

J. Michael McCarthy

August 1, 2025

Distinguished Professor
Department of Mechanical and Aerospace Engineering
School of Engineering
University of California, Irvine

Irvine, CA 92697
(949) 824-6893

Education

9/75 - 6/79 Stanford University, Stanford, CA, Ph.D. Mechanical Engineering
9/74 - 6/75 Stanford University, M.S. Mechanical Engineering
9/70 - 6/74 Loyola Marymount University, Los Angeles, CA, B.S. Mechanical Engineering

Experience

11/2024-present Member, Board of Advisors, ASME Letters in Translational Robotics
7/2020-present Distinguished Professor, Department of Mechanical and Aerospace Engineering. The Henry Samueli School of Engineering, University of California, Irvine.
1/2020-present Member of the Advisory Board, Loyola Marymount University, Department of Mechanical Engineering.
1/2020-1/2024 Elected Member of the Executive Council, International Federation for the Promotion of Mechanism and Machine Science (IFTToMM).
4/2020-4/2021 Panel Fellow trainee National Science Foundation, Civil, Mechanical and Manufacturing Innovation Division sponsored Game Changer Academy.
2017 - 2022 Member ASME Technical Committee on Publications Communications — responsible for managing over 30 ASME journals, including interviewing editors and establishing policy.
1/2018-3/2018 Visiting Professor, Department of Mechanical Engineering, Stanford University, Prof. Bernard Roth, host. Responsible for ME 322 Kinematic Synthesis of Mechanisms.
7/2012-6/2014 Associate Chair, Department of Mechanical and Aerospace Engineering. The Henry Samueli School of Engineering, University of California, Irvine---Responsible for course scheduling and facilities.
12/2007-6/2014 Founding Editor-in-Chief, *ASME Journal of Mechanisms and Robotics*—Responsible for managing the review and production process for the journal for ASME International, the professional society for mechanical engineers.
7/2006-6/2014 Henry Samueli Chair and Director, Center for Engineering Science in Design —School of Engineering center supporting team-based extramural projects to promote engineering leadership.
12/2002-12/2007 Editor-in-Chief, *ASME Journal of Mechanical Design*—Responsible for managing the review and production process for the journal. During this time the journal grew from 900 to 1400 pages, from quarterly to monthly, and from an impact factor of 0.27 to 1.24.
1/2001-6/2002 Chief Technical Officer, Accuray Incorporated, Sunnyvale, CA. Reported to Dr. John Adler, CEO (Dept of Neurosurgery, Stanford University)—responsible for 25 hardware, software and field service engineers focused on the transition of the CyberKnife image-guided robotic radiosurgery system to a commercial product.

- 7/92-present Professor, Department of Mechanical and Aerospace Engineering. The Henry Samueli School of Engineering, University of California, Irvine.
- 9/92-12/92 Visiting Professor, Department of Mechanical Engineering, Massachusetts Institute of Technology, Prof. Steve Dubowsky, host.
- 7/91-6/92 Associate Dean for Undergraduate Studies, School of Engineering--Responsible for admissions, probation, disqualification, and curriculum planning, scheduling, and advising for all Engineering undergraduates.
- 7/89-6/91 Undergraduate Advisor, Department of Mechanical Engineering--Responsible for organizing and scheduling the Mechanical Engineering undergraduate program, and for recruiting students and monitoring their progress.
- 7/88-6/92 Associate Professor in the Department of Mechanical Engineering--Research in the mechanical design of manipulators and manipulator systems and mathematical methods for spatial mechanism synthesis.
- 7/86-7/88 Assistant Professor in the Department of Mechanical Engineering at the University of California, Irvine. Adjunct Assistant Professor in the Department of Mechanical Engineering and Applied Mechanics at the University of Pennsylvania, Phila., PA.
- 1/83-6/86 Assistant Professor in the Department of Mechanical Engineering and Applied Mechanics at the University of Pennsylvania, with a Secondary Appointment in the Computer and Information Sciences Department, Dr. J. Bordogna, Dean, Dr. M. Lesser, Chairman (MEAM), Dr. Ruzena Bajcsy, Chairman (CIS)--Research and teaching in mechanism design and automation. Joint research with C.I.S. Department in robotics and computer graphics.
- 9/80 - 12/82 Assistant Professor in the Department of Mechanical Engineering at Loyola Marymount University, Los Angeles, CA., Prof. J. Callinan, Dean--Undergraduate and Masters level teaching with special projects in robotics and computer graphics; designed and supervised the microcomputer based computer-aided engineering laboratory.
- 8/79 - 9/80 Senior Engineer in the Applied Mechanics Group, Central Engineering Laboratories of FMC Corp., 1185 Coleman Ave., Santa Clara, CA., Dr. J. Wiederrich, supervisor--Provided mechanical design consulting support to FMC divisions, performed experimental vibration and modal analysis studies.

Honors and Awards

- 2024-2026. Organizer with Pierre Larochelle and Nina Robson of the Combined 2026 Mechanical Systems and Robotics Symposium, May 21-23, 2026, Irvine, CA
- 2022–2024. Organizer with Pierre Larochelle and Craig Lusk of the Combined 2024 RoManSy and Mechanical Systems and Robotics Symposium, May 22-24, 2024, Tampa, Florida.
- 2022 Member, American Society of Safety Professionals
- 2022 Member, American Society of Engineering Education
- 2021 Henry Samueli School of Engineering Faculty Innovation in Teaching (Senior) Award for 2020-2021 academic year.
- 2020 Listed in 2020 Marquis Who's Who in America, 73rd Edition
- 2020 Co-founder with Pierre Larochelle, Biannual USCToMM Symposium on Mechanical Systems and Robotics. Location: 2020 remote, 2022 Rapid City, SD.
- 2017 Chancellor's Award for Excellence in Undergraduate Research at the 2017 Undergraduate Research Opportunities Symposium.
- 2015 A.T. Yang Memorial Award in Theoretical Kinematics, awarded to M. M. Plecnik and J. M. McCarthy in recognition of a prize winning paper on "Controlling the Movement of a TRR

- Spatial Chain with Coupled Six-Bar Function Generators for Biomimetic Motion,” presented at the 39th Mechanisms and Robotics Conference, Boston, MA, August 4, 2015
- 2014 ASME International Certificate of Appreciation: In recognition of outstanding and distinguished service to your colleagues in the society a Editor, Journal of Mechanisms and Robotics, 2008-2014
- 2013 Robert E. Abbott Award from the Design Engineering Division of ASME International. Awarded at the 2013 Design Engineering Technical Conference, Portland, OR. A Lifetime Service Award for valued services on behalf of the Division, the Society and the Engineering profession beyond the call of duty.
- 2011 Mechanisms and Robotics Award from the Design Engineering Division of ASME International. Awarded at the 2011 Design Engineering Technical Conference, Washington, DC. Citation: “For cumulative contributions to the fundamental theory, design and applications of mechanisms and robotics system and for scholarly leadership as Technical Editor of two ASME Journals pertaining to mechanisms and robotics.”
- 2010 Certified Visiting Professor (2010-2015), Beijing University of Posts and Telecommunications. Award ceremony, July 26, 2010.
- 2010 Teaching Excellence in Undergraduate Engineering for the Henry Samueli School of Engineering, awarded by the UCI Division of Undergraduate Education at the UCI Celebration of Teaching event, May 27, 2010.
- 2010 Mechanical and Aerospace Engineering Professor of the Year, voted by MAE students.
- 2009 ASME Machine Design Award. The Machine Design Award recognizes eminent achievement or distinguished service in the field of machine design, which is considered to include application, research, development, or teaching of machine design. (http://www.asme.org/Governance/Honors/SocietyAwards/Machine_Design_Award.cfm)
- 2009 HSSOE Fariborz Maseeh Best Teaching Award, Henry Samueli School of Engineering (<http://www.eng.uci.edu/news/2009/7/outstanding-engineering-professors-honored-fariborz-maseeh-best-research-and-teaching-aw>)
- 2009 Springer *Handbook on Robotics* awarded two PROSE Awards by the American Association of Publishers, Professional and Scholarly Publishing Division. Awards for Excellence in Physical Sciences & Mathematics, and for Excellence in Engineering & Technology.
- 2008 ASME Outstanding Service Award, awarded by the ASME Design Engineering Division for service as the Editor of the ASME Journal of Mechanical Design.
- 2008 Outstanding Engineering Educator Award, Orange County Engineering Council.
- 2007 Outstanding Engineering Professor, voted by the senior class, organized by the UCI Yearbook.
- 2005 Advisor Participation Award, UCI Dean of Students.
- 2005 Best Paper Award, 2005 ASME Mechanisms and Robotics Conference, “Synthesis of Compliant Mechanisms with Specified Equilibrium Positions,” with H. Su, J. Vance.
- 2003 Elected to Senior Member of the Institute of Electrical and Electronics Engineers (IEEE), Robotics Society.
- 2002 MDI Best Paper Award, 2002 ASME Design Engineering Technical Conferences. “An Extensible Java Applet for Spatial Linkage Synthesis,” with H. Su, C. Collins.
- 2001 Elected Fellow, American Society of Mechanical Engineers
- 1999 Faculty Speaker for the UCI Honors Convocation.
- 1999 Award Winner, PVA Student Design Competition, “A Wheelchair based Mounting System for Automated Positioning of an Electronic Augmentative Communication Device,” D. A. Ruth, RESNA’99, June 29, 1999, Long Beach, CA.
- 1997 MAE Professor of the Year, voted by students.

- 1993 AMR Unique Contribution Award for contributions to the growth of the science of applied mechanisms and robotics.
- 1990 School of Engineering, Outstanding University Service Award.

Ph. D. Students:

1. Qiaode (Jeff) Ge, "Kinematic Constraints as Algebraic Manifolds in the Clifford Algebra of Three Dimensional Projective Space," Department of Mechanical Engineering, UCI, June 1990. (Professor, State University of New York, Stony Brook)
2. R. Mohan C. Bodduluri, "The Design and Planned Movement of Multi Degree of Freedom Closed Kinematic Chains," Department of Mechanical Engineering, UCI, August 1990. (Co-founder, Restoration Robotics, Inc., Sunnyvale, CA.)
3. John R. Dooley, "Dynamic Analysis of Spatial Mechanisms Using Dual Quaternion Coordinates," Department of Mechanical Engineering, UCI, January 1993. (Research Scientist, Accuray, Inc., Sunnyvale, CA.)
4. Pierre Larochelle, "Design of Cooperating Robots and Spatial Mechanisms," Department of Mechanical Engineering, UCI, June 1994. (Professor and Head, Mechanical Engineering, South Dakota School of Mines, Rapid City, SD).
5. Andrew Murray, "Global Properties of Constraint Manifolds in the Kinematic Synthesis of Closed Chains," Department of Mechanical Engineering, UCI, June 1996 (Professor, University of Dayton, Dayton, OH).
6. Fangli Hao, "A Geometric Approach to the Singularity Analysis of In-Parallel Robot Manipulators," Department of Mechanical Engineering, UCI, June 1996. (Research scientist, Lam Research Corp.)
7. Bernard Soriano, "A Biomechanical Investigation of Human Movement during the Golf Swing," Department of Mechanical Engineering, UCI, August 1996. (California Department of Motor VehiclesCS.)
8. Curtis Collins, "Singularity Analysis and Design of Parallel Manipulators"-- Department of Mechanical Engineering, UCI, August 1997. (Research Scientist, Jet Propulsion Laboratory, Lecturer, California Institute of Technology.)
9. Alba Perez, "Dual Quaternion Synthesis of Constrained Robotic Systems," Department of Mechanical Engineering, UCI, September 2003. (Assistant Professor, Idaho State University)
10. Haijun Su, "Computer-Aided Constrained Robot Design Using Mechanism Synthesis Theory," Department of Mechanical Engineering, UCI, July 2004. (Associate Professor, The Ohio State University, Columbus, OH.)
11. Nina Robson, "Synthesis of Spatial Serial Chains to Match Acceleration Constraints," Department of Mechanical Engineering, UCI, September 2008. (Assistant Professor, California State University, Fullerton, CA)
12. GimSong Soh, "Complex Mechanism Design by Constraint of Robotic Systems," Department of Mechanical Engineering, UCI, December 2008. (Assistant Professor, Singapore University of Technology and Design)

13. Brian Parrish, "Automated Configuration Analysis of Planar Eight-bar Linkages, Department of Mechanical Engineering, UCI, June 2014. (Senior Engineer, Northrop-Grumman Corp.)
14. Patrick Nguyen Huu, "Electronic Differential for High Performance Electric Racecars," Oral Qualifying Exam, Program in Materials and Manufacturing Technology, UCI, February 2014.
15. Mark M. Plecnik, "Dimensional Synthesis of Six-bar Linkages for Function, Motion and Path Synthesis," Department of Mechanical Engineering UCI, June 2015. (Post-doctoral research UC Berkeley)
16. Kaustubh Sonawale, "Computer Aided Design of Eight-bar Linkages," Department of Mechanical Engineering UCI, June 2015. (Senior Engineer, Zap Surgical Systems, Inc.)
17. Brandon Tsuge, "Kinematic Synthesis of Lower Limb Supporting Linkage for Rehabilitation," Department of Mechanical Engineering, UCI, September 2015. (Senior Engineer, MEA Associates)
18. Shramana Ghosh, "Linkage-based Orthoses Designed for Individualized Motion Requirements," Department of Mechanical Engineering, UCI, November 2017. (Post Doctoral Researcher, New York University)
19. Yang Liu, "Design of Linkages to Draw Plane Curves." Department of Mechanical Engineering, UCI, June 2018.
20. Peter L. Wang, "Kinematic Synthesis of Spatial Six-Bar Linkages." Department of Mechanical Engineering, UCI, June 2018. (Senior Research Scientist, Oak Ridge National Laboratory)
21. Jeffrey Glabe, "Numerical Continuation on a GPU for Kinematic Synthesis," Department of Mechanical Engineering, UCI, June 2020 (Post Doctoral Researcher, Pacific Northwest National Laboratories).
22. Dina Abulon, "Design and Manufacture of Hybrid Soft Robots with Distributed Actuation," Department of Mechanical Engineering, UCI, December 2023 (Medical Director, Iveric bio, an Astellas Company)
23. Jiaji Li, "The Design and Fabrication of Innovative Linkage Systems," Department of Mechanical Engineering, UCI, December 2024.
25. Austin (Woo Rib) Suh, "Design of Novel Planar and Spherical Mechanisms with Additive Manufacturing," Department of Mechanical Engineering, UCI, June 2025.

PhD Students

Master's of Science Students:

University of Pennsylvania:

1. D. Carmel, "The Mechanical Design of the Pennsylvania Anthropomorphic Robotic Manipulator - A Seven Degree of Freedom Kinetically Anthropomorphic Robot," May 1984.
2. A. Gillett, "Kinematic and Dynamics Analysis of an Anthropomorphic Manipulator," August 1984.
3. W. Holzmann, "On Grasping a General Solid Object with a Multi-Fingered Mechanical Hand," December 1984.
4. E. Donskoy, "The Mechanical Design of a High Speed Robotic Electronic Component Insertion System," September 1986.

5. Qiaode Ge, "The Kinematic Geometry of the Hypersphere as an Image Space of Rotational Motion," September 1986.
6. Scott Leaver, "The Mechanical Design of a Three Jointed Two-degree-of-freedom Robot Fingers," September 1986.
7. Mohan Bodduluri, "The Design of Spherical Four Bar Linkages Using Interactive Computer Graphics," September 1986.
8. S. Mantha, "The Synthesis of Four Bar Linkages using Kinematic Mapping," December 1986.

