

Venkat N. Krovi

Work

Mechanical and Aerospace Engineering
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Research Interests

Lifecycle treatment (conception, design, modeling, analysis, control, implementation and verification) of articulated multibody mechanical & mechatronic systems for motion- and force-manipulation tasks.

Education

1992-1998

University of Pennsylvania, Philadelphia, Pennsylvania

Ph.D., Mechanical Engineering and Applied Mechanics, December 1998
Dissertation: "Design and Virtual Prototyping of User-Customized Assistive Devices,"
Advisors : Prof. Vijay Kumar and Prof. G. K. Ananthasuresh

M.S.E., Mechanical Engineering and Applied Mechanics, December 1995
Thesis: "Modeling and Control of a Hybrid Locomotion System – An All Terrain
Wheelchair," Advisor: Prof. Vijay Kumar

1988-1992

Indian Institute of Technology, Madras, India

B.Tech., Department of Mechanical Engineering, June 1992

Employment

University at Buffalo (SUNY), Buffalo, New York

Sep. 2007-present *Associate Professor*, Department of Mechanical and Aerospace Engineering

Sep. 2007-present *Adjunct Associate Professor*, Department of Electrical Engineering

Sep. 2002-present *Director (Robotics & Haptics)*, New York State Center for Engineering
Design and Industrial Innovation (NYSCEDI)

Apr. 2003-present *Faculty Member*, UB Center for Advanced Technology in Biomedical and
Bioengineering

Sep. 2001-Aug.2007 *Assistant Professor*, Department of Mechanical and Aerospace Engineering

Jun. 2005-Aug.2007 *Adjunct Assistant Professor*, Department of Electrical Engineering

McGill University, Montreal, Quebec

Jan. 1999-Sep. 2001 *Assistant Professor*, Department of Mechanical Engineering

Jan. 1999-Sep. 2001 *Faculty Member*, McGill Center for Intelligent Machines (CIM)

University of Pennsylvania, Philadelphia, Pennsylvania

Dec. 1992-Oct. 1998 *Research Assistant*, Mechanical Engineering and Applied Mechanics

Awards and Honors

- *National Science Foundation CAREER Award*, Robotics and Human Augmentation Program, Division of Information and Intelligent Systems, 2004.
- *Riefler Award*, University at Buffalo, 2002, 2003.
- *2000 Petro-Canada Young Innovator Award*, McGill University, Montreal, Canada, 2000.
- *Proctor & Gamble Best Student Paper Award*, 5th National Applied Mechanisms & Robotics Conference, Cincinnati, Ohio, 1997.
- *John A. Goff Outstanding Graduate Student Award*, Mechanical Engineering and Applied Mechanics, University of Pennsylvania, 1997.
- *Proctor & Gamble Best Student Paper Award*, 4th National Applied Mechanisms & Robotics Conference, Cincinnati, Ohio, 1995.
- *Finalist*, All India Class X Mathematics Olympiad, India, 1986.
- *National Talent Search Examination Scholarship Recipient*, National Council of Educational Research and Training (NCERT), Govt. of India, 1985-1992.

Professional Memberships and Activities

▪ Memberships

American Society of Mechanical Engineers (ASME)

Member, 1996-present.

Chair, Robotics Technical Committee, Dynamic Systems and Control Division, 2006-2008.

Vice Chair, Robotics Technical Panel, Dynamic Systems and Control Division, 2003-2006.

Elected Voting Member, Mechanisms Technical Committee, Design Division, 2002-2008.

Institute of Electrical and Electronics Engineers (IEEE)

Member, 1996-present.

American Society for Engineering Education (ASEE)

Member, 2002-present.

▪ Editorial Duties

Guest Co-Editor, Special Issue of the **International Journal of Robotics Research**, Expected December 2007.

Guest Co-Editor, Focused Section on Biomimetics and Novel Aspects in Robotics, **IEEE/ASME Transactions on Mechatronics**, Vol. 11, No. 2, April 2006.

Guest Co-Editor, Special Issue on Novel Robotics and Control, **ASME Journal of Dynamic Systems Measurement and Control**, Vol. 128, No. 1, March 2006.

