Robot Manipulators with Bounded Input Part II: Robustness and Disturbance Rejection," *Proceedings of the 1984 IEEE Conference on Decision and Control*, Las Vegas, NV, Dec., 1984.
146. Spong, M.W., "Practical Issues in Robot Control: Uncertainty and Torque Saturation," *Proceedings of the 4th International Conference on Applied Numerical Modeling*, Taiwan, Dec., 1984.
147. Spong, M.W., "Torque Optimization for Robust Control of Robot Manipulators," *Proceedings of the World Conference on Robotics Research*, Lehigh University, Aug., 1984.
148. Spong, M.W., Thorp, J.S., and Kleinwaks, J.M., "On Pointwise Optimal Control Strategies for Robot Manipulators," *Proceedings of the 18th Annual Conference on Information Sciences and Systems*, Princeton University, Mar., 1984.
149. Spong, M.W., "Equivalence of Retarded and Neutral Delay-Differential Systems under Feedback," *Proceedings of the 21st Allerton Conference on Communication, Control and Computing*, Oct., 1983.
150. Spong, M.W., "Feedback Stabilization of Retarded and Neutral Delay-differential Systems with Noncommensurable Delays," presented at the SIAM 1983 Fall Meeting, Norfolk, VA., Nov., 1983.
151. Ilic-Spong, M., Spong, M.W., and Fischl, R., "A No-gain Theorem for Steady State Electric Power Systems with Losses", *Proceedings of the 1982 Large Scale Systems Symposium*, Virginia Beach, VA, Oct., 1982.
152. Spong, M.W., and Johnson, C.R., Jr., "On System Type for Linear Multivariable Non-unity Feedback Control Systems," *Proceedings of the 1983 Conference on Information Sciences and Systems*, Johns Hopkins University, Mar., 1983,
153. Spong, M.W., and Tarn, T.J., "Structure and Regulation of Linear Neutral Delay-Differential Systems," *Proceedings of the 1982 IEEE Conference on Decision and Control*, Orlando, FL., Dec., 1982.
154. Spong, M.W., and Tarn, T.J., "Realization of Linear Neutral Systems," *Proceedings of the 1982 Conference on Information Sciences and Systems*, Princeton, NJ, Mar., 1982.
155. Tarn, T.J., Spong, M.W., and Ito, K., "Feedback Stabilization and Control of Linear Neutral Systems," *Proceedings of the 19th Allerton Conference on Communication, Control, and Computing*, Oct., 1981.

Magazine Articles

1. Mark W. Spong, Jonathan K. Holm, Dongjun Lee, "Passivity-Based Control of Bipedal Locomotion," *IEEE Robotics and Automation Magazine*, Special Issue on Walking Robots, Volume 14, Issue 2, June, 2007, Page(s):30 - 40
2. Spong, M.W., "President's Message: The Rewards of Membership," *IEEE Control Systems Magazine*, pp. 10-11, December, 2005.

3. Spong, M.W., "President's Message: Think Globally, Act Locally," *IEEE Control Systems Magazine*, pp. 10-12, October, 2005.
4. Spong, M.W., "President's Message: Education, Instruction, and Motivation," *IEEE Control Systems Magazine*, pp. 10-12, August, 2005.
5. Spong, M.W., "President's Message: The Yin and the Yang of Control," *IEEE Control Systems Magazine*, pp. 10-11, June, 2005.
6. Spong, M.W., "President's Message: Relevancy and No-Shows," *IEEE Control Systems Magazine*, pp. 8-11, April, 2005.
7. Spong, M.W., "President's Message: Looking Back and Looking Forward," *IEEE Control Systems Magazine*, pp. 7-9, February, 2005.
8. Alleyne, A.G.; Block, D.J.; Meyn, S.P.; Perkins, W.R.; Spong, M.W.; "An interdisciplinary, interdepartmental control systems laboratory," *IEEE Control Systems Magazine*, Volume: 25 , Issue: 1 , Feb. 2005 Pages:50 - 55.
9. Schrader, Cheryl B. and Spong, M.W., "Tracing CDC History," *IEEE Control Systems Magazine*, pp. 56-66, December, 2004.
10. Antsaklis, P. Spong, M.W., et.al., "Report on the NSF/CSS Workshop on New Directions in Control Engineering Education," *IEEE Control Systems Magazine*, pp. 53-58, October, 1999.
11. Bishop, B.E., and Spong, M.W., "Vision-Based Control of an Air Hockey Robot," *IEEE Control Systems Magazine*, pp. 23-32, June, 1999.
12. Spong, M.W., "The Swingup Control Problem for the Acrobot," *IEEE Control Systems Magazine*, Vol. 15, No. 1, pp. 49-55, Feb. 1995.
13. Nethery, J., and Spong, M.W., "Robotica: A Mathematica Package for Robot Analysis," *IEEE Robotics and Automation Magazine*, Vol. 1, No. 1, Mar., 1994.
14. Ghorbel, F., Hung, J.Y., and Spong, M.W., "Adaptive Control of Flexible Joint Robots," *IEEE Control System Magazine*, Vol. 9, No. 7, pp. 9-13, Dec., 1989.

Book Reviews

1. *Robotics: An Introduction*, by D. McCloy and D.M.J. Harris, *Applied Mechanics Reviews*, 41:1, pp. 3, (1988).
2. *Mechanical Design of Robots*, by E.E. Rivin, *Applied Mechanics Reviews*, 41:12, pp. 215, (1988).
3. *Fundamentals of Robot Technology: An Introduction to Industrial Robots, Teleoperators, and Robot Vehicles*, by D.J. Todd, *Applied Mechanics Reviews*, 40:4, pp. 459, (1987).
4. *Robot Analysis and Control*, by H. Asada and J.J.-E. Slotine, *Applied Mechanics Reviews*, 40:4, pp. 460, (1987).
5. *Robot Grippers*, by D.T. Pham and W.B. Higinbotham, *Applied Mechanics Reviews*, 40:5, pp. 596-597, (1987).
6. *Applied Dynamics and CAD of Manipulation Robots*, by M. Vukobratovich and V. Potkonjak, *Applied Mechanics Reviews*, 39:9, pp. 1379-1380, (1986).

Reports

1. Ghorbel, F., and Spong, M.W., "Stability Analysis of Adaptively Controlled Flexible Joint Robots," CSL Report, UILU-ENG-90-2246, University of Illinois, September, 1990.
2. Spong, M.W., "Control of Flexible Joint Robots: A Survey," CSL Report, UILU-ENG-90-2203, University of Illinois, February, 1990.
3. Spong, M.W., "Development of an Initial Prototype Robotic In-Pipe Inspection System," US Army CERL Rept, (1989).
4. Albert, M. and Spong, M.W., "Linear and Nonlinear Controller Design for Elastic Joint Manipulators", CSL Report, UILU-ENG-87-2251, University of Illinois, August 1987.
5. Spong, M.W., "Some Issues in Robot Control," General Electric Company, Control Technology Branch, August 1984.
6. Spong, M.W., "Realization and Feedback Stabilization of Linear Neutral Systems," D.Sc. Thesis, Department of Systems Science and Mathematics, Washington University, St. Louis, Mo. May 1981.
7. Spong, M.W., "The Numerical Solution of Optimal Control Problems: An Introduction to the Strategies Model," Report to the Decision Models Directorate, Rock Island Army Arsenal, Rock Island, Ill., August 1979.
8. Spong, M.W., "Notes on Multi-criterion Optimization and the Surrogate Worth Tradeoff Method," Report to the Decision Models Directorate, Rock Island Army Arsenal, Rock Island, Ill., July 1979.