University of California, Irvine:

9. Y. M. Tsai (M. S. Engineering), "The Workspace of Two Adjacent Planar Manipulators, One with One Link, Another with Two Links, Holding an Object of One Dimension" March 1988.
10. Dawn T. Duerre (M. S. Engineering), "Compliance Control of Robotic Fingers," August 1989.
11. Frank Ma (M. S. Engineering), "The Design of a Four Fingered Mechanical Hand," December 1989.
12. John R. Dooley (M. S. Engineering), "Analysis of Mechanisms in the Image Space of Planar Displacements," June 1990.
13. Kevin Quirk (M. S. Engineering), "Symbolic Model Derivation and Trajectory Generation for the UCI Robotic Finger System," December 1990.
14. Tony Wu (M. S. Engineering), "Computer Aided Design of Planar and Spherical 4R Linkages with an Added Driving Dyad," May 1991.
15. Pierre Larochelle (M. S. Engineering), "Maximizing Payload for Cooperating Robot Systems using Time-Optimal Control"--August 1991.
16. Philip Wong (M. S. Engineering), "System Integration and Control of the UCI Three Fingered Mechanical Hand,"--December 1991.
17. Andrew Murray (M. S. Engineering), "Central Axis and Circling Axis Congruences as Projections of the Constraint Manifold of the Complementary Screw Quadrilateral,"--March 1993.
18. Dore C. Mark (M. S. Engineering), "Spherical Linkage Classification and Singularity Analysis"--December 1993
19. Chris Muller (M. S. Mechanical Engineering), "Static Analysis and Deflections of Spherical 4R Linkages."--March 1996.
20. Karl Etzel (M. S. Mechanical Engineering), "Biquaternion Theory and Applications to Spatial Motion Analysis."--March 1996.
21. Da-Yu Chang, (M. S. Mechanical Engineering), "Kinematic and Static Analysis of 4C Spatial Mechanism,"--August 1998.
22. Lance Kwock (M.S. Mechanical Engineering), "Four Position Synthesis Algorithm for 4C Mechanisms,"--February 1999.
23. Alba Perez (M.S. Mechanical Engineering), "The Analysis and Synthesis of Bennett Linkages,"--March 1999.
24. Shawn Ahlers (M.S. Mechanical Engineering), "Motion Interpolation using Double Quaternions," May 2000.
25. Jeong Wu Kim, (M.S. Mechanical Engineering), "Geometric Design of Bicycle Linkage Suspensions." June 2006.
26. Gim Song Soh, (M.S. Mechanical Engineering), "Analysis and Design of Complex Planar Mechanisms." September 2006.
27. Jerome Choe, (M.S. Mechanical Engineering), "Driving linkages for deployable planar and spherical articulated systems," January 2010.

28. Brandon Tsuge, (M.S. Mechanical Engineering), "The Application of Planar Six Bar Synthesis in Pedicle Based Posterior Fixation Implants and Instrumentation for the Lumbar Spine," June 2012.
29. Mark M. Plecnik, (M.S. Mechanical Engineering), "Synthesis of Slider-Crank Four-and Six-Bar Mechanisms Using Toleranced Task Specification," June 2012.
30. Kaustubh Sonawale, (M.S. Mechanical Engineering), "Computer Aided Design of Spherical Six-Bar Linkages," June 2012.
31. Kelly Lin, (M.S. Mechanical Engineering), "Systems Engineering of the UCI Electric Racecar Gamma Prime," May 2013
32. Siqi Shi, (M.S. Mechanical Engineering), "Systems Engineering of the UCI Electric Racecar Zeta," Nov. 2013
33. Andrew Brouwer, (M.S. Mechanical Engineering), June 2014.

Supervised M.S. Research Project

1. Shan Sun, (M.S. Mechanical Engineering), Sept. 2013-Dec. 2014
2. Rahul Gopalakrishnan, Sept. 2013-Dec. 2014
3. Amit Sandu, Sept. 2013-Dec. 2014
4. Jue Wang, Sept. 2013-Dec. 2014
5. Will Allison, Sept. 2013-Dec. 2015
6. Feiyue Wu, Sept. 2013-March 2015
7. Bote Zhang, Sept. 2013-June 2015
8. Veronica Swanson, March 2016
9. Justin Quan, March 2016
10. Zonghao Liu, December 2017
11. Wenrui Den, December 2017
12. Poyen Huang, January 2019.
13. Sihao Xu, March 2019
14. Poyen Huang, January 2019.
15. Sihao Xu, March 2019
16. David Dyk, March 2020,
17. Kevin Chen, June 2020
18. Luis Garcia, December 2020
19. Angela Cardamone, March 2021
20. Dominic Tran, March, 2021,
21. Faraz Mahboubzadeh, March 2021,
22. Kelvin Ulloa, June 2022,
23. Kyle Simonson, June 2022,
24. Alex DiMascio, June 2022
25. Youssef Georgy, March 2023,
26. Juan De La Cruz, March 2023,
27. Mirana Angel, March 2023
28. Ken Nguyen, March 2023
29. Cameron Ng, May 2023
30. Qingzhi Hong, June 2023
31. Ryan Yoshimoto, June 2023
32. Cameron Ng, June 2023
33. Honglei Hu, June 2023
34. Alejandro Aguilera, June 2023

35. Kevin Huang, June 2023
36. Andre Neochea Barnett, June 2023
37. Susan Bunloeuth, October 2023
38. Noah Sampiere-Prochnow, November 2023
39. Hunter Vasquez, December 2023
40. Jeremy Kim, March 2024
41. Matthew Gwin, March 2024

Post-Doctoral Researchers

Gregory Long, 1990-1991, Ph.D., University of Pennsylvania, UC President's Fellow.
 Pierre Larochelle, 1994, Ph.D., University of California, Irvine
 Gregory Long, 1997, President, Reflex Technologies.
 Curtis Collins, 2002, Assistant Researcher, III.
 Alba Perez, 2003-2004, Assistant Researcher, I.
 HaiJun Su, 2004, Assistant Researcher, I.
 GimSong Soh, 2009, Assistant Researcher, I.

Visiting Scholars

Chuen Sen Lin, Summer 1989, Asst. Prof., Dept. of Mechanical Engineering, Calif. State Univ., Fullerton.
 Peter Dietmeier, 1991-1992, Professor, Technical University of Graz, Austria.
 Warren Seering, 1994-1995, Professor, Dept. of Mechanical Engineering, MIT.
 Pierre Dauchez, 1995-1996, Professor, University of Montpellier, and Research Scientist LIRMM
 Francois Pierrot, 1995-1996, Research Scientist LIRMM
 Qizheng Liao, 1997, Professor, Beijing University of Posts and Telecommunications.
 Thomas Chase, 1998, Professor, University of Minnesota.
 Narcis Gascons, 2001, Assistant Professor, University of Girona.
 Duanling Li, 2008-2009, Lecturer, Beijing University of Posts and Telecommunications.
 Sheng Guo, 2010-2011, Assistant Professor, Beijing Jiao Tong University.
 Jianyou Han, 2013-2014, Professor, Beijing University of Science and Technology
 Ju Li, Dec 2015 – June 2016, Dr. Lecturer, School of Mechanical Engineering, Changzhou University, Changzhou, 213164, Jiangsu, China
 Duanling Li, Sept 2017 - Dec 2017, Lecturer, Beijing University of Posts and Telecommunications
 Xueao Liu, Oct 2018 - Mar 2020, PhD student Beihang University, advisor Changjie Wang.

Research Grants

University of Pennsylvania:

Spatial Rigid Motion and the Curvature Theory of Line Trajectories--National Science Foundation
 1984-1985, \$71,000, awarded May 1984 (duration 12 mon.).
 Advanced Computation and Graphics Workstation (with J. Bassani, H. Bau, M. Nansteel, and B. Paul, MEAM)--National Science Foundation, \$45,000, awarded Sept. 1984 (duration 12 mon.).
 Advanced Actuator/Sensor/Control System for Robotic Applications (with S. Goldwasser, CIS University of Pennsylvania, and A. Guez, Drexel University, and Clifton Precision Co.)--Ben Franklin Partnership (State of Pennsylvania), \$70,000, awarded Sept. 1984 (duration 12 mon.).
 The Design of a Flexible Electronic Assembly Station--Burroughs Advanced Manufacturing Technology Center (with Prof. R. Paul, CIS), Ben Franklin Partnership (State of Pennsylvania), \$88,000, awarded Sept. 1985 (duration 12 mon.).

A Formal Methodology for the Graphical Synthesis of Spatial Mechanisms (with Prof. N. Badler, CIS Dept., University of Pennsylvania)--National Science Foundation, \$152,900, awarded January 1986 (duration 24 mon.).

Artificial Intelligence for the Mechanical Design of Injection Molded Parts (with Prof. T. Finan, CIS Dept., University of Pennsylvania)--Scott Paper Co., \$85,000, February 1986 (duration 12 mon.).

University of California, Irvine:

Mathematical Foundation for a Design Methodology based on Kinematic Mappings--National Science Foundation, \$130,000, awarded June 1986 (duration 24 mon.)

Analytical and Experimental Investigation of Coordinated Manipulation in Mechanical Hands--UCI Faculty Research Fellowship, \$4000, awarded Sept. 1986.

The Analysis of Cooperating Manipulators in the Configuration Manifold of the Workpiece--National Science Foundation, \$156,504, awarded May 1988 (duration 24 mon.).

The Geometric Representation of Functional Constraints Using Clifford Algebras--National Science Foundation, \$30,000, awarded September 1989 (duration 12 mon.).

Supplement to the "Analysis of Cooperating Manipulators in the Configuration Space of the Workpiece"--National Science Foundation, \$34,000, awarded May 1990 (duration 6 mon.).

Motion Optimization and Design of Closed Chain Robotic Systems--National Science Foundation, \$217,000, w. James Bobrow, awarded Jan. 1991 (duration 36 mon.).

Interactive Design of Single and Multi-degree of Freedom Spatial Mechanisms--National Science Foundation, \$120,000, awarded June 1991 (24 mon.).

Telerobotics and Automation in Clean-up of Potentially Hazardous Materials--UC Davis/Caltrans, Advanced Highway Maintenance Technology Program, \$46,000, w. Gregory Long, awarded August 1991, (12 mon.).

Advances in the Design of Spatial Mechanisms for New Products and Processes--National Science Foundation, \$269,000 awarded January 1994 (36 mon.).

Task-Driven Design of Robotic Mechanisms--National Science Foundation, \$156,000, co-PI with J. E. Bobrow, Frank Park (P.I.), awarded March 1994 (36 mon.).

Engineering Design in Industry Internship:

Spring 94: Printronix, Co. \$3500.

Engineering Design Research

Summer 94: Unisen, Corp., \$3600.

Virtual Reality Environment for Spherical Mechanism Design--National Science Foundation, Subcontract through Iowa State University, \$8600 (24 mon.).

Design Task Specification using Hyperspherical Motion Interpolation--National Science Foundation, \$210,000 awarded April 1997 (36 mon.).

Research Experience for Undergraduates--National Science Foundation with grant "Virtual Reality Environment for Spherical Mechanism Design," \$5000, Summer 1997.

Acquisition of Equipment for a Virtual Reality Laboratory for Vision, Visuomotor and Syntheic Environment Research--National Science Foundation, \$335,000 Equipment Grant, co-PI with M. D'Zmura (PI) and others from the Dept. of Cognitive Sciences, UCI.

Spatial Linkage CAD Primitives for the Mechanical Inventor (9900391)--National Science Foundation, \$273,000 awarded Sept 1999 (36 mon.).

Management of Design Innovation—Image-guided Robotic Radiosurgery, Accuray, Inc., \$30,000, January-March 2001

Management of Design Innovation---Image-guided Robotic Radiosurgery, Accuray, Inc., \$30,000, September-December 2001

Management of Design Innovation---Image-guided Robotic Radiosurgery, Accuray, Inc., \$30,000, January-March 2002

An Extensible Architecture for the Synthesis of Constrained Robotic Systems (0218285)--National Science Foundation, \$306,000 awarded July 2002 (36 mon.).

Morphing Wing Project---Next Gen Aeronautics, Inc. \$36,000, June 2003-November 2004.

Computing Configuration Manifolds for the Synthesis of Spatial Serial Chains (0456213)--National Science Foundation, \$300,000 awarded June 2005 (36 mon.). \$40,000 supplement awarded October 2007.

Robot Failure Recovery Planning---University Affiliated Research Center (UARC) NAS2-03144. \$38,297 August 2005, (13 mon).

Geometric Synthesis of Articulated Systems (0758359)--National Science Foundation, \$340,000 awarded August 2008 (36 mon.).

A Design Environment for Kinematic Synthesis of Defect Free Linkage Systems (1066082)---National Science Foundation, \$340,000 (36 mon.) awarded June 2010.

Workshop on 21st Century Kinematics; Washington DC (1068497)—National Science Foundation, \$49,900 (12 mon.), awarded April 2011.

Collaborative Research: A Design Methodology for Multi-fingered Robotic Hands with Second-order Kinematic Constraints," under the direction of J. Michael McCarthy, Nina P. Robson, in collaboration with Alba Perez Gracia, Idaho State University (IIS-1208412), \$399,997, awarded September 2012.

EAGER: Computational Machine Design: The Eight-bar Linkage (1346738), National Science Foundation, \$88,883, awarded August 1, 2013.

Computer-Aided Invention of Complex Articulated Systems with Operational Constraints (1636017), National Science Foundation, \$548,000, awarded May 1, 2016.

ICorps Program: Patient Leg-Powered Wheelchair Mobility to Promote Wellness (1743477), National Science Foundation, \$50,000 (12 mon.), awarded June 1, 2017

Instructional Grants

13 Apple Mac IICx workstations for the Mechanical Engineering Computer Aided Engineering Laboratory--Apple Computer Co., \$124,000, UCI Matching Grant \$20,000 (with J. E. Bobrow and D. Dunn-Rankin) 1989.

Engineering Design in Industry (with J. E. Bobrow, and D. Dunn-Rankin):

- Winter 94: McDonnell-Douglas, Steelcase, Inc. and Printronix, \$6000,
- Spring 94: Lumenyte, Corp., Tektrix, Co., and Texceed, Inc., \$6000.
- Fall 94: Texeed, Printronix, Balseal Eng., Odetics, STI Inc., \$14,000.
- Winter 95: Balseal Eng., Baxter Healthcare, STI Inc., Ceromet, Inc. \$12,000
- Spring 95: Balseal Eng., Baxter Healthcare, Shutt Medical Co., Packard-Hughes, \$12,000

Southern California Coalition for Education in Manufacturing Engineering (SCCEME), w. J. Bobrow, D. Dunn-Rankin, K. Mease--\$70,000 for 12 months.

Engineering Design in Industry (with J. E. Bobrow, K. Mease and D. Dunn-Rankin):

- Fall 1995, \$30,000 support from a consortium of 10 companies.
- Fall 1996, \$3,000, Anaheim Manufacturing Co.
- Spring 1997, \$9,000 from Lumenyte, Inc, Foam Pro Mfg., ASP, Inc.
- Fall 1997, \$3000, Knowledge Research, Inc.

Engineering Design in Industry (with D. Dunn-Rankin):

- Spring 1998, \$9000, Toshiba, Inc., Parker Aerospace Inc., Pacific Press.
- Fall 1998, \$3000, MicroMotors, Inc.
- Winter 1999, \$7000, Packard-Hughes Interconnect.

Spring 1999, \$10,000, Orthodyne, Inc., Road and Track Mag., UCI IRU in Grav. Biology
 Fall 1999, \$7000, Toshiba Information Systems, New Hair Institute
 Winter 2000, \$7000, Parker Aerospace, Eaton Inc.
 Spring 2000, \$7000, Cherry Textron, Inc., Edwards Lifesciences, Inc.
 Fall 2000, \$3500, Packard-Hughes Interconnect.
 Spring 2002, \$3500, private inventor.
 Fall 2002, \$3500, Driessen Aerospace.