▪ **Funding Agency Reviews**

National Science Foundation Panel, CBET Program, CISE Directorate, 2007.

National Science Foundation Panel, Robust Intelligence Program, CISE Directorate, 2007.

Army Research Office, 2005.

National Science Foundation Panel, Robotics and Human Augmentation Program, CISE Directorate, 2004.

National Science Foundation Panel, SENSORS Program, ENG Directorate, 2003.

National Academy of Science, COBASE program, 2003.

Natural Sciences and Engineering Research Council of Canada, Individual New Researcher Program, 2001.

Canadian Foundation for Innovation, 2000.

Le Fonds pour la Formation de Chercheurs et l'Aide à la Recherche, Equipe Program, 2000.

▪ **Journal Manuscript Review**

ASME Journal of Mechanical Design (For Associate Eds. G.K. Ananthasuresh, S. Agrawal, G. Chirikjian, C. Gosselin, Q.J. Ge, L. Howell, K. Lewis, P. Laroche, J. M. McCarthy, C. Mavroidis, M. Raghavan, J. Rastegar)

ASME Journal of Dynamic Systems Measurement and Control (For Associate Eds. S. Agrawal, S. Jayasuriya, Y. Hurmuzlu)

IEEE Transactions on Robotics (For Associate Eds. J. Angeles, I. Bonev, M. Buehler, C. Gosselin, N. Sarkar, J. Troccaz)

IEEE Transactions of Automation Science and Engineering (For Associate Eds. S. Akella, P. Fiorini, M. Zhang)

IEEE Transactions on Neural Sciences and Rehabilitation Engineering (For Associate Eds. M. Van der Loos)

ASME/IEEE Transactions on Mechatronics (For Associate Eds. S. Agrawal, D. Mavroidis)

International Journal of Robotics Research (For Associate Eds. M. Buehler)

International Journal of Mechatronics (For Associate Eds. C. Melchiorri)

IEEE Transactions of Control System Technology (For Associate Eds. L. Villiani)

IEEE Control Systems Magazine (For Associate Eds. H. Ashrafiun)

Mechanisms and Machine Theory (For Associate Eds. K. Kazerounian, G. Chirikjian)

Robotics and Autonomous Systems (For Associate Eds. W. Gruver)

Integrated Computer Aided Engineering (For Associate Eds. H. Adeli).

- **Conference Service**

- **Reviewer**

- ASME Design Engineering Technical Conferences – DAC, MECH, CIE (1999-present).

- ASME International Mechanical Engineering Congress and Exposition (2001-present).

- IEEE International Conference on Robotics and Automation (2004-present).

- IEEE/RSJ International Conference on Intelligent Robots and Systems (2005-present).

- IEEE Conference on Decision and Control (2004, 2005).

- **Session Organizer and Chair**

- ASME Design Engineering Technical Conferences (2002 - 2007).

- ASME International Mechanical Engineering Congress and Exposition (2003 - 2007).

- IEEE International Conference on Robotics and Automation (2005 - 2007).

- IEEE/RSJ International Conference on Intelligent Robots and Systems (2005 - 2007).

- 2002 NSF Workshop on Fundamental Issues and Future Research Directions for Parallel Mechanisms and Manipulators.

- 2004 IEEE Engineering in Medicine and Biology Conference.

- **Chair**, ASME Student Mechanism Design Competition, 27th Biennial Mechanisms and Robotics Conference, Montreal, Canada, Sep. 29 – Oct. 2, 2002, URL: <http://www.eng.buffalo.edu/~vkrovi/MechDesignContest2002>.

- **Publicity Chair**, ASME Design Engineering Technical Conferences, Philadelphia, PA, September 10 -13, 2006 <http://www.asmeconferences.org/IDETC06/Organizers.cfm>.

Service

- **University at Buffalo**

- **University**

- Member, IRDF Review Panel, Office of VP (Research), University at Buffalo, June 2006.

- Member, IRCAF Review Panel, Office of VP (Research), University at Buffalo, October 2004.

- Member, MyUB Improvement Committee, University at Buffalo, Feb. 2004-present.

- Judge, Sigma Xi Student Research Competition, 2005, 2006, 2007.

