Bibliography

Asada, H, and Cro Granito, J. A., 1985, "Kinematic and Static Characterization of Wrist Joints and Their Optimal Design," *Proceedings of the 1995 IEEE International Conference on Robotics and Automation*, St. Louis, MO, March, pp. 244-250

Agrawal, S. K. and Desmier, G, Siyan, L., 1994, "Fabrication and Analysis of a Novel 3 DOF Parallel Wrist Mechanism," *23rd Biennial Mechanisms Conference*, Minneapolis, MN, September 11-14, pp. 351-354.

Canfield, S. L., Soper, R. R., and Reinholtz, C. F., 1997, "Dynamic Force Analysis of the Carpal Wrist," *1997 ASME Design Automation Conference*, Sacramento, CA, September 15-20, DETC97/DAC-3970.

Canfield, S. L., Soper, R. R., and Reinholtz, C. F., 1997, "Uniformity as the Guide to Evaluation of Dexterous Manipulator Workspaces," *1997 ASME Design Automation Conference*, Sacramento, CA, September 15-20, DETC97/DAC-3969.

Canfield, S. L., Ganino, A. J., Salerno, R. J., and Reinholtz, C. F., 1996, "Singularity and Dexterity Analysis of the Carpal Wrist," *24th Biennial Mechanisms Conference, Proceedings of the 1996 ASME Design Engineering Technical Conferences*, Irvine, CA, August 18-21, 96-DETC/MECH-1156.

Canfield, S. L., Soper, R. R., Hendricks, S. L., and Reinholtz, C. F., 1996, "Velocity Analysis of Truss-Type Manipulators," *24th Biennial Mechanisms Conference*, Irvine, California, August 18-21, 96-DETC/MECH-1158.

Canfield, S. L., and Reinholtz, C. F., 1995, "Development of an All-Revolute-Jointed Constant-Velocity Coupling," *Journal of Applied Mechanisms & Robotics*, Vol. 2, No. 3, July, pp. 13-19.

Canfield, S. L., Salerno, R. J., and Reinholtz, C. F., 1995, "Design of an All-Revolute, Linkage-Type, Constant-Velocity Coupling," *SAE International Off-Highway & Powerplant Congress & Exposition*, September 11-13, 1995, Milwaukee, Wisconsin, ISSN 0148-7191, Paper no. 952133.

Canfield, S. L., Reinholtz, C. F., and Salerno, R. J., 1995, "A Parallel, Four Degree-of-Freedom Robotic Wrist," *Virginia Tech Intellectual Property Disclosure*, February, Disclosure No. 95-019.

Canfield, S. L., Salerno, R. J., and Reinholtz, C. F., 1994, "Kinematic Design of a Large-Angular-Motion Constant-Velocity Coupling," *23rd Biennial Mechanisms Conference*, Minneapolis, MN, September 11-14, pp. 167-174.

Canfield, S. L. and Reinholtz, C. F., 1993, "Development of an All-Revolute-Jointed Constant-Velocity Coupling," *3rd National Applied Mechanisms & Robotics Conference*, Cincinnati OH, November, AMR-93-081.

Cleary, K., and Arai, T., 1991, "A Prototype Parallel Manipulator: Kinematics, Construction, Software, Workspace Results, and Singularity Analysis," *1991 IEEE International Conference on Robotics and Automation,* Sacramento, CA, pp. 566-571.

Clemens, M., 1872, "Universal-Joint Coupling for Connecting Shafts," *U.S. Patents,* 125,880 & 125,881.

Collins, C. L. and Long, G. L., 1994, "Line Geometry and the Singularity Analysis of an In-Parallel Hand Controller for Force-Reflected Teleoperation," *23rd Biennial Mechanisms Conference,* Minneapolis, MN, September 11-14, pp. 361-370.

Cox, D. J., and Tesar, D., 1989, "The Dynamic Model of a Three-Degree-of-Freedom Parallel Robotic Shoulder Module," *Fourth International Conference on Advanced Robotics,* Columbus, OH, June 13-15.

Craig, J. J., 1989, *Introduction to Robotics: Mechanics and Control,* Addison Wesley Publishing Co., Reading, MA.

Craver, W. M., 1989, Structural Analysis and Design of a Three-Degree-of-Freedom Robotic Shoulder Module," Master's Thesis, University of Texas at Austin.

Denavit, J., and Hertenberg, R. S., 1955, "A Kinematic Notation for Lower-Pair Mechanisms Based on Matrices," *Journal of Applied Mechanics,* June, pp. 215-221.

Dubey, R., and Luh, J. Y. S., 1986, "Performance Measures and Their Improvement for Redundant Robots," *ASME Proc.* WAM DSC-Vol. 3, Anaheim. CA, pp. 143-151.