Engineering Design in Industry:

Organized with John Garman:

Orange County Great Park	Fall 2011	\$4500
Flexenergy, LLC	Winter 2012	\$4500
Control Components Inc.	Spring 2012	\$4500
Delphi Display Systems	Spring 2012	\$4500
Thermal-Vac Technology	Spring 2012	\$4500
Free Wheelchair Mission	Summer 2012	\$5000
(funded by Chancellor Drake)		
Intellicon Webtalk - EECS	Fall 2012	\$4500
Cummins Cal Pacific	Fall 2012	\$4500
Performance Sealing Inc.	Fall 2012	\$4500
MARS Air Systems	Fall 2012	\$4500
Cummins Cal Pacific	Winter 2013	\$4500
Pacific Precision Products	Winter 2013	\$4500
Delphi Display Systems- EECS	Winter 2013	\$4500
Rain Bird Corporation	Spring 2013	0
Wind Spinners-Peter Dunn-Rankin	Spring 2013	\$2500
Pro-Dex, Inc	Spring 2013	\$4500
Free Wheelchair Mission	Summer 2013	\$5000
(funded by Chancellor Drake)		

Organized with Vince McDonell and Farzad Ahmadkhanlou:

Douglas C. Kruse, Inc.	Fall 2013	\$4500
OC Great Park	Fall 2013	0
Toyota Racing Development	Winter 2014	\$4500
Intellicon, Inc.	Winter 2014	\$4500
Pacific Trinetics Corporation	Spring 2014	\$4500
Intellicon, Inc.	Spring 2014	\$4500

2013 Racecar Engineering Summer Program

Volvo	\$2,600.00
Sam Sarem	\$1,000.00
SAE Southern California Section	\$650.00
McCarthy Design Associates	\$1,650.00
Student Fees	\$1,300.00
Orange County Engineering Council	1,000.00

California Challenge 2013, in coordination with the 2013 US Department of Energy Solar Decathlon. \$45,000

UCI Energy Invitational 2014, donations:

Esperanza HS	\$1,000.00
Tustin HS	\$1,000.00

Tustin HS	\$1,000.00
Foothill HS	\$1,000.00
OC Department of Education	\$8,000.00
Volvo	\$10,000.00
2014 Racecar Engineering Summer Program	
The Gene Haas Foundation	\$14,000.00
Charles Glabe Family	\$3,000.00
OC Department of Education	\$2,780.00
Students Fees	\$1,980.00

PUBLICATIONS:

Patents Awarded

1. U. S. Patent No. 4,865,376 Sept. 12, 1989, *Mechanical Fingers for Dexterity and Grasping*, S.O. Leaver and J. M. McCarthy, inventors.
2. U. S. Patent No. 10,456,286, awarded Oct 19, 2019, *Torque-Compensating Assistive Wrist Braces*, Inventors: M. M. Plecnik, D. Bissell, D. Reinkensmeyer, J. M. McCarthy, inventors.

Patent Disclosures

1. Patent Disclosure, April 29, 2015, Title: *Method for Dimensioning a Leg Mechanism to Trace a Foot Trajectory*, M. M. Plecnik and J. M. McCarthy, UCI Docket No. 2015-808, U.S. Provisional Patent Application, filed.
2. Y. Liu and J. M. McCarthy. "Windshield Wiper Mechanism for Enhanced Coverage" U.C. Case No: 2016-7520-1, U.S. Provisional Patent Application, filed.

Book Reviews

Review of H. H. Mabie and C. F. Reinholtz, *Mechanisms and Dynamics of Machinery*, Fourth Edition, John Wiley & Sons, New York, NY, 1988, for *Mechanism and Machine Theory*, Vol 23, No. 2, pp. 170.

Review of D. H. Myszka, *Machines and Mechanisms: Applied Kinematic Analysis*, Prentice-Hall, 1999, for *Applied Mechanics Reviews*.

Review of Robert L. Norton, *Design of Machinery*, (3rd Ed.) McGraw-Hill, 2004, for the *ASME Journal of Mechanical Design*. September 2003

Review of John J. Uicker, Gordon R. Pennock, and Joseph E. Shigley, *Theory of Machines and Mechanisms*, (3rd Ed.) Oxford Press, 2003, for the *ASME Journal of Mechanical Design*. September 2003

Guest Editor:

1. J. M. McCarthy, Guest Editor, *International Journal of Robotics Research*, Vol. 5, No. 2, June 1986, special issue featuring the Kinematics of Manipulators.
2. J. M. McCarthy (with F. Park), Guest Editor, *J. of Robotics Systems*, special issue "Perspectives in Robotics," June 1995.

Books

1. J. M. McCarthy, *An Introduction to Theoretical Kinematics*, MIT Press, Cambridge, MA, 1990.
2. J. M. McCarthy, *Geometric Design of Linkages*, (Interdisciplinary Applied Mathematics Series), Springer-Verlag, New York, 2000.
3. J. M. McCarthy and G. S. Soh, *Geometric Design of Linkages 2nd Edition*, (Interdisciplinary Applied Mathematics Series), Springer Press, New York, 2011.
4. J. M. McCarthy, *An Introduction to Theoretical Kinematics 2nd Edition*, MDA Press, available on Apple Books and Amazon.com, 2013. ISBN: 978-0-9785180-3-5
5. J. M. McCarthy, *Kinematics and Polynomials in Brief*, MDA Press, available on Apple Books, 2013. ISBN: 978-0-9785180-1-1
6. J. M. McCarthy, *Kinematic Synthesis of Mechanisms: a project based approach*, MDA Press 2019, available on Apple Books and Amazon.com. ISBN: 978-0-9785180-5-9
7. J. M. McCarthy, *Design of Mechanical Walking Machines*, MDA Press, 2021 available on Amazon.com. ISBN: 978-0-9785180-6-6.

Books Edited

1. J. M. McCarthy (Editor), *Kinematics of Robot Manipulators*, MIT Press, Cambridge, MA, 1987, (reprint of IJRR 5:2.)
2. J. M. McCarthy (with S. Derby and A. Pisano) Proceedings of the 1990 ASME Design Technical Conferences: DE-Vol. 24, Flexible Mechanism, Dynamics, and Robot Trajectories, DE-Vol. 25, Mechanism Synthesis and Analysis, and DE-Vol 26, Cams, Gears, and Robot and Mechanism Design.
3. S. Azarm, D. Dutta, H. Eschenauer, B. Gilmore, M. McCarthy, M. Yoshimura, editors, *Advances in Design Automation, Proceedings of the 1995 Design Engineering Technical Conferences*, Sept. 17-20, 1995, Boston, MA.
4. J. M. McCarthy, editor, *Proceedings of the ASME 1996 Design Engineering Technical Conferences and Computers in Engineering Conference*, August 18-22, 1996, Irvine, CA.
5. J. M. McCarthy, editor, *Abstracts of the ASME 1996 Design Engineering Technical Conferences and Computers in Engineering Conference*, August 18-22, 1996, Irvine, CA.
6. J. M. McCarthy, (Editor), *Proceedings of the Celebratory Symposium for Bernard Roth*, June 20-21, 2003, Stanford, CA.
7. J. M. McCarthy (Editor), *21st Century Kinematics: 2012 NSF Workshop*, Springer Press, New York, 2013.
8. Pierre Larochelle and J. Michael McCarthy (Editors), *Proceedings of the 2020 USCToMM Symposium on Mechanical Systems and Robotics*, Springer Nature Switzerland 2020, doi: <https://doi.org/10.1007/978-3-030-43929-3>.
9. Pierre Larochelle and J. Michael McCarthy (Editors), *Proceedings of the 2022 USCToMM Symposium on Mechanical Systems and Robotics*, Springer Nature Switzerland 2022, doi: <https://doi.org/10.1007/978-3-030-99826-4>.
10. Encyclopedia of Robotics, Section Editor (Kinematics) 22 Chapters published. Springer. Editors: M. H. And, O. Khatib, and B. Siciliano. <https://meteor.springer.com>

Book Chapters

1. J. M. McCarthy and R. M. C. Bodduluri, "A Bibliography on Robot Kinematics, Workspace Analysis, and Path Planning," *Robotics Review 1*, edited by O. Khatib, pp. 267-281, MIT Press, 1990
2. J. M. McCarthy and K. J. Waldron, "Chapter 5: Analysis and Synthesis of Spatial Mechanisms," *Forty Years of Modern Kinematics: A Tribute to Ferdinand Freudenstein*, edited by A. G. Erdman, John Wiley, 1993
3. R. M. C. Bodduluri, Q. J. Ge, J. M. McCarthy and B. Roth, "5.4: The Synthesis of Spatial Linkages," *Forty Years of Modern Kinematics: A Tribute to Ferdinand Freudenstein*, edited by A. G. Erdman, John Wiley, 1993.
4. J. M. McCarthy, "4.6: Dual Quaternions and the Pole Triangle," *Forty Years of Modern Kinematics: A Tribute to Ferdinand Freudenstein*, edited by A. G. Erdman, John Wiley, 1993.
5. P. Dietmaier and J. M. McCarthy, "Planning Grasp Points and Base Locations of Single Robots and Cooperating Robot Systems," *Advances in Robot Kinematics and Computational Geometry*, (J. Lenarcic and B. Ravani, eds.), Springer Netherlands, pp. 495-504, 1994.

6. A.P. Murray and J. M. McCarthy, "Characterizing the Workspace of the Spherical Image of Cooperating Robots," *Advances in Robot Kinematics and Computational Geometry*, (J. Lenarcic and B. Ravani, eds.), Springer Netherlands, pp. 19-28, 1994.
7. J. M. McCarthy and G. L. Long, "20: Linkages and Cams," *The Engineering Handbook*, edited by R. C. Dorf, pp. 203-209, CRC Press, 1995.
8. A. P. Murray, F. Pierrot, P. Dauchez, and J. M. McCarthy, "On the Design of Parallel Manipulators for a Prescribed Workspace: a Planar Quaternion Approach," *Recent Advances in Robot Kinematics*, (Portoroz-Bernardin, Slovenia, June 22-26), Springer Netherlands, pp. 349-358, 1996.
9. D. A. Ruth and J. M. McCarthy, "The Design of Spherical 4R Linkages for Four Specified Orientations," *Computational Methods in Mechanisms*, (J. Angeles, and E. Zakhariyev, eds.), Springer-Verlag, 1998.
10. A. Perez and J. M. McCarthy, "Dimensional Synthesis of Spatial RR Robots," *Advances in Robot Kinematics*, (J. Lenarcic and M.M. Stanisic, eds.), pp. 93-102, Kluwer Academic Publ., Netherlands, 2000.
11. S. G. Ahlers and J. M. McCarthy, "The Clifford Algebra and the Optimization of Robot Design," *Geometric Algebra with Applications in Science and Engineering* (E. Bayro and G. Sobczyk, editors), Birkhauser, pp. 235-251, 2001.
12. J. M. McCarthy and Leo Joskowicz, "Kinematic Synthesis," *Formal Engineering Design Synthesis*, (J. Cagan and E. Antonson, eds.), Cambridge Univ. Press 2002.
13. A. Perez and J. M. McCarthy, "Dual Quaternion Synthesis of Constrained Robots," *Advances in Robot Kinematics Theory and Applications*, (J. Lenarcic and F. Thomas, eds.) Springer Netherlands, pp 443-454. (Barcelona, Spain, June 24-29), 2002.
14. N. Gascons, H. Su, and J. M. McCarthy, "Performance Evaluation of the Grasp of Two Cooperating Robots Using a Type Map," *Advances in Robot Kinematics Theory and Practice*, (J. Lenarcic and F. Thomas, eds.) Springer Netherlands, pp. 49-56, (Barcelona, Spain, June 24-29), 2002.
15. J. M. McCarthy and G. L. Long, "20: Linkages and Cams," *The Engineering Handbook*, 2nd edition edited by R. C. Dorf, CRC Press, 20:1-8, 2004
16. M. C. Villa-Uriol, F. Kuester, N. Bagherzadeh, A. Perez, J. M. McCarthy, "Kinematic synthesis of avatar skeletons from visual data," *On Advances in Robot Kinematics*, pp 171-180, Springer Netherlands, 2004.
17. M. C. Villa-Uriol, F. Kuester, N. Bagherzadeh, A. Perez, J. M. McCarthy "Kinematic Synthesis of Avatar Skeletons from Visual Data," . *On Advances in Robot Kinematics*, (J. Lenarcic and C. Galletti) Springer Netherlands, pp 171-180, (Sestri Levante, Italy, June 28-July 1), 2004.
18. J. M. McCarthy and Hai-Jun Su, "The Computation of Reachable Surfaces for a Specified Set of Spatial Displacements," In: E. Bayro, ed., *Handbook of Computational Geometry for Pattern Recognition, Computer Vision, Neurocomputing and Robotics*, Springer Verlag, 2005.
19. G. S. Soh and J. M. McCarthy, "Constraint synthesis for n-R robots," *Advances in Robot Kinematics Mechanisms and Motion*, (J. Lenarcic and B. Roth eds) Springer Netherlands, pp. 395-402, June 2006.
20. G. S. Soh and J. M. McCarthy, "Synthesis and Analysis of a Constrained Spherical Parallel Manipulator," *Advances in Robot Kinematics Analysis and Design*, (J. Lenarcic and P. Wenger eds.) Springer Netherlands, pp. 101-110, (Batz-sur-Mer, France, June 22 – 26), 2008.

21. Victor Scheinman and J. Michael McCarthy, "Chapter 3: Mechanisms and Actuation," In B. Siciliano and O. Khatib, ed. *Robotics Handbook*, Springer Verlag, 2008.
22. J. M. McCarthy and J. Choe, "Difficulty of Kinematic Synthesis of Usable Constrained Planar 6R Robots," *Advances in Robot Kinematics: Motion in Man and Machine* (J. Lenarcic and M. Stanisic, eds.) Springer Netherlands, pp 455-463, (Portoroz, Slovenia, June 28 – July1), 2010.
23. J. Michael McCarthy, "Chapter 1: Polynomials, Computers and Kinematics for the 21st Century," *21st Century Kinematics: 2012 NSF Workshop*, Springer Press, New York, 2012.
24. J. Michael McCarthy, "Chapter 2: Kinematic Synthesis," *21st Century Kinematics: 2012 NSF Workshop*, Springer Press, New York, 2012.
25. B. Parrish and J. M. McCarthy, "Identification of Usable Six-bar Linkage for Dimensional Synthesis," F. Viadero and M. Ceccarelli (eds.) *New Trends in Mechanisms and Mechanism Science*, Mechanisms and Machine Science 7, Springer Science, 2013
26. M. M. Plecnik and J. M. McCarthy, "Dimensional Synthesis of Six-bar Linkage as a Constrained RPR Chain," F. Viadero and M. Ceccarelli (eds.) *New Trends in Mechanisms and Mechanism Science*, Mechanisms and Machine Science 7, Springer Science, 2013.
27. M. Plecnik, J. M. McCarthy, and C. W. Wampler, "Kinematic synthesis of a Watt I six-bar linkage for body guidance," *Advances in Robot Kinematics*, Springer International Publishing, pp. 317-325, 2014.
28. Victor Scheinman, J. Michael McCarthy, and Jae Bok Son, "Chapter 4: Mechanisms and Actuation," In B. Siciliano and O. Khatib, ed. *Robotics Handbook 2nd Ed*, Springer Verlag, 2014.
29. B. Tsuge and J. M. McCarthy, "Fitting Useful Planar Four-Bar and Six-Bar Linkages to Over-Specified Tasks," *Interdisciplinary Application in Kinematics*, Mechanisms and Machine Science 26, Springer International Publishing, Switzerland, 2015 doi:10.1007/978-3-319-10723-3_18
30. D. Eppstein, J. M. McCarthy, and B. E. Parrish, "Rooted Cycle Bases," Algorithms and Data Structures, 14th International Symposium, WADS 2015, Victoria, BC, Canada, August 5-7, 2015. Proceedings, Editors F. Dehne, J-R Sack, and U. Stege, Springer, Lecture Notes in Computer Science, 2015, ISBN 978-3-319-21839-7.
31. Ghosh S., Robson N., McCarthy J.A.M. (2018) Development of Customized Orthotics Based on Lower-Leg Anthropometric Data and Task. In: Ahram T., Falcão C. (eds) *Advances in Human Factors in Wearable Technologies and Game Design*. AHFE 2017. *Advances in Intelligent Systems and Computing*, vol 608. Springer, Cham. doi: 10.1007/978-3-319-60639-2_6
32. Glabe, J. and McCarthy, J. M., (2018) Six-bar Linkage Design System with a Parallelized Polynomial Homotopy Solver, *Advances In Robot Kinematics*, Springer International Publishing. doi: 10.1007/978-3-319-93188-3_16
33. Chen K., McCarthy J.M. (2021) Kinematic Synthesis of a Modified Jansen Leg Mechanism. In: Lenarčič J., Siciliano B. (eds) *Advances in Robot Kinematics 2020*. ARK 2020. Springer Proceedings in Advanced Robotics, vol 15. Springer, Cham. doi: 978-3-030-50975-0_30

Encyclopedia Articles

1. A. P. Murray and J. M. McCarthy, "Kinematics," *Encyclopedia of Robotics*, M. A Ang, O. Khatib, B. Siciliano, Springer, Nov. 2020.
2. K. Sonawale and J. M. McCarthy, "Homogeneous Transforms," *Encyclopedia of Robotics*, M. A Ang, O. Khatib, B. Siciliano, Springer, Aug. 2021.
3. P. Larochelle and J. M. McCarthy, "Inverse Kinematics," *Encyclopedia of Robotics*, M. A Ang, O. Khatib, B. Siciliano, Springer, May. 2023.