- **School of Engineering and Applied Sciences**

Department Representative, SENS Computing Advisory Committee, School of Engineering and Applied Sciences, Spring 2006-present.

Judge, IEEE Region I Micromouse Maze Competition, June 2005.

Planning Committee Report to the Dean Karwan on deployment of EDS Software in the MAE Dept. and SEAS.

Mentor, Freshman Mentoring Program, 2004-present.

Contributor, Igniting Ideas 6, “Big Picture Engineering: Visualization, Simulation, and Modeling,” 2005.

Invited Speaker, “What is Robotics and Mechatronics?,” Engineering Cooperative Society Student Group, University at Buffalo, NY, Nov. 2005.

▪ **Department**

Seminar Chair, Mechanical and Aerospace Engineering, University at Buffalo, Fall 2004-present.

Ph. D. Qualifying Committee, Dynamics and Control Group, 2001-present.

Over 20 Ph. D. and M.S. Committees, 2001-present (more details under Research Supervision: Committee Membership).

Lab Tours for Open House 2001, 2002, 2003, 2004, 2005, 2006.

Lab Tours for Preview Day 2002, 2003, 2004, 2005, 2006, 2007.

▪ **Community Service and Outreach**

“2006 Summer Workshop on Robotics for High School Students,” 2006 NYSCEDII Cyber Engineering High School Summer Workshop, July 10 - 14, 2006. Website: <http://mechatronics.eng.buffalo.edu/education/summerworkshop2006/>.

“Summer Workshop on Robotics for High School Students,” 2005 NYSCEDII Summer Workshops in Scientific Visualization and Robotics, August 3 - 5, 2005. Website: <http://mechatronics.eng.buffalo.edu/education/summerworkshop2005/>.

Mentor, State University of New York Louis Stokes Alliance for Minority Participation (SUNY LSAMP) Research Internships: (A) Ms. Sara Forde – Summer 2002, Fall 2002; (B) Ms. Philana Owusu – Summer 2003, (C) Ms. Denisse Yopez – Summer 2004 Website: http://mechatronics.eng.buffalo.edu/people/SARAs_FOLDER/.

Mentor, Buffalo Engineering Alliance for Minorities (BEAM) Summer Research Internships for: (A) Mr. Christopher Guerra – Summer 2005.

“2003 Workshop on Robotics for High School Students,” 2003 NYSCEDII Summer Workshops in Scientific Visualization and Robotics, July 7 - 11, 2003. Website: <http://mechatronics.eng.buffalo.edu/education/summerworkshop2003/>.

“Taking Virtual Prototyping to High Schools, ” Workshop on Virtual Prototyping Technologies for Newfane High School, October 26th 2002 and November 2nd 2002. Website: <http://mechatronics.eng.buffalo.edu/NewfaneHighSchool/>.

▪ **McGill University**

Coordinator, Mechatronics Curriculum Option in Mechanical Engineering, McGill University, 2000-2001.

Chair, Robotic Seminar Series, Center for Intelligent Machines, McGill University, 1999-2001.

Faculty Advisor, Student Chapter of American Society of Mechanical Engineers at McGill University, 1999-2001.

Courses Taught (*Enhancement of Existing Course; *Newly developed Course Content)

▪ **University at Buffalo (SUNY), Buffalo, New York,**
Department of Mechanical and Aerospace Engineering

MAE 340 ⁺	Systems Analysis Laboratories (8 Lab Sections)	S'03, S'04, S'05, S'06
MAE 512 ⁺	Machines and Mechanisms II (Graduate)	F'05, F'06
MAE 412 ⁺	Machines and Mechanisms II	F'01, F'02, F'03, F'04, F'05, F'06
MAE 493/593*	Mathematical Methods in Robotics	F'05 (<i>Also Enginet F'05</i>)
MAE 505	Special Topics – Robotics	F'03, F'04(<i>Also Enginet F'04</i>)
MAE 476/576*	Mechatronics	S'02, S' 03 (<i>Also Enginet S'03</i>)
MAE 459	Capstone Design	2001, 2002, 2003, 2004
MAE 501/601	Individual Problems (Graduate)	F'01, F'02, F'03, F'04, F'05 S'02, S'03, S'04, S'05, S'06

