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FIRST-AUTHOR PUBLICATIONS, PATENTS, AND CONFERENCE SESSION CHAIRING

First-author Publications

Many of these papers, along with the associated presentations and videos, are available at <http://intellization.com/files/>. Individual hyperlinks are embedded below.

- [“Spacecraft Autonomy Experiments using the MIT SPHERES on the International Space Station,”](#) a Presentation at the Lockheed Martin Advanced Technology Center Colloquia Series, Palo Alto, California, October 2006. [presentation \(1.8M pdf, no videos\)](#) [full presentation \(53M ppt, with videos\)](#).
- [“Motion-Based Thruster Fault Detection and Isolation,”](#) in *Proceedings of the AIAA Infotech@Aerospace Conference*, Arlington, Virginia, September 2005, with David W. Sutter and Robert W. Mah. [presentation](#)
- [“Motion-Based Mass- and Thruster-Property Identification for Thruster-Controlled Spacecraft,”](#) in *Proceedings of the AIAA Infotech@Aerospace Conference*, Arlington, Virginia, September 2005, with David W. Sutter and Robert W. Mah. [presentation](#)
- [“Automatic balancing and intelligent fault-tolerance for a space-based centrifuge,”](#) in *Proceedings of the AIAA Guidance, Navigation and Control Conference*, San Francisco, California, August 2005, with Robert W. Mah. [presentation](#)
- [“Adaptive DFT-based interferometer fringe tracking,”](#) in *EURASIP Journal on Applied Signal Processing – special issue on Applications of Signal Processing in Astrophysics and Cosmology*, 2005:15 (2005) pp. 2559-2572, with Ettore Pedretti et al.
- [“Multiple concurrent recursive least squares identification,”](#) in *Proceedings of the IASTED International Conference on Intelligent Systems and Control*, Honolulu, Hawaii, August 2004, with David W. Sutter and Robert W. Mah. [presentation](#)
- [“MCRLS for on-line spacecraft mass- and thruster-property identification,”](#) in *Proceedings of the IASTED International Conference on Intelligent Systems and Control*, Honolulu, Hawaii, August 2004, with David W. Sutter and Robert W. Mah. [presentation](#)
- [“Adaptive DFT-based fringe tracking and prediction at IOTA,”](#) in *Proceedings of the SPIE Astronomical Telescopes and Instrumentation Symposium: New Frontiers in Stellar Interferometry*, Glasgow, Scotland, June 2004, with Ettore Pedretti et al (SPIE vol. 5491-173). [presentation](#)
- [“Motion-based system identification and fault detection and isolation technologies for thruster controlled spacecraft,”](#) in *Proceedings of the JANNAF 3rd Modeling and Simulation Joint Subcommittee Meeting*, Colorado Springs, Colorado, December 2003, with David W. Sutter et al. [presentation](#)
- [“Gradient-based parameter optimization for systems containing discrete-valued functions,”](#) *International Journal of Robust and Nonlinear Control*, Volume 12, No. 11, pp. 1009-1028, September 2002, with Stephen M. Rock. Journal special issue: *Applications of Neural Networks in Control and Instrumentation*.
- [“On-line, gyro-based, mass-property identification for thruster-controlled spacecraft using recursive least squares,”](#) in *Proceedings of the 45th IEEE International Midwest Symposium on Circuits and Systems*, Tulsa, Oklahoma, vol. 2, pp. 334-337, August 2002, with Chris Lages and Robert W. Mah. [presentation](#)