Refereed Journal Articles

1. J. M. McCarthy and B. Roth, "The Curvature Theory of Line Trajectories in Spatial Kinematics," *ASME Journal of Mechanical Design*, Vol. 103, No. 4, October 1981.
2. J. M. McCarthy and B. Roth, "The Instantaneous Properties of Trajectories Generated by Planar, Spherical and Spatial Rigid Body Motion," *ASME Journal of Mechanical Design*, Vol. 104, No. 1, January 1982.
3. J. M. McCarthy, "Planar and Spatial Rigid Motion as Special Cases of Spherical and 3-Spherical Motion," *ASME Journal of Mechanisms, Transmissions, and Automation in Design*, Vol. 105, No. 3, Sept. 1983, pp. 569-575.
4. W. Holzmann and J. M. McCarthy, "Computing the Friction Forces Associated with a Three-Fingered Grasp," *IEEE Journal of Robotics and Automation*, Vol. RA-1, No. 4, Dec. 1985, pp. 206-210.
5. J. Abel, W. Holzmann and J. M. McCarthy, "On Grasping Planar Objects with Two Articulated Fingers," *IEEE Journal of Robotics and Automation*, Vol. RA-1, No. 4, Dec. 1985, pp. 211-214.
6. J. M. McCarthy, "The Generalization of Line Trajectories in Spatial Kinematics to Trajectories of Great Circles on a Hypersphere," *ASME Journal of Mechanisms, Transmissions, and Automation in Design*, Vol. 108, March 1986, pp. 60-64.
7. J. M. McCarthy and B. Ravani, "Differential Kinematics of Spherical and Spatial Motions Using Kinematic Mapping," *ASME Journal of Applied Mechanics*, Vol. 53, March 1986, pp. 15-22.
8. J. M. McCarthy, "On the Relation Between Kinematic Mappings of Planar and Spherical Displacements," *ASME Journal of Applied Mechanics*, Vol. 53, June 1986, pp. 457-459.
9. J. M. McCarthy, "Dual Orthogonal Matrices in Manipulator Kinematics," *International Journal of Robotics Research*, Vol. 5, No. 2, June 1986, (special issue on Kinematics).
10. J. M. McCarthy, "The Instantaneous Kinematics of Line Trajectories in terms of a Kinematic Mapping of Spatial Rigid Motion," *ASME Journal of Mechanisms, Transmissions, and Automation in Design*, Vol. 109, No. 1, March 1987, pp. 95-100.
11. J. M. McCarthy, "On the Scalar and Dual Formulations of the Curvature Theory of Line Trajectories," *ASME Journal of Mechanisms, Transmissions, and Automation in Design*, Vol. 109, No. 1, March 1987, pp. 101-106.
12. J. M. McCarthy, "The Differential Geometry of Curves in an Image Space of Spherical Kinematics," *Mechanism and Machine Theory*, Vol. 22, No. 3, 1987, pp. 205-211.
13. J. M. McCarthy, "On the Image Curve of the Coupler Motion of a Special Spherical Four Bar Linkage," *ASME Journal of Mechanisms, Transmissions, and Automation in Design*, Vol. 110, No. 3, 1988, pp. 276-280.
14. Qiaode Ge and J. M. McCarthy, "On the Image Curve of a Spherical Epicyclic Gear Train," *ASME Journal of Mechanisms, Transmissions, and Automation in Design*, Vol. 110, No. 3, 1988, pp. 281-286.
15. S. O. Leaver, J. M. McCarthy, and J. E. Bobrow, "The Design and Control of a Robot Finger for Tactile Sensing," *Journal of Robotic Systems*, 5:567-581, 1988.

16. Qiaode Ge and J. M. McCarthy, "The Algebraic Classification of the Image Curves of Spherical Four-Bar Motion," *ASME Journal of Mechanical Design*, 113(3):227-231, 1991.
17. Q. Ge, and J. M. McCarthy, "Functional Constraints as Algebraic Manifolds in a Clifford Algebra," *IEEE Journal Robotics and Automation*, October 1991 7(5):670-677.
18. R. M. C. Bodduluri and J. M. McCarthy, "Finite Position Synthesis Using the Image Curve of Spherical Four-Bar Motion," *ASME Journal of Mechanical Design*, 114(1):55-60, 1992.
19. J. M. McCarthy and J. E. Bobrow, "The Number of Saturated Actuators and Constraint Forces During Time-Optimal Movement of a General Robotic System," *IEEE Journal of Robotics and Automation*, June 1992, 8(3):407-409.
20. G. L. Long, J. M. McCarthy, and R. P. Paul, "Kinematic Modules for Singularity-Free Movement with Three Cartesian Freedoms," *ASME Journal of Mechanical Design*, 115(2):207-213, 1993
21. J. M. McCarthy, "The Opposite Pole Quadrilateral as a Compatibility Linkage for the Parameterization of the Center Point Curve," *ASME Journal of Mechanical Design*, 115(2):332-336, 1993
22. J. M. McCarthy, "A Parameterization of the Central Axis Congruence Associated with Four Positions of a Rigid Body in Space," *ASME Journal of Mechanical Design*, 115(3):547-551, 1993.
23. J. E. Bobrow, J. M. McCarthy, and V. K. Chu, "Time-Optimal Control of Two Robots Holding the Same Workpiece," *ASME Journal of Dynamic Systems, Measurement and Control*, 115(3):441-446, 1993.
24. P. Larochelle, J. M. McCarthy, and J. E. Bobrow, "Determining Maximum Payloads for Cooperating Robots Under Time Optimal Control," *Int. J. of Robotics and Computer integrated Manufacturing*, 10(6):437-443, 1994.
25. J. M. McCarthy, "The Synthesis of Planar RR and Spatial CC Chains and the Equation of a Triangle," Special Combined Issue of the *ASME J. of Mechanical Design and J. of Vibration and Acoustics*, 117(B):101-106, June 1995.
26. A. P. Murray and J. M. McCarthy, "Determining Burmester Points from the Analysis of a Planar Platform," *ASME J. of Mechanical Design*, 117(2A):303-307, June 1995.
27. P. Larochelle and J. M. McCarthy, "Planar Motion Synthesis using an Approximate Bi-invariant Metric," *ASME Journal of Mechanical Design*. 117(4):646-651, December 1995.
28. A. P. Murray and J. M. McCarthy, "Passing a Central-axis Congruence through Six Arbitrary Lines in Space," *ASME J. of Mechanical Design*. 118(4):515-519, December 1996.
29. A. P. Murray and J. M. McCarthy, "Center-point Curves through Six Arbitrary Points," *ASME Journal of Mechanical Design*, 119(1):36-39, March 1997.
30. A. P. Murray, F. Pierrot, P. Dauchez, and J. M. McCarthy, "A Planar Quaternion Approach to the Kinematic Synthesis of a Parallel Manipulator," *Robotica*, 15:4, July 1997.
31. F. Hao and J. M. McCarthy, "Conditions for Line-based Singularities in Spatial Platform Manipulators," *Journal of Robotic Systems*, 15(1):43-55, 1998.
32. C. L. Collins and J. M. McCarthy, "The Quartic Singularity Surface of a Planar Platform in the Clifford Algebra of the Projective Plane," *Mechanism and Machine Theory*, 33(7): 931-944, 1998.

33. Dunn-Rankin, D., Bobrow, J.E., Mease, K.D., and McCarthy, J.M., "Engineering Design in Industry: A Course to Teach Students and Faculty Design", *ASEE Journal of Engineering Education*, 87(3):219-222, July 1998.
34. K. R. Etzel and J. M. McCarthy, "Interpolation of Spatial Displacements using the Clifford Algebra of E^4 ," *ASME Journal of Mechanical Design*, 121(1):39-44, 1999.
35. A. P. Murray and J. M. McCarthy, "Burmester Lines for Five Position Synthesis from the Analysis of a 3-CPC Platform," *ASME Journal of Mechanical Design*, 121(1):45-49, 1999.
36. D. A. Ruth and J. M. McCarthy, "The design of spherical 4R linkages for four specified orientations," *Mechanism and Machine Theory*, 34:677-694, 1999.
37. J. M. McCarthy and R.M.C. Bodduluri, "Avoiding singular configurations in finite position synthesis of spherical 4R linkages," *Mechanism and Machine Theory*, 35(3):451-462, 2000.
38. Qizheng Liao and J. M. McCarthy, "On the Seven Position Synthesis of a 5-SS Platform Linkage," *ASME Journal of Mechanical Design*, 123:74-79, 2001
39. M. Bodduluri and J. M. McCarthy, "X-ray Guided Robotic Radiosurgery for Solid Tumors," *Industrial Robot Journal*, 29:3, March 2002.
40. C. L. Collins, J. M. McCarthy, A. Perez, and H. Su, "The Structure of an Extensible Java Applet for Spatial Linkage Synthesis," *ASME Journal of Computing and Information Science and Engineering*, 2(1):45-49, March 2002.
41. A. Perez and J. M. McCarthy, "Bennett's Linkage and the Cylindroid," *Mechanism and Machine Theory*, 37(11):1245-1260, November 2002.
42. H. Su, C. Collins, J. M. McCarthy, "Classification of RRSS Linkages," *Mechanism and Machine Theory*, 37(11):1413-1433, November 2002.
43. A. Perez and J. M. McCarthy, "Dimensional Synthesis of Bennett Linkages," *ASME Journal of Mechanical Design*, 125(1):98-104, March 2003.
44. H. Su, P. Dietmaier, and J. M. McCarthy, "Trajectory Planning for Constrained Parallel Manipulators," *ASME Journal of Mechanical Design*, 125(4):709-716, December 2003.
45. H. Su, C. W. Wampler, and J. M. McCarthy, "Geometric Design of Cylindric PRS Serial Chains," *ASME Journal of Mechanical Design*, 126(2):268-277, March 2004.
46. A. Perez and J. M. McCarthy, "Dual Quaternion Synthesis of Constrained Robotic Systems," *ASME Journal of Mechanical Design* 126(3):425-435, July 2004.
47. H. Su, J. M. McCarthy, and L. T. Watson, "Generalized Linear Product Homotopy Algorithms and the Computation of Reachable Surfaces," *ASME Journal of Computers and Information Science and Engineering*, 4(3):226-234, September 2004.
48. H. Su and J. M. McCarthy, "The Synthesis of an RPS Serial Chain to Reach a Given Set of Task Positions," *Mechanism and Machine Theory*, 40(7):757-775, July 2005.
49. A. Perez and J. M. McCarthy, "Clifford Algebra Exponentials and Planar Linkage Synthesis Equations," *ASME Journal of Mechanical Design*, 127(5):931-940, September 2005.
50. A. Perez and J. M. McCarthy, "Geometric Design of RRP, RPR and PRR Serial Chains," *Mechanism and Machine Theory*, 40(11):1294-1311, November 2005.

51. H. Su and J. M. McCarthy, "A Polynomial Homotopy Formulation of the Inverse Static Analysis of Planar Compliant Mechanisms," *ASME Journal of Mechanical Design*, 128(4):776-786, July 2006.
52. H. Su, J. M. McCarthy, M. Sosonkina, and L. T. Watson, "POLSYS_GLP: A Parallel General Linear Product Homotopy Code," *ACM Trans. on Mathematical Software*, 32(4):561-579, December 2006. DOI: 10.1145/1186785.1186789
53. A. Perez-Gracia and J. M. McCarthy, "The Kinematic Synthesis of Spatial Serial Chains Using Clifford Algebra Exponentials," *Proc. IMechE Part C: Journal of Mechanical Engineering Science*, 220(7):953-968 (16), July 2006. DOI: 10.1243/09544062JMES166
54. H. P. Schrocker, M. L. Husty, and J. M. McCarthy, "Kinematic Mapping Based Assembly Mode Evaluation of Planar Four-bar Mechanisms," *ASME Journal of Mechanical Design*, 129(9):924-929, September 2007.
55. H. J. Su, and J. M. McCarthy, "Synthesis of Bistable Compliant Mechanisms Using Polynomial Homotopy," *ASME Journal of Mechanical Design*, 129(10):1094-1098, October 2007.
56. G. S. Soh and J. M. McCarthy, "The Synthesis of Six-bar Linkages as Constrained Planar 3R Chains," *Mechanism and Machine Theory*, 43 (2), Feb 2008, p.160-170.
57. N. P. Robson, J. M. McCarthy and I. Tumer, "The Algebraic Synthesis of a Spatial TS Chain for a Prescribed Acceleration Task," *Mechanism and Machine Theory*, 43 (10), Oct 2008, p. 1268-1280.
58. G. S. Soh and J. M. McCarthy, "Parametric Design of a Spherical Eight-Bar Linkage Based on a Spherical Parallel Manipulator," *J. Mechanisms Robotics*, 1, 011004 (2009).
59. N. P. Robson, J. M. McCarthy and I. Tumer, "Failure Recovery Planning for an Arm Mounted on an Exploratory Rover," *IEEE Transactions on Robotics*. 25(6):1448-1453, Dec. 2009.
60. N. P. Robson and J. M. McCarthy, "Second Order Task Specifications in the Geometric Design of Spatial Mechanical Linkages," *International Journal of Modern Engineering*, Fall/Winter 2010, Volume 11, No. 1, pp. 5-11, 2010.
61. N. P. Robson and J. M. McCarthy, "Non-branching Solutions for the Design of Planar four-bar Linkages Using Task Velocity Specifications," *International Journal of Engineering Research and Innovation*, Fall/Winter 2010, Volume 2, No. 2, pp. 33-32.
62. J. M. McCarthy, "Kinematics, polynomials, and computers—a brief history," *ASME Journal of Mechanisms and Robotics*, Vol. 3, February, 2011.
63. D. Li, Z. Zhang and J. M. McCarthy, "A Constraint Graph Representation of Metamorphic Linkages," 46(2):228-238, *Mechanism and Machine Theory*, 2011.
64. M. Plecnik and J. M. McCarthy, "Numerical Synthesis of Six-bar Linkages for Mechanical Computation," *ASME Journal of Mechanisms and Robotics*, Vol. 6, August, 2014.
65. B. E. Parrish, J. M. McCarthy, and D. Eppstein, "Automated Generation of Linkage Loop Equations for Planar 1-DoF Linkages, Demonstrated up to 8-bar," *ASME Journal of Mechanisms and Robotics*, Vol. 7, February 2015.
66. J. D. Hauenstein and J. M. McCarthy, "Biologically-inspired Linkage Design: Computing Form from Function," *SIAM News*, Vol 48, No. 8, October 2015.