▪ **McGill University, Montreal, Canada,**
Department of Mechanical Engineering

305-554A*	Microprocessors for Mechanical Systems	F' 99, F'00
305-412B ⁺	Dynamics of Systems	S'00, S'01
305-404B	Honors Thesis	F'99

Research Supervision

▪ University at Buffalo (SUNY), Buffalo, New York, Department of Mechanical and Aerospace Engineering

Ph.D., University at Buffalo

Lengfeng Lee	Topic: Haptic Cooperation in Teleimmersive Environments	Jun. 2008 (Expected)
Chin-Pei Tang	Topic: A Geometric Framework for Cooperative Payload Transport by Robot Collectives	Dec. 2007 (Expected)
Rajan Bhatt	Towards Modular Cooperation Between Multiple Nonholonomic Wheeled Mobile Manipulators	Nov. 2006

M.S. (Thesis), University at Buffalo

Srikanth Kannan	Topic: Haptic Surgical Simulator	Sep. 2008 (Expected)
Madusudanan Sathianathan	Topic: Musculoskeletal Analysis	Sep. 2008 (Expected)
Qiushi Fu	Topic: Cable–Driven Robot Systems	Sep. 2008 (Expected)
Hao Su	Topic: Formation Control of Unmanned Ground Vehicles	Sep. 2008 (Expected)
Yao Wang	Topic: Dynamics of Parallel Robot Manipulators	Sep. 2008 (Expected)
Patrick Miller	Topic: Air Ground Vehicle Cooperation	Sep. 2008 (Expected)
Kun Yu	Topic: Virtual Prototyping based Analysis of Cable Robot Manipulators.	Sep. 2007 (Expected)
Anand Naik	Topic: Stability and Transparency in Haptic Drive-by-Wire Systems	Sep. 2007 (Expected)
Glenn White	Simultaneous Motion and Interaction Force Control of a Nonholonomic Mobile Manipulator	Jun. 2006
Michael Del Signore	A Screw-Theoretic Framework For Musculoskeletal System Analysis	Feb. 2006
Lengfeng Lee (Stayed for Ph.D)	Decentralized Motion Planning within an Artificial Potential Framework (APF) for Cooperative Payload Transport by Multi-Robot Collectives	Feb. 2005
Talib Bhabrawala	Shape Modeling using Extended Superquadrics	Feb. 2005
Chetan Jadhav	A Low-Cost Framework for Individualized Interactive Telerehabilitation	Sep. 2004
Chin-Pei Tang	Control of a Modular Composite System of Mobile	Jun. 2004

(Stayed for Ph.D)	Manipulators	
Seung Kook Jun	Design Considerations for an Articulated Leg-Wheel Locomotion Subsystem	Jun. 2004
Rajan Bhatt (Stayed for Ph.D)	Physical Cooperation of a Modular Composite System of Several Mobile Manipulators	Feb. 2004
Pravin Nair	Quantitative Performance Evaluation of Upper-Limb Dysfunction	Feb. 2004

M.S. (Project), University at Buffalo

Nicholas Gill	Topic: CAD Applications in Toy Making	Dec. 2007 (Expected)
Matthew Szymanski	Topic: CAD Applications in Toy Making	Dec. 2007 (Expected)
Chihan Yang	Artificial Mechanical System Modeling And Simulation	Feb. 2006
Kiran Konakanchi	Musculoskeletal Modeling Of Smilodon Fatalis For Virtual Functional Performance Testing	Sep. 2005
Tao Gan	Automated CAD Generation to Improve Design Process- A Fourbar Linkage Case Study	Sep. 2005
Ajay D'Souza	Modeling and Kinematic Analysis of a 6 D.O.F. Motion Base using Virtual Prototyping Tools	Jun. 2003
Daniel O. Gott	The Smart Car Project: A Case Study in Computer-Mediated Interfaces	Jun. 2003
Chris Nowak	Wireless Data Acquisition System for In-Flight Acceleration Measurement of a Football	Jun. 2003
Harpreet Virk	Shape Synthesis of a Compliant Mechanism for Path Following	Jan. 2003