Fallon, J. B., Shooter, S. B., Reinholtz, C.F., and Glass, S. W., 1994, "URSULA: Design of an Underwater Robot for Nuclear Reactor Vessel Inspection," *Proceedings of the ASCE Specialty Conference,* Albuquerque, NM, pp. 311-319.

Fichter, E. F., and McDowell, E. D., 1980, "A Novel Design for a Robot Arm," *Proceedings of the International Computer Technology Conference,* ASME, New York, pp. 250-256.

Fichter, E. F., 1984, "Kinematics of a Parallel Connection Manipulator," *ASME Design Engineering Technical Conference,* Cambridge, MA, October, 84-DET-45.

Fichter, E. F., 1986, "A Stewart Platform-Based Manipulator: General Theory and Practical Construction," *The International Journal of Robotics and Research,* Vol. 5, No. 2, Summer, pp. 157-182.

Frederick, D., and Chang, T. S., 965, *Continuum Mechanics,* Scientific Publishers, Cambridge.

Ganino, A. J., 1996, "Mechanical Design of the Carpal Wrist: A Parallel-Actuated, Singularity-Free Robotic Wrist," Master's Thesis, Virginia Polytechnic Institute & State University, Blacksburg, VA, May.

Gosselin, C. M., Cloutier, C., and Rancourt, D., 1994, "Kinematic Analysis of Spherical Two-Degree-of-Freedom Parallel Manipulators," *23rd Biennial Mechanisms Conference,* Minneapolis, MN, September 11-14, DE-Vol. 72, pp. 255-262.

Gosselin, C., Sefrioui, J., Richard, M. J., 1994, "On the Kinematics of Spherical Three-Degree-of-Freedom Parallel Manipulators of General Architecture," ASME *Journal of Mechanical Design*, Vol. 116, No. 2, pp. 594-598.

Gosselin, C. M., Sefrioui, J., and Richard, M. J., 1994, "On the Direct Kinematics of Spherical Three-Degree-of-Freedom Parallel Manipulators with a Coplanar Platform," ASME *Journal of Mechanical Design*, Vol. 116, No. 2, pp. 587-593.

Gosselin, C., and Sefrioui, J., 1991, "Polynomial Solutions for the Direct Kinematic Problem of Planar Three-Degree-of-Freedom Parallel Manipulators," *Proceedings of the Fifth International Conference on Advanced Robotics*, Pisa, June, pp. 1124-1129.

Gosselin, C., and Angeles, J., 1989, "The Optimum Kinematic Design of Spherical Three-Degree-of-Freedom Parallel Manipulator," ASME *Journal of Mechanical Design*, Vol. 111, No. 2, pp. 202-207

Hollerbach, J. M., and Suh, K., 1985, "Redundancy Resolution of Manipulators Through Torque Optimization," *IEEE Proceedings of the International Conference on Robotics and Automation*, St. Louis, MO.

Hudgens, J. C. and Tesar, D., 1988, "A Fully-Parallel Six Degree-of-Freedom Micromanipulator: Kinematic Analysis and Dynamic Model*", 20th Biennial Mechanisms Conference*, pp. 29-37.

Hunt, K. H., 1983, "Structural Kinematics of In-Parallel-Actuated Robot Arms," ASME *Journal of Mechanisms, Transmissions, and Automation in Design*, Vol. 105, No. 4, pp. 705-712.

Hunt, K. H., 1978, *Kinematic Geometry of Mechanisms*, Oxford University Press, Oxford, Great Britain.

Hunt, K.H., 1973, "Constant Velocity Shaft Couplings: a General Theory*," Journal of Engineering for Industry*, pp. 455-464.

Kane, T. R., 1972, *Dynamics*, Academic Press, Inc.

Kircanski, M., and Vukobratovic, M., 1986, "Contribution to Control of Redundant Robotic Manipulators in an Environment With Obstacles," *International Journal of Robotics Research*, Vol. 5, No. 4, pp. 112-119

Klein, C. A., Chu-Jeng, C., and Ahmed, S., 1995, "A New Formulation of the Extended Jacobian Method and its Use in Mapping Algorithmic Singularities for Kinematically Redundant Manipulators," *IEEE Transactions on Robotics and Automation* Vol. 11, No. 1, pp.50-55

Lee, H. Y., Fallon, J. B., Cordle, W. H., and Reinholtz, C. F., 1993, "Inverse Kinematic Analysis of a Mobile Underwater Inspection Robot," *Proceedings of the Third National Applied Mechanisms and Robotics Conference*, Cincinnati, OH, November, Paper AMR 93-085.