67. K. H. Sonawale and J. M. McCarthy, "A Design System for Six-bar Linkages Integrated with a Solid Modeler," *ASME Journal of Computing and Information Science in Engineering*, Vol 15(4), December 2015, doi:10.1115/1.4030940.
68. K. H. Sonawale and J. M. McCarthy, "A Design System for Eight-bar Linkages as Constrained 4R Serial Chains," *ASME Journal of Mechanisms and Robotics*, Vol 8(1), February 2016, published on-line August 19, 2015.
69. M. Plecnik and J. M. McCarthy, "Computational Design of Stephenson II Six-bar Function Generators for 11 Accuracy Points," *ASME Journal of Mechanisms and Robotics*, Vol 8(1), February 2016.
70. M. Plecnik and J. M. McCarthy, "Design of Stephenson Linkages that Guide a Point Along a Specified Trajectory," *Mechanism and Machine Theory*, Vol 96, Part 1, February 2016, pp 38-51.
71. M. Plecnik and J. M. McCarthy, "Kinematic Synthesis of Stephenson III Six-bar Function Generators," *Mechanism and Machine Theory*, Vol 97, March 2016, pp 112-126.
72. M. M. Plecnik and J. M. McCarthy, "Controlling the Movement of a TRR Spatial Chain with Coupled Six-bar Function Generators for Biomimetic Motion," in the special issue "Selected Papers from the IDETC 2015," *ASME Journal of Mechanisms and Robotics*, Vol 8(5), October 2016, doi:10.1115/1.4032105.
73. B. Y. Tsuge and J. M. McCarthy, "An Adjustable Single Degree-of-Freedom System to Guide Natural Walking Movement for Rehabilitation," *Journal of Medical Devices*, Vol 10(4), December 2016, doi:10.1115/1.4033329.
74. B. Y. Tsuge and J. M. McCarthy, "Homotopy Directed Optimization to Design a Six-bar Linkage for a Lower Limb with a Natural Ankle Trajectory," *Journal of Mechanisms and Robotics*, December 2016, Vol 8(6), doi:10.1115/1.4034141.
75. K. H. Sonawale and J. M. McCarthy, "Synthesis of Eight-bar Linkages by Constraining a 6R Loop," *Mechanism and Machine Theory*, Vol 105, November 2016, pp 337-351. <http://dx.doi.org/10.1016/j.mechmachtheory.2016.07.001>
76. Yang Liu and J. M. McCarthy, "Synthesis of a Linkage to Draw a Plane Algebraic Curve," *Mechanism and Machine Theory*, Vol 111 May 2017, pp. 10-20. <http://dx.doi.org/10.1016/j.mechmachtheory.2016.12.005>
77. Y. Liu and J. M. McCarthy, "Design of Mechanisms to Draw Trigonometric Plane Curves," special issue "Selected Papers from the IDETC 2016," *Journal of Mechanisms and Robotics*, April 2017, Vol 9(2). doi: 10.1115/1.4035882
78. Ju Li and J. M. McCarthy, "Analysis of Two Spherical Parallel Manipulators with Hidden Revolute Joints" *Journal of Mechanisms and Robotics*, June 2017, Vol 9(3). doi: 10.1115/1.4035542
79. D. Eppstein, J. M. McCarthy, and B. E. Parrish, "Rooted Cycle Bases," *Journal of Graphs Algorithms and Applications*, 21(4), pp. 663–686 (2017) doi: 10.7155/jgaa.00434.
80. Y. Liu and J. M. McCarthy, "Design of a Linkage System to Write in Cursive." *Journal of Computer and Information Science and Engineering*, 17(3), Sept 2017, doi: 10.1115/1.4037229.
81. P. L. Wang, H. E. Taha, and J. M. McCarthy, "Synthesis of a Flapping Wing Mechanism using a Constrained Spatial RRR Serial Chain." *Journal of Mechanisms and Robotics*, 10(1), February 2018. doi:10.1115/1.4038529

82. P. L. Wang and J. M. McCarthy, "Design of a Spatial Six-bar Flapping Wing Mechanism for Combined Control of Swing and Pitch," *Journal of Mechanisms and Robotics*, 10(2), April 2018, doi: 10.1115/1.4038979
83. P. L. Wang, U. Rehm and J. M. McCarthy, "Design of a Spatial RPR-2SS Valve Mechanism," *Journal of Mechanisms and Robotics*, 10(4), August 2018, doi:10.1115/1.4040027
84. S. Ghosh, N. P. Robson and J. M. McCarthy, "Kinematic Design and Evaluation of a Six-bar Knee-Ankle-Foot Orthosis," *ASME Journal of Engineering and Science in Medical Diagnostics and Therapy*, February 2020. doi: 10.1115/1.4046474
85. X. Liu, C. Wang and J. M. McCarthy, "The Design of Coiling and Uncoiling Trusses Using Planar Linkage Modules," *Mechanism and Machine Theory*, September 2020, 103943. doi: 10.1016/j.mechmachtheory.2020.103943
86. J. Glabe and J. M. McCarthy, "Numerical Continuation on a Graphical Processing Unit for Kinematic Synthesis," *ASME Journal of Computer and Information Science and Engineering*, December 2020, 20(6): 061009. doi: 10.1115/1.4047240
87. X. Liu and J. M. McCarthy, "Design of a Continuum Mechanism that Matches the Movement of an Eight-bar Linkage," *Journal of Mechanisms and Robotics*, Dec. 2020, 12(6): 061013. doi: 10.1115/1.4047439
88. A. Murray and J. M. McCarthy, "Computing the Developable Forms of Planar and Spherical Four-bar Linkages," *International Journal of Mechanisms and Robotic Systems*, Vol. 5, Nos. 1/2, 2021, doi: 10.1504/IJMRS.2021.10035790
89. J. Glabe and J. M. McCarthy, "A GPU Homotopy Path Tracker and Endgame for Mechanism Synthesis," *International Journal of Mechanisms and Robotic Systems*, Vol. 5, Nos. 1/2, 2021, doi: 10.1504/IJMRS.2021.10035617
90. J. Li, C. Liu, K. Nguyen, and J. M. McCarthy, "A Steerable Walker Driven by Two Actuators," 40th Anniversary Special Issue, *Robotica*, December 1, 2023. <https://doi.org/10.1017/S0263574723001558>
91. J. M. McCarthy, "Quaternions in Kinematics," *Mechanism and Machine Theory*, Volume 209, July 2025, 105949.
92. J. Li and J. M. McCarthy, "A Multi-oar Robotic Marine Surface Vehicle," *ASME Letters in Translational Robotics*, February 2025.
93. J. Li, J. Golden, B. E. Johnson, E. Quilligan, V. O. Gardner, C. A. Prietto, and J. M. McCarthy, "Spherical Exoskeleton for the Measurement of Shoulder Movement," *Transactions of the Canadian Society of Mechanical Engineering (TCSME)*, 2025.

Refereed Conference Proceedings

1. J. M. McCarthy, "Differential Kinematics on a 3-Sphere," *Proceedings of the Sixth World Congress on the Theory of Machines and Mechanisms (IFTOMM)*, December 15, 1983, New Delhi, India.
2. W. Holzmann and J. M. McCarthy, "Computing the Friction Forces Associated with a Three-Fingered Grasp," *Proceedings of the IEEE Robotics and Automation Conference*, St. Louis, MO, March 1985.

3. J. Abel, W. Holzmann and J. M. McCarthy, "On Grasping Planar Objects with Two Articulated Fingers," *Proceedings of the IEEE Robotics and Automation Conference*, St. Louis, MO, March 1985.
4. J. M. McCarthy, "The Symbolic Computation of Multi-Vectors Using Logo," *Proceedings of the ASME Computers in Engineering Conference*, Boston, MA, August 1985.
5. J. M. McCarthy, "Kinematic Mappings and Robotics," *Proceedings of the IEEE Robotics and Automation Conference*, San Francisco, CA, April 1986.
6. J. M. McCarthy, "The Differential Properties of the Image Curve of General Spherical Four Bar Motion," *Proceedings of the Seventh World Congress on the Theory of Machines and Mechanisms (IFTOMM)*, Seville, Spain, Sept. 1987, pp. 289-292.
7. S. O. Leaver and J. M. McCarthy, "The Design of Three Jointed Two-degree-of-freedom Robot Fingers," *Proceedings of the 1987 Design Automation Conference*, Vol. 10-2, pp. 127-134.
8. J. M. McCarthy, "On the Image Curve of the Coupler Motion of a Special Spherical Four Bar Linkage," *Proceedings of the 1987 ASME Design Automation Conference*, Boston, MA, Sept. 1987, Vol. 10-2, pp. 311-316.
9. Qiaode Ge and J. M. McCarthy, "On the Image Curve of a Spherical Epicyclic Gear Train," *Proceedings of the 1987 ASME Design Automation Conference*, Boston, MA, Sept. 1987, pp. 363-368.
10. M. McCarthy, "The Hypersphere and Dual Hypersphere as Configuration spaces of Three Link Manipulators," *Proceedings of the IASTED International Symposium on Robotics and Automation*, May 27-29, 1987, Santa Barbara, CA., pp. 132-136.
11. M. McCarthy, "Configuration Manifolds for the Self-Motion of Redundant 4R, 5R, and 6R Planar Robots, *NATO Advanced Research Workshop: "Robots with Redundancy: Design, Sensing and Control,"* June 27-July 1, 1988, Salo, Italy.
12. J. M. McCarthy, Q. Ge, and R. M. C. Bodduluri, "The Analysis of Cooperating Planar Robots in the Configuration Manifold of the Workpiece," *Advances in Robot Kinematics*, International Meeting, Ljubljana, Yugoslavia, Sept. 19-21, 1988.
13. R. M. C. Bodduluri and J. M. McCarthy, "Finite Position Synthesis Using the Image Curve of Spherical Four-Bar Motion," *Proceedings of the ASME Mechanisms Conference*, DE-Vol. 1, pp. 445-450, Orlando, FL, Sept. 1988.
14. Qiaode Ge and J. M. McCarthy, "Classification of the Image Curves of Spherical Four-Bar Linkages," *Proceedings of the ASME Mechanisms Conference*, Orlando, FL, Sept. 1988.
15. J. M. McCarthy and J. E. Bobrow, "Time-Optimal Movement of Cooperating Robots," *Proceedings of the NASA Conference on Space Telerobotics*, Pasadena, CA, Jan. 31-Feb. 2, 1989, pp. 371-379.
16. R. M. C. Bodduluri, J. M. McCarthy, and J. E. Bobrow, "Planning Movement for Two PUMA Manipulators Holding the Same Object," *Experimental Robotics 1, First Int. Symp. on Experimental Robotics*, Montreal Canada, June 19-21, 1989, *Lecture notes in Control and Information Sciences*, V. 139, pp. 579-593, Springer-Verlag, Heidelberg, 1990.
17. Q. J. Ge and J. M. McCarthy, "Equations for the Boundaries of Joint Obstacles for Planar Robots," *Proceedings of the IEEE Robotics and Automation Conference*, Vol. 1, pp. 164-169, Scottsdale, AZ, May 14-19, 1989.

18. Q. J. Ge and J. M. McCarthy, "The Constraint Manifold of the Coupler of an SSSS Spatial Four Bar Linkage," *Proceedings of the Applied Mechanisms and Robotics Conference*, Cincinnati, OH, November 5-8, 1989.
19. R. M. C. Bodduluri and J. M. McCarthy, "Planning Movement of Two Seven Degree of Freedom Robot Arms Holding One Object," *Proceedings of the Applied Mechanisms and Robotics Conference*, Cincinnati, OH, November 5-8, 1989.
20. Dooley, J. R., and McCarthy, J. M., "Parameterized Descriptions of the Joint Space Obstacles for a 5R Closed Chain Robot," *Proceedings of the 1990 IEEE Robotics and Automation Conference*, Vol. 3, pp. 1536-1541, Cincinnati, OH, May 13-18, 1990.
21. Ge, Q. J., and McCarthy, J. M., "An Algebraic Formulation of Configuration Space Obstacles for Spatial Robots," *Proceedings of the 1990 IEEE Robotics and Automation Conference*, Vol. 3, pp. 1542-1547, Cincinnati, OH, May 13-18, 1990.
22. J. M. McCarthy, "A Parameterization of the Central Axis Congruence Associated with Four Positions of a Rigid Body in Space," *Proceedings of the ASME Mechanisms Conference*, September 17-19, 1990, Chicago, IL.
23. J. M. McCarthy, "The Opposite Pole Quadrilateral as a Compatibility Linkage for the Parameterization of the Center Point Curve," *Proceedings of ASME Mechanisms Conference*, September 17-19, 1990, Chicago, IL.
24. J. M. McCarthy, J. E. Bobrow, and V. K. Chu, "Using Minimum Time Point to Point Movement to Size Actuators in a Multi-degree of Freedom Closed Chain," *Proceedings of ASME Mechanisms Conference*, September 17-19, 1990, Chicago, IL.
25. J. E. Bobrow, J. M. McCarthy, and V. K. Chu, "Time-Optimal Control of Two Robots Holding the Same Workpiece," *Proceedings of the IEEE Conference on Decision and Control*, December, 1990, Hawaii.
26. P. Larochelle, and J. M. McCarthy, "Performance Evaluation of Cooperating Robot Movements using Maximum Load under Time-Optimal Control," *Proceedings of the IEEE Conference on Robotics and Automation*, April, 1991, Sacramento, CA, pp:2612-2617.
27. J. R. Dooley, and J. M. McCarthy, "Spatial Rigid Body Dynamics using Dual Quaternion Components," *Proceedings of the IEEE Conference on Robotics and Automation*, April, 1991, Sacramento, CA, pp:90-95.
28. J. M. McCarthy, "Dual Quaternions and the Pole Triangle," *Proceedings of the Conference on Forty Years of Modern Kinematic: A Tribute to Ferdinand Freudenstein*, July 21, 1991, Minneapolis, MN.
29. J. M. McCarthy, R. M. C. Bodduluri, and Q. J. Ge, "The Synthesis of Spatial Linkages," *Proceedings of the Conference on Forty Years of Modern Kinematic: A Tribute to Ferdinand Freudenstein*, July 21, 1991, Minneapolis, MN.
30. J. M. McCarthy, "Finite Position Synthesis of a 4S Spatial Mechanism using Kinematic Mapping," *Proceedings of the Eighth World Congress on the Theory of Machines and Mechanisms (IFTOMM)*, Prague, Czechoslovakia, Aug. 1991.
31. R. M. C. Bodduluri, A. P. Murray, and J. M. McCarthy, "The Circle-point and Center-point Curves as Projections of the Image Curve of the Opposite Pole Quadrilateral," *Proceedings of the Applied Mechanisms and Robotics Conference*, November 1991, Cincinnati, OH.