M.S. (Course) , University at Buffalo

Prasanna Venkatesan		Jun. 2003
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Undergraduate Research, University at Buffalo

Brendan Yadav	Independent Mechatronics Project: Control of the BoEBot	Spring 2006
Srivatsa Mahesh	Freshman Research Internship: Virtual Prototyping with CAD	Fall 2005
Christopher Guerra	2005 BEAM/SEAS Honors Research Summer Program, 11 th Grade Student from Canisius High School	Summer 2005
Annapurna Vanga	Senior Design Project: Conversion of CAT-scans of Sabertooth Skulls using MIMICS	Sep. 2004
Ben Whiting	6-week Research Internship for High School Students	Summer 2004

Denisse Yopez	SUNY Louis Stokes Alliance for Minority Participation (SUNY LSAMP), Freshman Research Internship: Modeling of SmartCAR in SolidEdge	May-July 2004
Jonathan Westcott	Senior Design Project: Development of Web-Based Self-Paced Tutorials for Studying Planar Mechanisms	Sep. 2003
Philana Owusu	SUNY Louis Stokes Alliance for Minority Participation (SUNY LSAMP) Freshman Research Internship: Virtual Prototyping of a Wheeled Mobile Robot	May-July 2003
Lengfeng Lee	Senior Design Project: Virtual Prototyping Approach to Teaching Planar Mechanism Analysis	Dec. 2002
Neexon Khoo Arturo Machuca Kok-Kuan Leong Swee Lei Pang	Senior Design Project: Virtual Prototyping of the Suspension System of an All-Terrain Vehicle	Dec. 2002
Sara Forde	SUNY Louis Stokes Alliance for Minority Participation, Freshman Internship, Virtual Prototyping with CAD	May-Dec. 2002

Research Supervision (Cont'd)

▪ **McGill University, Montreal, Canada, Department of Mechanical Engineering**

M. Eng. (Thesis), McGill University

Waseem Khan	Distributed and Modular Forward Dynamic Simulation of Parallel Manipulators	Feb. 2003
Michel Abou-Samah	A Kinematically Compatible Framework for Collaboration of Multiple Nonholonomic Wheeled Mobile Robots	Dec. 2001
Xichun Nie	Design of Reconfigurable Manipulation Assist Aids by Fourier Methods	Dec. 2000

Undergraduate Research, McGill University

Robert Johnson	Senior Design Project: Shape Optimization of a Compliant Cantilever Beam for Path Following	Jun. 2001
Yeow-Wei Pang	Honors Thesis: Fourier Methods for Synthesis of CSC Mechanisms	Dec. 1999

Research Grant Support

- 02/2004-01/2009 **CAREER: Cooperative Payload Transport by Robot Collectives** **\$ 500,000.**
CAREER Grant, Robotics & Computer Vision, National Science Foundation
Investigators: V. Krovi (PI – 100%)
- 06/2006-05/2007 **Virtual Musculoskeletal Cadaver Case-Studies for Gross Anatomy** **\$ 10,000.**
UBIT Proposal, Office of the CIO, University at Buffalo
Investigators: F. Mendel (PI), V. Krovi (50%)
- 10/2006 -09/2007 **New York State Center for Engineering Design and Industrial Innovation** **\$ 250,000.**
NYSTAR Grant, State of New York
Investigators: K. Lewis (PI), K. English, M. Karwan, C. Bloebaum, V. Krovi (10%)
- 07/2005 –12/2006 **Scale Effects on Musculoskeletal Design in Terrestrial Crabs** **\$ 48,000.**
Research and Creative Activities Proposal, VP, Research, University at Buffalo
Investigators: S. Medler (PI), V. Krovi (35%), S. White and K. Hulme
- 11/2005 **Mechatronics 2-Day Workshop for Fisher-Price** **\$ 11,440.**
Short Course, The Center for Industrial Effectiveness, University at Buffalo
Investigators: V. Krovi (PI – 100%)
- 10/2005 -09/2006 **New York State Center for Engineering Design and Industrial Innovation Center** **\$250,000.**
NYSTAR Grant, State of New York
Investigators: C. Bloebaum (PI), K. English, M. Karwan, K. Lewis, V. Krovi (10%)
- 06/2005 –05/2006 **Integrating Technology and Design in Architecture Curriculum** **\$ 8,500.**
Education Technologies Grant, VP, Educational Technology, University at Buffalo
Investigators: S. Vassigh (PI), K. Mackay and V. Krovi (50%)
- 07/2004 -09/2005 **New York State Center for Engineering Design and Industrial Innovation Center** **\$250,000.**
NYSTAR Grant, State of New York
Investigators: C. Bloebaum (PI), K. English, M. Karwan, K. Lewis, V. Krovi (10%)
- 2004-2005 **The Vertebrate Analyzer: A simulator of form/function/behavior of extant/extinct vertebrates** **\$ 28,000.**
Research and Creative Activities Proposal, VP Research, University at Buffalo
Investigators: V. Krovi (PI – 40%) F. Mendel, K. Hulme, A. Patra and D. Pendergast
- 2003-2004 **Teleoperated Virtual Access Laboratories (WEBLABS)** **\$ 3,300.**
Education Technologies Grant, VP, Educational Technology, University at Buffalo
Investigators: V. Krovi (PI – 100%)