Lee, J. J. and Chang, S., 1992, "On the Kinematics of the UPS Wrist for Real Time Control," *22nd Biennial Mechanisms Conference*, pp. 305-312.

Mabie, H. and C. F. Reinholtz, 1987, *Mechanisms and Dynamics of Machinery*, J. Wiley and Sons, New York.

Maciejewski, A. A., and Klein, C. A., 1985, "Obstacle Avoidance for Kinematically Redundant Manipulators in Dynamically Varying Environment," *International Journal of Robotics Research*, Vol. 4, No. 3, pp. 109-117.

McLean, A., and Cameron, S., 1996, "The Virtual Springs Method: Path Planning and Collision Avoidance for Redundant Manipulators," *International Journal of Robotics Research*, Vol. 15, No. 4, pp. 300-319.

Meirovitch, L., 1970, *Methods of Analytical Dynamics*, McGraw-Hill, New York.

Milenkovic, V., 1987, "New Nonsingular Robot Wrist Design," *Proceedings of the 17th ISIR Robots 11*, Chicago IL, pp. 13.29-13.42.

Nakamura, Y., and Hanafusa, H., 1987, "Optimal Redundancy Control of Robot Manipulators," *International Journal of Robotics Research*, Vol. 6, No. 1, pp. 32-42.

Nearchou, A. C., and Aspragathos, N. A., 1996, "Application of Genetic Algorithm to Point to Point Motion of Redundant Manipulators," *Mechanism and Machine Theory*, Vol. 31, No. 3, pp. 261-270.

Nguyen, C. C., and Farhad P. J., 1989, "Kinematic Analysis and Workspace Determination of a 6 DOF CKCM Robot End-Effector," *Journal of Mechanical Technology*, Vol. 20, pp. 283-294.

Ouerfelli, M., and Kumar, V., 1991, "Optimization of a Spherical Five Bar Parallel Drive Linkage," *Advances in Design Automation, Proceedings of the 1991 ASME Design Technical Conferences*, DE-Vol. 32-1, Vol. 1, pp. 171-177.

Padmanabhan, B., 1992, "A Study of Isostatic Framework with Application to Manipulator Design," Ph.D. Thesis, Virginia Polytechnic Institute & State University, Blacksburg, VA, August.

Park, J., Chung, W. K., and Youm, Y., 1996, Characteristics of Optimal Solutions in Kinematic Resolution of Redundancy," *IEEE Transactions, Robotics and Automation*, Vol. 12, No. 3, pp. 471-478.

Paul, R. P., and Stevenson, C. N., 1983, "Kinematics of Robot Wrists," *The International Journal of Robotics Research*, Vol. 2, No. 1, pp. 31-38.

Pierrot, F., Dauchez, P., and Fournier, A., 1991, "Fast Parallel Robots," *Journal of Robotic Systems*, 8(6), pp. 829-840.

Pierrot, F., Fournier, A., and Dauchez, P., 1991, "Towards a Fully-Parallel 6 DOF Robot for High-Speed Applications," *1991 IEEE International Conference on Robotics and Automation*, Sacramento, CA, pp. 1288-1293.

Rastegar, J., and Rafdanesh, B., 1991, "Inverse Dynamics Models of Robot Manipulators Using Trajectory Patterns," *Proceedings of the 8th World Congress on the Theory of Machines and Mechanisms*.

Rastegar, J., Khorrami, F., and Retchkiman, Z., 1994, "Inversion of Nonlinear Systems Via Trajectory Pattern Method," *Proceedings of the 33rd Conference on Decision and Control*, Orlando, FL.

Rastegar, J., and Tu, Q., 1992, "On the Effects of Operating Speed on the Dynamic Behavior of Manipulators With Rigid Links," *Proceedings of the ASME Mechanisms Conference*, Stockton, AZ.

Rastegar, J., Tu, Q., and Tangerman, F., 1993, "Trajectory Synthesis and Inverse Dynamics Formulation for Minimal Vibrational Excitation for Flexible Structures Based on Trajectory Patterns," *Proceedings of the 1993 American Control Conference*, San Francisco, CA.

Remis, S. J., and Stanisic, M. M., 1993, "Design of a Singularity-Free Articulated Arm Subassembly," *IEEE Transactions on Robotics and Automation*, Vol. 9, No. 6, pp. 816-824.

Roberts, R. G., and Maciejewski, A. A., 1996, "A Local Measure of Fault Tolerance for Kinematically Redundant Manipulators," *IEEE Transactions, Robotics and Automation*, Vol. 12, No. 4, pp. 543-552.

Rosheim, M. E., 1989, *Robot Wrist Actuators*, John Wiley & Sons, New York, NY.

Rosheim, M. E., 1990, "Design of an Omnidirectional Arm," *Proceedings IEEE International Conference on Robotics Automation*, Cincinnati, OH, May 1990.