32. J. M. McCarthy and J. E. Bobrow, "The Number of Saturated Actuators and Constraint Forces during Time-Optimal Movement of a General Robotic System," *Proc. IEEE Robotics and Automation Conf.*, Nice, France, May 1992, Vol. 1, pp. 542-546.
33. P. Larochelle and J. M. McCarthy, "Static Analysis of Spherical nR Chains with Joint Friction," *Flexible Mechanisms, Dynamics and Analysis DE-Vol 47*, (Proc. ASME Mechanisms Conf.), pg. 173-177, September 1992.
34. J. Dooley and J. M. McCarthy, "Dynamic Analysis of a Spherical Four Bar Mechanism," *Flexible Mechanisms, Dynamics and Analysis DE-Vol 47*, (Proc. ASME Mechanisms Conf.), pg. 161-165, September 1992.
35. J. Dooley and J. M. McCarthy, "Dynamics of Open and Closed Chain Spherical Mechanisms using Quaternion Coordinates," *Flexible Mechanisms, Dynamics and Analysis DE-Vol 47*, (Proc. ASME Mechanisms Conf.), pg. 166-171, September 1992.
36. P. Larochelle and J. M. McCarthy, "Trajectory Planning for Cooperating Robot Using Maximum Payload Under Time Optimal Control," *Robotics and Manufacturing--Recent Trends in Research, Education, and Applications*, ASME Press Series, pg. Vol. 4 (M. Jamshidi, R. Lumia, J. Mullins, M. Shahinpoor, eds.), 1992
37. J. M. McCarthy and R. M. C. Bodduluri, "Planning Workpiece Grasp Points for Cooperating Robot Movement," *Proc. Ninth CISM-IFTOMM Symposium on Theory and Practice of Robots and Manipulators*, Udine, Italy, Sept. 1992.
38. P. Larochelle, J. Dooley, A. Murray, J. M. McCarthy, "SPHINX--Software for Synthesizing Spherical 4R Mechanisms," Vol 1, pg. 607-611, *Proc. of the 1993 NSF Design and Manufacturing Systems Conference*, Univ. of North Carolina at Charlotte, Jan. 1993.
39. J. R. Dooley and J. M. McCarthy, "On the Geometric Analysis of Optimum Trajectories for Cooperating Robots using Dual Quaternion Coordinates," *Proceedings of the IEEE Robotics and Automation Conference*, Atlanta, GA.
40. P. Larochelle, and J. M. McCarthy, "Teaching spatial visualization via spherical mechanism design," *Proceedings of the 1993 ASME Engineering Design Graphics Division Conf.*, Akron, Oh. Oct. 1993.
41. F. C. Park, A. P. Murray, and J. M. McCarthy, "Designing Mechanisms for Workspace Fit," *Computational Kinematics*. Proceedings of the Computational Kinematics Workshop, Dahgstuhl, Germany, Kluwer Academic Publishers, Boston 1993.
42. P. Larochelle and J. M. McCarthy, "Payload study of wheelchair mounted cooperating robots," *Fifth Int. Symp. on Robotics and Manufacturing*, Maui, Hawaii, Aug. 1994.
43. P. Larochelle and J. M. McCarthy, "Design of the spatial 4C mechanism for rigid body guidance," *ASME Mechanisms Conf.*, Minneapolis, MN, Sept. 1994.
44. P. Larochelle and J. M. McCarthy, "Designing planar mechanisms using a bi-invariant metric in the image space of $SO(3)$," *ASME Mechanisms Conf.*, Minneapolis, MN, Sept. 1994.
45. A. P. Murray and J. M. McCarthy, "Five Position Synthesis of Spatial CC Dyads," *ASME Mechanisms Conf.* Minneapolis, MN, Sept. 1994.
46. A. P. Murray and J. M. McCarthy, "A Linkage Type Map for Spherical Four Position Synthesis," *Proceedings of 1995 ASME Design Engineering Technical Conferences*, Boston, MA, Sept. 1995.

47. K. Etzel and J. M. McCarthy, "A Metric for Spatial Displacements using Biquaternions on $SO(4)$," Proceedings of the 1996 Robotics and Automation Conference, Minneapolis, MN, April 1996.
48. K. R. Etzel and J. M. McCarthy, "Spatial Motion Interpolation in an Image Space of $SO(4)$," Proceedings ASME Design Engineering Technical Conferences, Irvine, CA, August 19-21, 1996.
49. A. P. Murray and J. M. McCarthy, "Constraint Manifold Synthesis of Planar Linkages," Proceedings ASME Design Engineering Technical Conferences, Irvine, CA, August 19-21, 1996.
50. C. L. Collins and J. M. McCarthy, "A Generalized Grashof Condition for Planar Platform Manipulator Design," Proceedings of the Fourth Int. Assoc. of Science and Technology for Development (IASTED) International Conference, Maui, HA, Aug. 19-22, 1996.
51. P. M. Larocelle, J. Vance, and J.M. McCarthy, "A Virtual Reality Environment for Spherical Mechanism Design," 1997 NSF Grantees Conference, Seattle, WA, pp85-86, Jan 1997.
52. C. L. Collins and J. M. McCarthy, "The Quartic Singularity Surfaces of Planar Parallel Manipulators," Proceedings of the Fifth Int. Assoc. of Science and Technology for Development (IASTED) International Conference, Cancun, Mexico, Aug. 1997.
53. D. A. Ruth and J. M. McCarthy, "Efficient Computation of Spherical 4R Linkages Compatible with Four Specified Orientations," NATO Advanced Study Institute on Computational Methods in Mechanisms, Varna, Bulgaria, June 1997.
54. C. L. Collins and J. M. McCarthy, "The Singularity Loci of Two Triangular Parallel Manipulators," Proceedings of the 8th International Conference on Advanced Robotics, Monterey, CA, July 6-8, 1997.
55. D. A. Ruth and J. M. McCarthy, "SphinxPC: An Implementation of Four Position Synthesis for Planar and Spherical Linkages," Proceedings of the ASME Design Engineering Technical Conferences, Sacramento, CA, Sept. 14-17, 1997.
56. P. M. Larochelle, J. M. Vance, and J. M. McCarthy, "Creating a Virtual Reality Environment for Spherical Mechanism Design," 1998 NSF Grantees Conference, Monterrey, Mexico, pp. 83-84, Jan. 1998
57. D. A. Ruth and J. M. McCarthy, "A Wheelchair-based Mounting System for Automated Positioning of an Electronic Augmentative Communications Device," Proceedings of RESNA '99, Long Beach, CA. June 25-29, 1999.
58. J. M. McCarthy and S. Ahlers, "Dimensional Synthesis of Robots using a Double Quaternion Formulation of the Workspace," *Robotics Research: The Ninth International Symposium*, (J. M. Hollerbach and D. E. Koditschek, editors), pp. 3-8, Springer-Verlag, 2000.
59. J. M. McCarthy, "Mechanisms Synthesis Theory and the Design of Robots," *Proc. Int. Conf. Robotics and Automation*, San Francisco, CA, April 24-28, 2000.
60. A. Perez and J. M. McCarthy, "Dimensional Synthesis of Bennett Linkages," Proceedings of the ASME Design Engineering Technical Conferences, Baltimore, MD, Sept. 10-13, 2000.
61. M. Bodduluri and J. M. McCarthy, "X-ray Guided Robotic Radiosurgery for Solid Tumors," Proceedings of ASME/IEEE Conference on Advanced Intelligent Mechatronics, Como, Italy, July 8-11, 2001.

62. H. Su and J. M. McCarthy, "Classification of Designs for RRSS Linkages," Proceedings of 2001 ASME Design Engineering Technical Conferences, Pittsburgh, PA, Paper No. DETC2001/DAC-21104, Sept. 9-12, 2001.
63. H. Su, C. Collins, and J. M. McCarthy, "An Extensible Java Applet for Spatial Linkage Synthesis," ASME DETC, Montreal, Canada, 2002.
64. A. Perez and J. M. McCarthy, "Dual Quaternion Synthesis of a Parallel 2-TPR Robot," Proc of the Workshop on Fundamental Issues and Future Research Directions for Parallel Mechanisms and Manipulators, October 3-4, 2002, Quebec City, Quebec, Canada.
65. A. Perez and J. M. McCarthy, "Dimensional Synthesis of RPC Serial Robots," Proceedings of the International Conference on Advanced Robotics, June 30-July 3, 2003, Univ. of Coimbra, Portugal.
66. A. Perez and J. M. McCarthy, "Dual Quaternion Synthesis of a CRR Robot," Proceedings of the ASME Design Engineering Technical Conferences, September 2-6, 2003, Chicago, IL.
67. H. Su, C. W. Wampler, and J. M. McCarthy, "Geometric Design of Cylindric PRS Serial Chains," Proceedings of the ASME Design Engineering Technical Conferences, September 2-6, 2003, Chicago, IL.
68. H. Su and J. M. McCarthy, "Kinematic Synthesis of a RPS Serial Chains," Proceedings of the ASME Design Engineering Technical Conferences, September 2-6, 2003, Chicago, IL.
69. H-J Su and J. M. McCarthy, "Inverse Static Analysis for a Planar Compliant Platform Mechanism," *Proceedings of the 2004 Design Engineering Technical Conferences*, Sept. 28-Oct. 2, 2004, Salt Lake City, Utah.
70. Alba Perez, H-J Su, and J. M. McCarthy, "Synthetica 2.0: Software for the Synthesis of Constrained Serial Chains," *Proceedings of the ASME 2004 Design Engineering Technical Conferences*, Sept. 28-Oct. 2, 2004, Salt Lake City, Utah.
71. E. Wolbrecht, H-J Su, A. Perez and J. M. McCarthy, "Geometric Design of Symmetric 3-RRS Constrained Parallel Platforms," *Proceedings of the International Mechanical Engineering Congress and Exposition*, November 13-19, 2004, Anaheim, CA.
72. Alba Perez and J. M. McCarthy, "Sizing a serial chain to fit a task trajectory using Clifford algebra exponentials," *Proceedings of the International Conference on Robotics and Automation*, April 18-22, 2005, Barcelona, Spain.
73. H-J Su and J. M. McCarthy, "Dimensioning a Constrained Parallel Robot to Reach a Set of Task Positions," *Proceedings of the International Conference on Robotics and Automation*, April 18-22, 2005, Barcelona, Spain.
74. N. Robson and J. M. McCarthy, "The Synthesis of Planar 4R Linkage with Three Task positions and Two Specified Velocities," *Proceedings of the ASME International Design Engineering Technical Conferences*, September 25-28, 2005.
75. H. P. Schrocker, M. L. Husty and J. M. McCarthy, "Kinematic Mapping-based Evaluation of Modes for Planar Four-bar Synthesis," *Proceedings of the ASME International Design Engineering Technical Conferences*, September 25-28, 2005.
76. H. J. Su, M. J. M. McCarthy, and J. Vance, "Synthesis of Compliant Mechanisms with Specified Equilibrium Positions," *Proceedings of the ASME International Design Engineering Technical Conferences*, September 25-28, 2005.

77. G. S. Soh, A. Perez, and J. M. McCarthy, "The Kinematic Synthesis of Mechanically Constrained Planar 3R Chains", Proceedings of the first European Conference on Mechanism Science (EUCOMES), Obergurgl, Austria, 2006.
78. G. S. Soh, and J. M. McCarthy, "Synthesis of Eight-bar Linkages as Mechanically Constrained Planar Parallel Robots," *Proceedings of the 2007 IFToMM World Congress*, Besancon, France, June 18-21, 2007.
79. N. P. Robson, and J. M. McCarthy, "Synthesis of a Spatial SS Serial Chain for a Prescribed Acceleration Task," *Proceedings of the 2007 IFToMM World Congress*, Besancon, France, June 18-21, 2007.
80. G. S. Soh and J. M. McCarthy, "Synthesis of Constrained nR Planar Robots to Reach Five Task Positions," 2007 Robotics Science and Systems Conference, Atlanta, GA, June 27-30, 2007.
81. G. S. Soh and J. M. McCarthy, "Assessment Criteria for the Conceptual Design of Six-bar Linkages," *Proceedings of the ASME 2007 International Design Engineering Technical Conferences*, Sept. 4-7, 2007, Las Vegas, NV.
82. N. P. Robson and J. M. McCarthy, "Kinematic Synthesis with Contact Forces and Curvature Constraints on the Workpiece," *Proceedings of the ASME 2007 International Design Engineering Technical Conferences*, Sept. 4-7, 2007, Las Vegas, NV.
83. G. S. Soh and J. M. McCarthy, "Five Position Synthesis of Spherical (6, 7) Linkages," *Proceedings of the ASME 2008 International Design Engineering Technical Conferences*, Aug. 3-6, 2008, New York City, NY.
84. J. Choe, D. L. Li, G. S. Soh, and J. M. McCarthy, "Synthesis of a 10-bar Driver for a Planar Scale Change Linkage," *Proceedings of the ASME/IFToMM International Conference on Reconfigurable Mechanisms and Robots*, June 22-24, 2009, London, UK.
85. N. P. Robson, and J. M. McCarthy, "Exploring New Strategies for Failure Recovery of Crippled Robot Manipulators," *Proceedings of the ASME/IFToMM International Conference on Reconfigurable Mechanisms and Robots*, June 22-24, 2009, London, UK
86. N. P. Robson, J. M. McCarthy, "Applications of the Geometric Design of Mechanical Linkages with Task Acceleration Specifications," DETC2009-87415, *Proceedings of the IDETC09 33rd Mechanisms and Robotics Conference*, Aug. 30-Sept. 2, 2009, San Diego, CA.
87. G. S. Soh, J. M. McCarthy, "Seven-Position Synthesis of a Spatial Eight-bar by Constraining a TRS Serial Chain," DETC2009-87366, *Proceedings of the IDETC09 33rd Mechanisms and Robotics Conference*, Aug. 30-Sept. 2, 2009, San Diego, CA
88. D. L. Li, Z. Zhang, J. Dai, J. M. McCarthy, "Configuration Based Improved Synthesis Approach of Metamorphic Mechanisms," DETC2009-87747 *Proceedings of the IDETC09 33rd Mechanisms and Robotics Conference*, Aug. 30-Sept. 2, 2009, San Diego, CA.
89. D. L. Li, Z. Zhang, J. Dai, J. M. McCarthy, "Configuration Synthesis of Metamorphic Mechanisms based on Characteristic Incidence Matrix," DETC2010-29199 *Proceedings of the Mechanisms and Robotics Conference ASME IDETC 2010*, Aug. 15-8, 2010, Montreal, Quebec, Canada.
90. M. M. Plecnik and J. M. McCarthy, "Five Position Synthesis of a Slider-Crank Function Generator," DETC2011-47581 *Proceedings of the ASME 2011 International Design Engineering*

Technical Conferences & Computers and Information in Engineering Conferences, August 28-31, 2011, Washington, DC, USA.