- 2002-2003 **EDS PLM-Suite: Solid-Edge, Jack, Unigraphics NX, e-Factory, I-DEAS, Teamcenter** \$ 53,400.
In-kind software grant, Electronic Data Systems Inc.
Net Commercial Value: \$55,214,760.00, University List Price for Installation and 1st year maintenance fees (Waived per grant).
Investigators: V. Krovi (PI- 100%)
- 2002-2003 **Xilinx Suite: Digilab, Sysgen and ISE Foundation Xilinx Systems** \$ 5,280.
In-kind hardware and software grant, Xilinx Corp.
Net Commercial Value: \$29,269.00, University List Price for Installation and 1st year maintenance fees (Waived per grant).
Investigators: V. Krovi (PI- 100%)
- 2002-2003 **User-Customized Haptic Rehabilitation Environment (UCHRE)** \$ 48,000.
Research and Creative Activities Proposal, VP Research, University at Buffalo
Investigators: V. Krovi (PI - 50%) and N. Fisher
- 2002-2003 **Web-based Virtual Prototyping Tutorials/Case-Studies** \$ 6,600.
Education Technologies Grant, VP Educational Technology, University at Buffalo
Investigators: V. Krovi (PI- 100%)
- 2001 **ADAMS: Dynamic Analysis Suite** \$ 1,000.
In-kind software grant, Mechanical Dynamics Inc.
Installation and 6-month maintenance fees (Waived per grant).
Investigators: V. Krovi (PI- 100%)
- 1999-2003 **Minimal Complexity Manipulation Assistive Devices** CDN \$ 67,200.
(ended Sept. 2001) *Individual New Researcher*, Natural Science & Engg. Research Council of Canada
Investigators: V. Krovi (PI- 100%) [McGill Univ.]
- 2000-2001 **Petro Canada Young Innovator Award** CDN \$ 16,000.
Investigators: V. Krovi (PI- 100%) [McGill Univ.]
- 2000-2003 **Computation Visualization and Realization Laboratory** CDN \$ 482,000.
(ended Sept. 2001) *New Opportunities Award*, Canadian Foundation for Innovation
Investigators: X. Chang, L. Cortelezzi, V. Krovi (25%), K. Siddiqi [McGill Univ.]
- 2000-2002 **Cooperation Frameworks for Actively Articulated Wheeled Vehicles** CDN \$ 45,000.
(ended Sept. 2001) *Nouveaux Chercheur*, Le Fonds Formation de Chercheurs et l'Aide à la Recherche
Investigators: V. Krovi (PI - 100%) [McGill Univ.]
- 2000-2003 **Computational Kinematics** CDN \$ 145,000.
(ended Sept. 2001) *Equipe*, Le Fonds pour la Formation de Chercheurs et l'Aide à la Recherche
Investigators: J. Angeles, V. Krovi (30%) and P. Zsombor-Murray [McGill Univ.]