- [“Gyro-based maximum-likelihood thruster fault detection and identification,”](#) in *Proceedings of the 2002 American Control Conference*, Anchorage, Alaska, pp. 4525-4530, May 2002, with Chris Lages and Robert W. Mah. [presentation](#)
- [“An Overview of Intelligent Systems Technologies for Process Optimization,”](#) *Symposium on Evolving Computer Application Trends in the Steel Industry*, Iron and Steel Society, Myrtle Beach, South Carolina, May, 2000.
- [“On-line fringe tracking and prediction at IOTA,”](#) in *Proceedings of the 18th Congress of the International Commission for Optics*, San Francisco, California, August 1999 (SPIE Vol. 3749).
- “Neurocontrol Technologies for Space Shuttle Docking,” presented at the *Space Shuttle Development Conference* at NASA Ames Research Center, July 30, 1999, with Robert W. Mah and John Schreiner.
- [“Neural network control in the metals industry,”](#) in *Proceedings of the 1999 American Control Conference*, San Diego, California, pp. 1657-1658, June 1999. Invited paper. [presentation](#)
- [“Intelligent Technologies for Electric Arc Furnace Optimization,”](#) in *1998 Electric Furnace Conference - Process Technology Conference Proceedings*, pp. 697-702, New Orleans, Louisiana, November 1998, with Michael Kan and Anjan K. Mirle. [presentation](#)
- [“Imbalance Identification and Compensation for an Airborne Telescope,”](#) in *Proceedings of the 1998 American Control Conference*, Volume 2, pp. 856-860, Philadelphia, Pennsylvania, June 1998, with Robert W. Mah, et al. [presentation](#)
- [“Virtual Sensor Technology for Process Optimization,”](#) *Symposium on Computers and Controls in the Metals Industry*, Iron and Steel Society, St. Petersburg Beach, Florida, December, 1997.
- [“Adaptive profile optimization for the electric arc furnace,”](#) *Steel Technology International*, pp. 140-145. Brunel House, London, 1997.
- [“Neural-Network Control of a Free-Flying Space Robot,”](#) *Simulation*, Volume 65, No. 2, pp. 103-115, August 1995, with Stephen Rock. [video](#). [video description](#).
- [“Reconfigurable Control of a Free-Flying Space Robot Using Neural Networks,”](#) in *Proceedings of the 1995 American Control Conference*, Volume 2, pp. 1355-1359, Seattle, Washington, June 1995, with Stephen Rock. [video](#). [video description](#).
- [“Experiments in Neural-Network Control of a Free-Flying Space Robot,”](#) Ph.D. Dissertation, Department of Mechanical Engineering, Stanford University, Stanford, CA 94305, March 1995. Also published as Stanford University Department of Aeronautics and Astronautics Report #666. [video](#). [video description](#).
- “Reconfigurable Thruster-Based Control Using Neural Networks,” *NASA Symposium on Neural Networks for Aero Control*, NASA Ames Research Center, California, August 1994, with Stephen Rock and Robert Cannon.
- [“Backpropagation Learning for Systems with Discrete-Valued Functions,”](#) in *Proceedings of the INNS World Congress on Neural Networks*, Volume 3, pp. 332-339, San Diego, California, June 1994.
- [“Neural Network Control of a Free-Flying Space Robot,”](#) in *Proceedings of the INNS World Congress on Neural Networks*, Volume 2, pp. 15-22, San Diego, California, June 1994, with Stephen Rock.
- [“Experiments in Neural Network Control of a Free-Flying Space Robot,”](#) in *Proceedings of the Fifth Workshop on Neural Networks: Academic/Industrial/NASA/Defense*, pp. 204-209, San Francisco, California, November 1993 (SPIE Vol. 2204).
- [“Experiments in Control of a Free-Flying Space Robot Using Fully-Connected Neural Networks,”](#) in *Proceedings of the INNS World Congress on Neural Networks*, Volume 3, pp. 157-162, Portland, Oregon, July 1993, with Stephen Rock.
- [“Design and Construction of a Laser Machine Tool for Processing Advanced Materials,”](#) Masters Thesis, MIT Laboratory for Manufacturing and Productivity, Dept. of Mechanical Engineering, Massachusetts Institute of Technology, Cambridge, Massachusetts, June 1987.

Patents

["Multiple concurrent recursive least squares identification with application to on-line spacecraft mass-property identification."](#) *United States Patent 7110915.* [pdf](#)

["Model-based fault detection and isolation for intermittently active faults with application to motion-based thruster fault detection and isolation for spacecraft."](#) *United States Patent 7451021.* [pdf](#)

Conference Session Chairing

International Space Station Centrifuge Balance and Control session at the *AIAA Guidance, Navigation and Control Conference* in San Francisco, California, August 2005.

Modelling, Identification, and Simulation I and II sessions at the *IASTED International Conference on Intelligent Systems and Control* in Honolulu, Hawaii, August 2004.

Applications of Adaptive Systems I and II sessions in the *Neural Networks and Control Systems* track at the *45th IEEE International Midwest Symposium on Circuits and Systems* in Tulsa, Oklahoma, August, 2002.

Intelligent Systems session at the *Iron and Steel Society Symposium on Evolving Computer Application Trends in the Steel Industry* in Myrtle Beach, South Carolina, May 2000.

Intelligent Systems session at the *1998 Electric Furnace Conference* in New Orleans, Louisiana, November 1998.

Intelligent Systems session at the *Symposium on Computers and Controls in the Metals Industry* in St. Petersburg Beach, Florida, December, 1997.