91. M. M. Plecnik and J. M. McCarthy, "Design of a 5-SS Spatial Steering Linkage," DETC 2012-71405, *Proceedings of the ASME 2012 International Design Engineering Technical Conferences & Computers and Information in Engineering Conferences*, August 12-15, 2012, Chicago, IL, USA.
92. G. S., F. Ying, and J. M. McCarthy, "Dimensional Synthesis of Planar Six-bar Linkages by Mechanically Constrain a PRR Serial Chain," DETC 2012-70721, *Proceedings of the ASME 2012 International Design Engineering Technical Conferences & Computers and Information in Engineering Conferences*, August 12-15, 2012, Chicago, IL, USA.
93. B. Parrish and J. M. McCarthy, "Use of the Jacobian to Verify Smooth Movement in Watt I and Stephenson I Six-bar Linkages," *Proceedings of the ASME 2013 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference*, DET2013-13051, August 4-7, 2013, Portland, Oregon USA.
94. K. H. Sonawale, A. Arredondo, and J. M. McCarthy, "Computer Aided Design of Useful Spherical Watt I Six-bar Linkages," *Proceedings of the ASME 2013 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference*, DET2013-13454, August 4-7, 2013, Portland, Oregon USA.
95. M. M. Plecnik, and J. M. McCarthy, "Synthesis of a Stephenson II Six-bar Function Generator for Eight Precision Positions," *Proceedings of the ASME 2013 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference*, August 4-7, 2013, Portland, Oregon USA.
96. B. Tsuge and J. M. McCarthy, "Synthesis of an n-R robot with four-bar constraining modules," *Proceedings of the ASME 2014 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference*, DET2014-35371, August 17-21, 2014, Buffalo, NY, USA.
97. M. Plecnik and J. M. McCarthy, "Vehicle suspension design based on a six-bar linkage," *Proceedings of the ASME 2014 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference*, August 17-21, 2014, Buffalo, NY, USA.
98. K. H. Sonawale and J. M. McCarthy, "Synthesis of Useful Eight-bar Linkages as Constrained 6R loops," *Proceedings of the ASME 2014 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference*, DETC 2014-35523, August 17-20, 2014, Buffalo New York, USA.
99. B. E. Parrish, J. M. McCarthy, and D. Eppstein, "Automated Generation of Linkage Loop Equations for Planar 1-DoF Linkages, Demonstrated up to 8-bar," *Proceedings of the ASME 2014 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference*, DETC 2014-35263, August 17-20, 2014, Buffalo New York, USA.
100. S. Ghosh, N. P. Robson and J. M. McCarthy, "Geometric Design of a Passive Mechanical Knee Based on Foot Task Geometry Scaling," *Proceedings of the ASME 2015 International Design Engineering Technical Conferences and Computers & Information in Engineering Conference* DETC 2015-46499, August 2-5, 2015, Boston, Massachusetts, USA
101. B. Tsuge and J. M. McCarthy, "Synthesis of a 10-bar Linkage to Guide the Gait Cycle of a Human Leg," *Proceedings of the ASME 2015 International Design Engineering Technical*

- Conferences and Computers & Information in Engineering Conference DETC 2015-47723, August 2-5, 2015, Boston, MA, USA
- 102.K. H. Sonawale and J. M. McCarthy, "Design of Eight-bar Linkages with an Application to Rectilinear Motion," Proceedings of the ASME 2015 International Design Engineering Technical Conferences and Computers & Information in Engineering Conference DETC 2015-47804, August 2-5, 2015, Boston, MA, USA
 - 103.Y. Liu and J. M. McCarthy, "Flexure Design for Eight-bar Rectilinear Motion Mechanism," Proceedings of the ASME 2015 International Design Engineering Technical Conferences and Computers & Information in Engineering Conference DETC 2015-47863, August 2-5, 2015, Boston, MA, USA
 - 104.M. M. Plecnik and J. M. McCarthy, "Controlling the Movement of a TRR Spatial Chain with Coupled Six-bar Function Generators for Biomimetic Motion," Proceedings of the ASME 2015 International Design Engineering Technical Conferences and Computers & Information in Engineering Conference DETC 2015-47876, August 2-5, 2015, Boston, MA, USA
 - 105.M. Plecnik and J. M. McCarthy, "Synthesis of an Inverted Stephenson Linkage to Guide a Point Path," 14th World Congress in Mechanism and Machine Science, Taipei, Taiwan, 25-30 October, 2015. DOI Number: 10.6567/IFTToMM.14TH.WC.OS2.022
 - 106.N. P. Robson, S. Ghosh and J. M. McCarthy, "Simultaneous Geometric Design of Mechanical Fingers for Coordinated Movement," 14th World Congress in Mechanism and Machine Science, Taipei, Taiwan, 25-30 October, 2015. DOI: 10.6567/IFTToMM.14TH.WC.OS2.036
 - 107.Y. Liu and J. M. McCarthy, "Synthesis of Linkages to Trace Plane Curves," *Advances in Robot Kinematics*, 2016 pp 245-253, Springer Proceedings in Advanced Robotics book series (SPAR, volume 4).
 - 108.Y. Liu and J. M. McCarthy, "Design of Mechanisms to Trace Plane Curves," Proceedings of the ASME 2016 International Design Engineering Technical Conferences and Computers & Information in Engineering Conference DETC 2016-596896, August 21-24, 2016, Charlotte, NC, USA, doi: 10.1115/DETC2016-59689
 - 109.Ju Li and J. M. McCarthy, "Singularity Variety of a 3SPS-1S Spherical Parallel Manipulator," Proceedings of the ASME 2016 International Design Engineering Technical Conferences and Computers & Information in Engineering Conference DETC 2016-60416, August 21-24, 2016, Charlotte, NC, USA. doi: 10.1115/DETC2016-60416
 - 110.M. Balta, K. A. Ahmed, P. L. Wang, J. M. McCarthy, and H. E. Taha, "Design and Manufacturing of Flapping Wing Mechanisms for Micro Air Vehicles," AIAA Atmospheric Flight Mechanics Conference, 2017 AIAA Science and Technology Forum and Exposition, 9-13 Jan 2017, Grapevine Texas. <http://dx.doi.org/10.2514/6.2017-0509>
 111. S. Ghosh, N. Robson, J. M. McCarthy, "Design of a Wearable Lower Leg Orthotic Based on Six-bar Linkage," ASME 2017 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference DETC 2017-67837, August 6-9, 2017, Cleveland, OH. doi: 10.1115/DETC2017-67837
 - 112.P. L. Wang and J. M. McCarthy, "Design of a Spatial Six-bar Flapping Wing Mechanisms for Combined Control of Swing and Pitch," Proceedings of the ASME 2017 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference DETC 2017-68266, August 6-9, 2017, Cleveland, OH. doi: 10.1115/DETC2017-68266

113. Y. Liu and J. M. McCarthy, "Design and Manufacture of a Gear-Coupled Serial Chain to Trace the Butterfly Curve," *Proceedings of the ASME 2017 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference DETC 2017-68388*, August 6-9, 2017, Cleveland, OH. doi: 10.1115/DETC2017-68388
114. J. Glabe and J. M. McCarthy, "Five Position Synthesis of a Planar Four-Bar Linkage," *15th IFTOMM World Congress*, June 30-July 4, 2019, Krakow Poland.
115. D. J. K. Abulon and J. M. McCarthy, "Kinematic Modeling of Origami-based Forcep Design," *Proceedings of the ASME 2019 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference, IDETC/CIE 2019 August 18-21, 2019, Anaheim, USA*
116. X. Liu, J. Glabe, H. Wu, C. Wang, and J. M. McCarthy, "Design of Four, Six and Eight-bar Linkages for Rectilinear Movement," *Proceedings of the ASME 2019 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference, IDETC/CIE 2019 August 18-21, 2019, Anaheim, USA*.
117. W. R. Suh, J. M. McCarthy, E. A. Peraza Hernandez, "Efficient Development of Continuum/Compliant Planar Linkage Mechanisms," *Proceedings of the ASME 2019 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference, IDETC/CIE 2019 August 18-21, 2019, Anaheim, USA*.
118. A. Murray and J. M. McCarthy, "Computation of the Developable Form of a Planar Four-bar Linkage," *Proceedings of the 2020 USCToMM Symposium on Mechanical Systems and Robotics*, Springer Nature, 2020. doi: 10.1007/978-3-030-43929-3_16
119. J. Glabe and J. M. McCarthy, "A GPU Homotopy Path Tracker and Endgame for Mechanism Synthesis," *Proceedings of the 2020 USCToMM Symposium on Mechanical Systems and Robotics*, Springer Nature, 2020. doi: 10.1007/978-3-030-43929-3_19
120. D. J. K. Abulon and J. M. McCarthy, "Design Elements Inflatable Origami-based Forceps," *Proceedings of the ASME 2020 International Design Engineering Technical Conferences & Computers in Engineering Conference*, August 16-19, 2020, St. Louis, MO, USA. doi: doi.org/10.1115/DETC2020-22733
121. D. J. K. Abulon, J. Li, and J. M. McCarthy, "Design and Actuation of a Skeleton for a Robotic Fish," *Proceedings of the ASME 2021 International Design Engineering Technical Conferences & Computers in Engineering Conference*, August 17-20, 2021, Virtual Online. doi: 10.1115/DETC2021-69688
122. W. R. Suh, E. A. Peraza-Hernandez, and J. M. McCarthy, "Design of Continuum Mechanisms with Target Motions," *Proceedings of the 2nd USCToMM Symposium on Mechanical Systems and Robotics*, Rapid City, SD, May 19-21, 2022.
123. J. Li, K. Chen, and J. M. McCarthy, "Manufacture of a Folding Continuum Mechanism," *Proceedings of the 2nd USCToMM Symposium on Mechanical Systems and Robotics*, Rapid City, SD, May 19-21, 2022.
124. J. Li, J. Golden, B. E. Johnson, E. Quilligan, V. O. Gardner, C. A. Prietto, and J. M. McCarthy, "Spherical Exoskeleton for the Measurement of Shoulder Movement," *Proceedings of the 2023 CCToMM Mechanisms, Machines, and Mechatronics Symposium*, Quebec City, Quebec, Canada, June 19-20, 2023.

125. J. Li, C. Liu, and J. M. McCarthy, "The Design of a Multi-legged Modular Walking Robot," *Proceedings of the 2023 World Congress on International Federation on the Theory on Machine Science (IFTToMM)*, Tokyo, Japan, November 5-10, 2023.
126. J. Li and J. M. McCarthy, "The Design of a Robotic Rowboat," *Proceedings of the 3rd USCToMM Symposium on Mechanical Systems and Robotics*, Tampa, FL, May 22-25, 2024.
127. J. Li, C. Liu, and J. M. McCarthy, "A Minimally Autonomous Walker," 19th International Symposium on Advances in Robot Kinematics, Ljubljana, June 30 – July 4, 2024.
128. Austin W. R. Suh, and J. M. McCarthy, "Spherical Articulated Drive for a Butterfly Car Door," Paper No. 169757, Proceedings of the ASME 2025 IDETC-CIE, August 17-20, 2025, Anaheim, CA.
129. Nicholas S. Buzby, Austin W. R. Suh, and J. M. McCarthy, "Spherical Pectoral Fin Drive Mechanism for Labriform Swimming," Paper No. 169751, Proceedings of the ASME 2025 IDETC-CIE,, August 17-20, 2025, Anaheim, CA.

Software

1. *Sphinx, 0.4*, (June 1993). Interactive graphics system for the design of spherical 4R mechanisms. Developed using several NSF research grants and distributed free to research institutions to promote design of spatial mechanisms. Universities: MIT, Boston Univ., Purdue Univ., Notre Dame Univ., Univ. of Minn., Univ. of Florida, Univ. of Wisconsin, Milwaukee. Industry: John Deere, Inc.
2. *Sphinx, 1.0*, (September 1994). Interactive graphics system for the design of spherical 4R mechanisms (a detailed revision of version 0.4) distributed to attendees of the "Design of Spatial Mechanisms" Tutorial. September 10, 1994, ASME Design Technical Conferences, Minneapolis, MN. Sponsored by the ASME Mechanisms Committee.
3. *SphinxPC 96* (August 1996). Windows95 based C++ and OpenGL version of Sphinx 1.0 with the added capability to design planar 4R linkages. Distributed to over 50 university and industrial researchers.
4. *SphinxPC 97* (March 1997). A revision of SphinxPC 96, distributed 30 university and industry researchers. Used by students in ME183, Spring 97. Featured in Mechanical Engineering Magazine "Software Exchange," September 1997.
5. *SphinxPC AdCap* (August 1998). Latest revision of SphinxPC 97. Used by students in ME183. Distributed free of charge via Internet.
6. *Synthetica 1.0* (September 2002). Java-based computer aided design system for constrained robotic systems.
7. *Synthetica 2.0* (September 2004). Design system for constrained robotic systems with expanded synthesis routines including a generic synthesis solver.
8. *Mechanism Generator* (August 2010). Approved SolidWorks Add-in for the automated generation of solid models for four-bar and six-bar linkages. Collaboration with Alex Arredondo. Distributed on <http://mechanicaldesign101.com>
9. *Mechanism Generator 1.0, 2.0, 3.0, 4.0, 5.0* (June 2013) Approved SolidWorks Add-in for the automated design of planar and spherical four-bar and six-bar linkages. See videos on <http://mechanicaldesign101.com>
10. *MechGen FG (October 2014)* an iPad and iPhone App that designs a four-bar linkage to coordinate five user-specified input and output angles, known as a function generator. Kaustubh Sonawale and Jeffrey Glabe. The app is distributed through iTunes at <https://itunes.apple.com/us/app/mechgen-fg/id915956170?mt=8>
11. *MechGen Suspension* (March 2015) an iPad App that designs the control arms of an independent vehicle suspension to provide a desired coordination of the wheel lift and

camber angle. Kaustubh Sonawale and Jeffrey Glabe. The app is distributed through iTunes at <https://itunes.apple.com/us/app/mechgen-suspension/id960884317?mt=8>

PRESENTATIONS:

Workshops and Tutorials

Advanced Robot Kinematics Workshop, Linz, Austria, "Motion Optimization of Closed Chain Robotics Systems," September 10-12, 1990. (One of six speakers invited for opening talks, two for each of the three days of the conference).

Workshop on Constraints in Obstacle Avoidance, Parts Mating, and Assembly Verification, presented at the 1990 IEEE Robotics and Automation Conference, Cincinnati, OH, May 13-18, organizer: J. M. McCarthy, additional speakers: B. Ravani (UC Davis), S. DeSa (Carnegie-Mellon). (35 attendees)

Workshop on Kinematics and Robotics, Bad Munster am Stein--Ebernberg, Germany, "Avoiding Singular Positions in the Design of Spherical 4R Mechanisms," July 12-17, 1992. (One of 31 invited speakers).

IMA Workshop on Robotics, J. Baillieul, S. Sastry, organizers, "Planning Spatial Movement Using Constraint Manifolds," Institute for Mathematics and its Applications, University of Minnesota, Jan. 25-29, 1992. (One of 16 invited speakers).

Conference on Geometry, Kinematics, and Robotics, Seggau, Austria, "Dual Quaternions and the Spatial Triangle Associated with the Composition of Two Displacements," July 4-9, 1993, (One of 2 speakers invited from the US).

Tutorial : Design of Spatial Mechanisms, 1994 ASME Design Engineering Technical Conferences, Minneapolis, MN, Sept. 1994, sponsored by the Mechanisms Committee, organizer: J. M. McCarthy. (19 attendees)

Tutorial : Spatial Mechanism Design, 1996 ASME Design Engineering Technical Conferences, Irvine, CA, Aug. 1996, sponsored by the Mechanisms Committee, organizer: P. Larochelle.

Mechanisms Committee Research Workshop, (organizer w. Sridar Kota, Univ. of Michigan) 1998 ASME Design Engineering Technical Conferences, Atlanta, GA, Sept. 14 and 15, 1998, sponsored by the Mechanisms Committee, 60 attendees.

Workshop on Robot Mechanics, Versailles, France, "Finite Position Synthesis of RRSS Robots," July 12, 13, 2001. (One of eight invited speakers.)

Workshop on Metrology and Standards Needs in Medical Robotics, National Institute of Standards and Technology, "Xray Image Guided Robotic Radiosurgery," September 10, 2001. (One of five invited speakers.)

Tutorial : Robot Design using Mechanism Synthesis Theory, 2004 ASME Design Engineering Technical Conferences, Salt Lake City, UT, Oct. 2, 2004, sponsored by the Mechanisms Committee, organizer: J. M. McCarthy, 13 attendees.

Tutorial : Robot Design using Mechanism Synthesis Theory, 2005 IEEE International Conference on Robotics and Automation, Barcelona, Spain, April 22, 2005, organizer: J. M. McCarthy, 17 attendees.