Publications

Patents

- [P1] Kumar, V., Wellman, P., and Krovi, V., “*Adaptive mobility system*,” **United States Patent 5,513,716**. *Appl. No.:* 239,951, *Filed:* May 9, 1994, *Granted:* May 7, 1996.

Book Chapters

- [B2] Krovi, V., and Kumar, V., “*Rapid Design and Prototyping of Customized Rehabilitation Aids*,” **Encyclopedia of Microcomputers**, Eds. A. Kent and J. G. Williams, Marcel Dekker, New York, September 1999.
- [B1] Kumar, V., T. Rahman, and Krovi, V., “*Assistive Devices for People with Motor Disabilities*,” **Wiley Encyclopaedia of Electrical and Electronics Engineering**, Ed. J. G. Webster, March 1999.

Invited Journals/Editorials

- [IJ2] Agrawal, S. K., and Krovi, V., “*Guest Editorial: Introduction to the Focused Section on Biomimetics and Novel Aspects in Robotics*,” **IEEE/ASME Transactions on Mechatronics**, Vol. 11, No. 2, pp. 117- 118, April 2006.
- [IJ1] Agrawal, S. K., Krovi, V., and O’Malley, M., “*Guest Editorial: Special Issue on Novel Robotics and Control*,” **ASME Journal of Dynamic Systems Measurement and Control**, Vol. 128, No. 1, pp. 1-2, March 2006.

Journal Articles (Accepted and Published) (Supervised Students are bolded)

- [J20] **del Signore, M.J., Bhatt, R.M.**, and Krovi, V., “*Musculoskeletal Analysis of Felid Jaw Mechanisms using Screw-Theory*,” *Mechanism and Machine Theory*, Accepted for publication in November 2006, In Press.
- [J19] **Bhatt, R.M., Tang, C-P.**, and Krovi, V., “*Formation Optimization for a Fleet of Wheeled Mobile Robots – A Geometric Approach*,” *Robotics and Autonomous Systems*, Accepted for publication in October 2006, In Press.
- [J18] **Bhatt, R.M., Tang, C-P., Lee, L-F.**, and Krovi, V., “*A Case for Scaffolded Virtual Prototyping Tutorial Case-Studies in Engineering Education*,” *International Journal of Engineering Education*, Accepted for publication in June 2006, In Press.
- [J17] Krovi, V. and **Nie, X.**, “*Design of Reconfigurable Coupled-Serial Chain Based Manipulation Assistive Aids*,” *Robotics and Computer-Integrated Manufacturing*, In Press, Available online 3 April 2007.
- [J16] **Khan, W.A., Tang, C-P.**, and Krovi, V., “*Modular and Distributed Forward Dynamic Simulation of Constrained Mechanical Systems - A Comparative Study*”, *Mechanism and Machine Theory*, Vol. 42, No. 5, pp. 558-579, May 2007 (Available online since 10 July 2006).
- [J15] **White, G.D., Bhatt, R.M.**, and Krovi, V., “*Dynamic Redundancy Resolution in a Nonholonomic Wheeled Mobile Manipulator*,” *Robotica*, Special Issue on Mobile