Salerno, R. J., Canfield, S. L., Ganino, A. J., and Reinholtz, C. F., 1995, "A Parallel, Four Degree-Of-Freedom Robotic Wrist,", *Advances in Design Automation, Proceedings of the 1995 ASME Design Technical Conferences*, DE-Vol. 82, Boston, MA, September 17-21, pp. 765-771.

Salerno, R. J., 1993, "Positional Control Stategies for a Modular, Long-Reach, Truss-Type Manipulator," *Ph.D. Dissertation*, Virginia Polytechnic Institute & State University, Blacksburg, VA, November.

Salerno, R. J., 1994, "Kinematic Analysis of Modular, Truss-Based Manipulator Units," Report prepared for Pacific Northwest Laboratory, U.S. Department of Energy, Hanford, WA.

Sklar, M., and Tesar, D., 1988, "Dynamic Analysis of Hybrid Serial Manipulator Systems Containing Parallel Modules," *ASME Journal of Mechanisms, Transmissions, and Automation in Design*, Vol. 110, June, pp. 109-115.

Smith, W. F. and Nguyen, C. C., 1991, "On the Mechanical Design of a Stewart Platform-Based Robotic End-Effector," *Proceedings of the IEEE Southeast Conference*, pp. 875-879.

Soper, R. R., Canfield, S. L., Reinholtz, C. F., and Mook, D., 1997, "New Matrix-Theory-Based Definitions for Manipulator Dexterity," *1997 ASME Design Automation Conference*, Sacramento, CA, September 17-21.

Stanisic, M. M., and Duta, O., 1990, "Symmetrically Actuated Double Pointing Systems: The Basis of Singularity-Free Robot Wrists," *IEEE Transactions on Robotics and Automation*, Vol. 6, No. 6, pp. 562-569.

Stevens, B. S., and Clavel, R., 1994, "The DELTA Parallel Robot, its Future in Industry," *Proceedings of the Fifth International Symposium on Robotics and Manufacturing: Research, Education, and Applications (ISRAM'94)*, Maui, HI, August, pp. 273-278.

Stewart, D., 1965, "A Platform with Six Degrees of Freedom," *Proc. Inst. Mech. Eng. (London)*, Vol. 180, Part 1, No. 15, pp. 371-386.

Sugimoto, K., 1989, "Computational Scheme for Dynamic Analysis of Parallel Manipualtors," *ASME Journal of Mechanisms, Transmissions, and Automation in Design*, Vol. 111, March, pp. 29-33.

Sugimoto, K., 1987, "Kinematic and Dynamic Analysis of Parallel Manipulators by Means of Motor Algebra," *ASME Journal of Mechanisms, Transmissions, and Automation in Design*, Vol. 109, March, pp. 3-7.

Tu, Q., Rastegar, J., and Singh, J. R., 1994, "Trajectory Synthesis and Inverse Dynamics Model Formulation and Control of Tip Motion of a High Performance Flexible Positioning System," *Mechanism and Machine Theory*, Vol. 29, No. 7, pp. 959-968.

Wampler, C. W., 1989, "Inverse Kinematic Functions for Redundant Spherical Wrist," *IEEE Transactions on Robotics and Automation*, Vol. 5, No. 1, pp. 106-111.

Wang, J., and Gosselin, C. M., 1996, "Kinematic Analysis and Singularity Loci of Spatial Four-Degree-of-Freedom Parallel Manipulators," *24th Biennial Mechanisms Conference*, Irvine, CA, August 18-21, 96 DETC/MECH-1006.

Webster, 1957, *Webster's New World Dictionary*, College Edition, The World Publishing Company, Cleveland and New York.

Whitney, D. E., 1969, "Resolved Motion Rate Control of Manipulators and Human Prostheses," *IEEE Transactions on Man-Machine Systems*, MMS-10, No. 2, pp. 47-53.

Williams, R. L., 1994, "The Double Universal Joint Wrist on a Manipulator: Inverse Position Kinematics and Singularities," *Robotics: Kinematics, Dynamics and Controls, Proceedings of the 23rd Biennial Mechanisms Conference*, Minneapolis, MN, September 11-14, DE-Vol. 72, pp. 355-360.

Vukobratovic, M., and Kircanski, M., 1984, "A Dynamic Approach to Nominal Trajectory Synthesis for Redundant Manipulators," *IEEE Transactions, Systems, Man and Cybernetics*, SMC-14, No. 4, pp. 580-586.

Yoshikawa, T., 1985, "Manipulability of Robotic Mechanisms," *The International Journal of Robotics Research*, Vol. 4, No. 2, pp. 3-9.