- Manipulators: Basic Techniques, New trends & Applications, Vol. 25, No. 2 pp. 147-156, March 2007.
- [J14] **Tang, C-P.**, and Krovi, V., “*Manipulability based Configuration Evaluation of Cooperative Payload Transport by Mobile Manipulator Collectives*,” *Robotica*, Vol. 25, No. 1, pp. 29-42, January 2007 (Available online 24 Aug 2006).
- [J13] **Bhatt, R.M.**, and Krovi, V., “*DynaFlexPro for Maple – A Review*,” *IEEE Control Systems*, Vol. 26, No. 6, pp. 127-138, December 2006.
- [J12] **Bhatt, R.M., Tang, C-P., Abou-Samah, M.**, and Krovi, V., “*A Kinematically Compatible Framework for Cooperative Payload Transport System by Multiple Mobile Manipulators*,” *Autonomous Robots*, Vol. 21, No. 3, pp. 227-242, November 2006.
- [J11] **Jadhav, C., Nair, P.** and Krovi, V., “*Individualized Interactive Home-based Haptic Telerehabilitation*,” *IEEE Multimedia Systems, Special Issue on Haptic User Interfaces in Multimedia Systems*, Vol. 13, No. 3, pp. 2-9, July 2006.
- [J10] **Bhatt, R.M., Tang, C-P., Abou-Samah, M.**, and Krovi, V., “*A Screw-Theoretic Analysis Framework For Payload Manipulation By Mobile Manipulator Collectives*,” *IEEE/ASME Transactions on Mechatronics*, Vol. 11, No. 2, pp. 169- 178, April 2006.
- [J09] **Jun, S-K., White, G.D.** and Krovi, V., “*Kinetostatic Design Considerations for an Articulated Leg-Wheel Locomotion Subsystem*,” *ASME Journal of Dynamic Systems Measurement and Control*, Vol. 128, No. 1, pp. 112-121, March 2006.
- [J08] **Khan, W. A.**, Krovi, V., Saha, S.K., and Angeles, J., “*Modular and Recursive Kinematics and Dynamics for Parallel Manipulators*,” *Multibody Systems Dynamics*, Vol. 14, No. 4, pp. 419–455, December 2005.
- [J07] **Khan, W. A.**, Krovi, V., Saha, S.K., and Angeles, J., “*Recursive Kinematics and Inverse Dynamics for a Planar 3R Parallel Manipulator*,” *ASME Journal of Dynamic Systems Measurement and Control*, Vol. 127, No. 4, pp. 529–536, December 2005.
- [J06] **Nie, X.**, and Krovi, V., “*Fourier Methods for Kinematic Synthesis of Coupled Serial Chain Mechanisms*,” *ASME Journal of Mechanical Design*, Vol. 127, No. 2, pp. 232–241, March 2005.
- [J05] Krovi, V., Ananthasuresh, G. K., and Kumar, V., “*Kinematic and Kinetostatic Synthesis of Planar Coupled Serial Chain Mechanisms*,” *ASME Journal of Mechanical Design*, Vol. 124, No. 2, pp.143-155, June 2002.
- [J04] Krovi, V., Ananthasuresh, G. K., and Kumar, V., “*Kinematic Synthesis of Spatial R-R Dyads for Path Following With Applications to Coupled Serial Chain Mechanisms*,” *ASME Journal of Mechanical Design*, Vol.123, No. 3, pp. 359-366, September 2001.
- [J03] Krovi, V., Kumar, V., Ananthasuresh, G. K., and Vezien, J-M., “*Design and Virtual Prototyping of Rehabilitation Aids*,” *ASME Journal of Mechanical Design*, Vol. 121, No. 3, pp. 456-458, September 1999.
- [J02] Krovi, V., and Kumar, V., “*Modeling and Control of a Hybrid Locomotion System*,” *ASME Journal of Mechanical Design*, Vol. 121, No. 3, pp. 448-455, September 1999.

- [J01] Wellman, P., Krovi, V., Kumar, V., and Harwin, W., “*Design of a Wheelchair with Legs for People with Motor Disabilities*,” IEEE Transactions on Rehabilitation Engineering, Vol. 3, No. 4, pp. 343 - 53, December 1995.

Refereed Conference Publications (Supervised Students are bolded)

- [C39] **White, G.D.**, and Krovi, V., “Motion and Force Control in a Nonholonomic Mobile Manipulator,” Proceedings of the **2006 ASME International Mechanical Engineering Congress and Exposition**, IMECE2006-14703, Chicago, IL, November 5 -10, 2006.
- [C38] **Lee, L-F.**, and Krovi, V., “Virtual Musculoskeletal Analysis-based Refinement of Rehabilitation Programs,” Proceedings of the **2006 IEEE International Workshop on Virtual Rehabilitation**, New York, NY, August 29 -30, 2006.
- [C37] **Lee, L-F.**, and Krovi, V., "A Standardized Testing-Ground for Artificial Potential-Field based Motion Planning for Robot Collectives," Proceedings of the 2006 Performance Metrics for Intelligent Systems Workshop, Gaithersburg, MD, August 21 -23, 2006.
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