Geometric Methods in Mechanism Science, (GeMS '07), University of Notre Dame, March 1-7, 2007, organizers: J. M. McCarthy, Charles Wampler, and Andrew Somese. 40 attendees.

NSF Workshop on 21st Century Kinematics, in coordination with the 2012 ASME Design Engineering Technical Conferences, organizer: J. M. McCarthy, 70 attendees.

Short Courses

Applications of Quaternions, Dual Numbers and Screw Theory in Mechanical Design, National Cheng Kung University, Tainan, Taiwan, organized by Prof. Ming June Tsai, August 8-12, 1992. Lectured 18 hrs. of the 54 hr. course. Other speakers were Prof. J. R. Philips (University of Sydney) and Prof. A. T. Yang (University of California, Davis)

Constraint Manifolds and Spatial Movement, McGill University, organized by Prof. J. Angeles, December 10-14, 1992, Lectured 7 hrs.

Kinematics and Dynamics of Mechanisms and Manipulators, Course 2.05, Department of Mechanical Engineering, Massachusetts Institute of Technology, with Prof. S. Dubowsky, Lectured 22.5 hrs of 45 hr. course, Sept. 10-Dec. 17, 1992.

Geometric Design of Robots, Beijing University of Posts and Telecommunications, organized by Prof. Qizheng Liao. September 6-14, 1999. Lectured 11 hrs.

Conference Presentations

"The Curvature Theory of Line Trajectories in Spatial Kinematics," ASME Mechanisms Conference, Los Angeles, CA, October 1982, (w. B. Roth).

"The Instantaneous Properties of Trajectories Generated by Planar, Spherical and Spatial Rigid Body Motion," ASME Mechanisms Conference, Los Angeles, CA, October 1982, (w. B. Roth).

"Computer Algebra and Computational Geometry," Panel Session on Computational Geometry, ASME Computers in Engineering Conference, Las Vegas, NV, August 1984.

"The Generalization of Line Trajectories in Space to the Trajectories of Great Circles on a Hypersphere," ASME Mechanisms Conference, Boston, MA, October 1984.

"Differential Kinematics of Spherical and Spatial Motions Using Kinematic Mapping," ASME Winter Annual Meeting, Applied Mechanics Division, Miami, FL, October 1985, (w. B. Ravani).

"The Instantaneous Kinematics of Line Trajectories in Terms of a Kinematic Mapping of Spatial Rigid Motion," ASME Mechanisms Conference, Columbus, OH, October 1986.

"On the Scalar and Dual Formulations of the Curvature Theory of Line Trajectories," ASME Mechanisms Conference, Columbus, OH, October 1986.

"The Design of a Three Jointed Two Degree-of-freedom Mechanical Finger Based on the Human Finger," The Applied Robotics Conference, sponsored by Oklahoma State University, St. Louis, MO., November 1986, (w. S. O. Leaver and J. E. Bobrow).

"The Hypersphere and Dual Hypersphere as Configuration Spaces of Three Link Manipulators," Proceedings of the IASTED International Symposium on Robotics and Automation, May 27-29, 1987, Santa Barbara, CA.

Invited Presentations, Educational and Governmental Institutions:

1982 "Planar and Spatial Rigid Motion as Special Cases of Spherical and 3-Spherical Motion," Department of Mechanical Engineering, University of California, Davis, CA, February 1982.

"Planar and Spatial Rigid Motion as Special Cases of Spherical and 3-Spherical Motion," Department of Mechanical Engineering and Applied Mechanics, University of Pennsylvania, Philadelphia, PA, March 1982.

1985 "The Image Curves of Planar, Spherical and Spatial Rigid Motion," Mechanical Engineering Seminar, University of Southern California, Los Angeles, CA, February 14, 1985.

"Mathematical Methods for Manipulator Kinematics," Joint M.E.M. and E.C.E. Depts. Robotics Seminar, Drexel University, Philadelphia, PA, February 28, 1985.

"The Image Curves of Spherical and Spatial Rigid Body Motion," MEAM Colloquium, University of Pennsylvania, Philadelphia, PA, April 4, 1985.

"Differential Kinematics in an Image Space of Spherical Motion," General Motors Research Laboratories, Power Systems Research Dept. (Roland Maki), Warren, MI, October 14, 1985.

1986 "Engineering Opportunities in Robotics," presented at the 28th Annual Science-Engineering-Technology Career Day, February 15, 1986, at Drexel University, sponsored by the Engineering and Technical Societies Council of Delaware Valley.

"Mechanism Design Research and the Image Curves of Rigid Body Motion," Seminar in the Department of Mechanical Engineering (Prof. J. Bobrow), University of California, Irvine, February 21, 1986.

"The Cutting Edge of Robotics Research," Delaware Valley Conference on Engineering and Technology, February 28, 1986, at the Valley Forge Convention Center, sponsored by the Engineers' Club of Philadelphia.

"Mechanical Design and Robotics at the University of Pennsylvania," presentation to graduate students in Advanced Mechanisms Course (Prof. D. Yang), University of California, Los Angeles, March 6, 1986.

"Basic Studies in the Design of Mechanisms and Manipulators," Seminar in the Department of Mechanical Engineering (Prof. B. Ravani), University of Wisconsin, Madison, March 21, 1986.

"Research Issues in Mechanical Design and Robotics," invited presentation, Department of Mechanical Engineering (Prof. W. Milestone), University of Wisconsin, Madison, May 7, 1986.

1987 "The Hypersphere and Dual Hypersphere as Image Spaces of Spherical and Spatial Rigid Body Motion," Seminar in Robotics, Department of Mechanical and Environmental Engineering (Prof. T. Kokkinis), University of California, Santa Barbara, February 19, 1987.

"The Design of a Three Jointed Two Degree-of-freedom Mechanical Finger Based on the Human Finger," Distinguished Lecture Series of the Wisconsin Center for Space Automation and Robotics (WCSAR), Madison, WI, March 2, 1987.

"The Hypersphere and Dual Hypersphere as Image Spaces of Spherical and Spatial Rigid Body Motion," Seminar in Robotics, Department of Mechanics (Prof. B. Ravani), University of Wisconsin, Madison, March 3, 1987.

"Robots: Its a long way from what they can do to what we want them to do," Professional seminar (Carl Ingalls), Scott Paper Co., Philadelphia, PA. June 18, 1987.

"The Hypersphere and Dual Hypersphere as the Configuration Manifolds of a Manipulated Workpiece: Part 1. The Hypersphere; Part 2. The Dual Hypersphere," Summer Program on Robotics, Week 3-Robot Manipulation (organized by Prof. M. Mason CMU), at the Institute for Mathematics and its Applications (IMA) University of Minnesota, Minneapolis, August 17-21, 1987.

1988 "The Analysis of Cooperating Planar Robot Arms in the Image Space of the Workpiece," UC, Irvine, Seminar in the Department of Mechanical Engineering, Feb. 5, 1988.

1989 "The Analysis of Cooperating Planar Robot Arms in the Image Space of the Workpiece," UC, Santa Barbara (Prof. B. Paden), Seminar in the Department of Mechanical Engineering, UCI, April 19, 1989.

"The Analysis of Cooperating Planar Robot Arms in the Image Space of the Workpiece," UC, Davis, Seminar for the Robotics group (Prof. B. Ravani), July, 1989.

- 1990 "Motion Optimization of Closed Chain Robot Systems," Seminar in the Department of Aerospace and Mechanical Engineering (Prof. M. Stanisic), Notre Dame, IN, May 1990.
- "Motion Optimization of Closed Chain Robot Systems," Seminar in the Department of Mechanical Engineering, New Jersey Institute of Technology, Newark, NJ, October 24, 1990
- "The Analysis of Cooperating Planar Robots in the Configuration Manifold of the Workpiece," Seminar in the Department of Mechanical Engineering, Drexel University, Philadelphia, PA, October 25, 1990.
- 1992 "Planning Spatial Movement Using Constraint Manifolds," Boston University, Robotics and Control Seminar, Department of Mechanical Engineering (Prof. P. Dupont), Oct. 30, 1992.
- "Planning Spatial Movement Using Constraint Manifolds," Midwest Mechanics Symposium, Prof. P. G. Kessel, University of Wisconsin, organizer:
- Tour A, November 3-6, 1992:
- Notre Dame University, Dept. Mechanical and Aerospace Eng., Prof. M. Stanisic,
 Illinois Institute of Technology, Dept. Mechanical and Aerospace Eng., Prof. M. Achaya,
 University of Illinois, Urbana-Champaign, Dept. Theo. and Appl. Mech., Prof. D. Stewart,
 Purdue University, School of Mechanical Engineering, Prof. J. S. Bolton,
- 1993 "Planning Spatial Movement Using Constraint Manifolds," Midwest Mechanics Symposium, Prof. P. G. Kessel, University of Wisconsin, organizer:
- Tour B, April 4-9, 1993:
- University of Michigan, Dept. of Mechanical Engineering, Prof. S. Kota,
 Michigan State University, Dept. of Material Science and Mechanics, Prof. A. Lee,
 University of Wisconsin, Dept. of Eng. Mechanics and Astronautics, Prof. J. Downer,
 University of Minnesota, Dept. of Aerospace Engineering and Mechanics, Prof. A. Alving.
- "Research in Robotics at the University of California, Irvine" Seminar at the Robotics Laboratory (Dr. Jadran Lenarcic), Josef Stefan Institute, Ljubljana, Slovenia, , July 10, 1993.
- "Cooperating Robots and Constraint Manifolds," Seminar at the Institute for Mechanics (o.Univ. Prof. Dr. K. Wohlhart), Technical University, Graz, Austria.
- 1994
- "Five Position Synthesis of Planar and Spherical RR and Spatial CC Dyads," Institute for Mechanics (o.Univ. Prof. Dr. K. Wohlhart), Technical University, Graz, Austria, July 1, 1994.
- "Planning Spatial Movement Using Constraint Manifolds," INRIA, Sophia-Antipolis, France (organized by Jean Pierre Merlet), July 11, 1994.
- "Planning Spatial Movement Using Constraint Manifolds," Ladoratoire d'Informatique de Robotique et de Microelectronique de Montpellier (LIRMM), France (organized by Pierre Dauchez), July 12, 1994.
- "Five Position Synthesis of Planar and Spherical RR and Spatial CC Dyads," Seminar at Iowa State University, Dept. of Mechanical Engineering, Sept. 1994 (Prof. Judy Vance).
- 1995
- "Dual Quaternions and Spatial Linkages," Seminar in the Dept. of Mechanical Engineering, Department of Mechanical Engineering, University of Michigan. (host: Panos Papalambros) January, 1995.
- "Dual Quaternions and the Design of Spatial Mechanisms and Cooperating Robots," Seminar in the Dept. of Mechanical Engineering, University of Victoria, (host: Ron Podhorodeski), June 17, 1995.
- "Dual Quaternions and the Design of Spatial Mechanisms and Cooperating Robots," Seminar in the Dept. of Mechanical Engineering, Columbia University (host. Michael Lai), June 26, 1995.
- 1998

"Geometric Design of Reduced Complexity Robotic Systems," Seminar in the Dept. of Mechanical Engineering, University of Pennsylvania (host. Jim Ostrowski), Sept. 17, 1998.

1999

"Geometric Design of Robots," Seminar in the Dept. of Mechanical and Aerospace Engineering, Seoul National University (host. Chongwoo), Sept. 16, 1999.

"The Geometric Design of Spatial Linkages and Robotic Systems," Seminar in the Dept. of Mechanical and Aerospace Engineering, (host. Bahram Ravani), UC Davis, Oct. 28, 1999.

2000

"The Geometric Design of Spatial Linkages and Robotic Systems," Seminar in the Dept. of Mechanical and Aerospace Engineering, (host. Jami Shah), Arizona State Univ., Apr. 14, 2000.

"The Geometric Design of Spatial Linkages and Robotic Systems," ECE 294 Colloquium, Dept. of Electrical and Computer Engineering (host. Harut Barsamian), UCI, May 31, 2000.

2002

"Dual Quaternion Synthesis of Constrained Robotic Systems," Seminar in the Dept. of Mechanical and Aerospace Engineering, (host. Judy Vance), Iowa State Univ., Nov. 18, 2002.

2003

"Dimensional Synthesis of the Bennett Mechanism," Celebratory Symposium for Bernard Roth (Ken Waldron and Steve Dubowsky, organizers), Stanford University, June 21, 2003.

2004

"Geometric Design of Mechanically Reachable Surfaces Using Polynomial Homotopy," Department of Mathematics, (host. Tangan Gao), California State University Long Beach, February 27, 2004.

"Geometric Design of Mechanically Reachable Surfaces Using Polynomial Homotopy," Department of Mechanical Engineering, (host. Mohamed Trabia), University of Nevada, Las Vegas, May 29, 2004.

2006

"Kinematic Synthesis of Mechanisms," Research Seminar, University of Bologna, Italy, (host. Vincenzo Parenti-Castelli) July 5, 2006.

"Kinematic Synthesis of Constrained Robotic Systems," Department of Mechanical and Aerospace Engineering, (host. Venkat Krovi), University at Buffalo (SUNY), Buffalo, NY, November 6, 2006.

"Kinematic Synthesis of Constrained Robotic Systems," Department of Mechanical and Aerospace Engineering, (host. Qiode Ge), Stony Brook University (SUNY), Stony Brook, NY, November 8, 2006.

2007

"Geometric Design of Linkage Systems," Institut für Grundlagen der Bauingenieurwissenschaften Arbeitsbereich für Geometrie und CAD, (host: Manfred Husty) University of Innsbruck, March 6, 2007.

"Major Design Projects and Engineering Education at UCI," Faculty Retreat for the Department of Electrical Engineering and Computer Science, University of California, Irvine, September 17, 2007 (host: Jean-Luc Gaudiot)

"Engineering and Product Design," for the UCI Design Alliance Symposium: *The Book, the Brand and the Box*. University of California, Irvine, November 2, 2007 (host: Julia Lupton)

2009

"Kinematic Synthesis of Complex Articulated Systems," Research Seminar, University of Texas, (host. Delbert Tesar and Vijay Srinivasan), March 5, 2009.

“Kinematic Synthesis of Complex Articulated Systems,” Mechanical Engineering Department Seminar, University of Maryland, Baltimore Campus (host, HaiJun Su), October 16, 2009.

“Kinematic Synthesis of Complex Articulated Systems,” Mechanical Engineering Department Seminar, Pennsylvania State University (host, H. J. Sommer), October 20, 2009.

2010

“Probability of Usable Solutions in Kinematic Synthesis,” Lecture, Mini-symposium on Kinematics and Numerical Algebraic Geometry, (Charles Wampler, organizer), SIAM Conference, Pittsburgh, PA, June 13-14-2010

“Opportunities and Challenges in Kinematic Synthesis,” Seminar, Beijing Jiaotong University, (host,), Beijing, China, July 29, 2010.

“Opportunities and Challenges in Kinematic Synthesis,” Seminar, Tsinghua University, (host,), Beijing, China, August 1, 2010.

“Opportunities and Challenges in Kinematic Synthesis,” Seminar, Tianjin University, (host, Tian Huang), Tianjin, China, August 1, 2010.

“Opportunities and Challenges in Kinematic Synthesis,” Seminar, Yanshan University, (host, Yongsheng Zhao, Dean of Engineering), Qinhuangdao, China, August 2, 2010.

2011

“Formula SAE: Intercollegiate Racecar Competitions and Education,” Lunch presentation, Rotary Club of Orange, host James Q. Gilmore, September 8, 2011.

“Formula SAE: Intercollegiate Racecar Competitions and Education,” Lunch presentation, Friars Club of Orange County, host Donald A. Hunsberger, October 7, 2011.

2012

“OC Racecar Engineering: Competition and Education,” Invited speaker, California State University, Fullerton, Senior Design Class, host: Nina Robson, September 27, 2012.

“OC Racecar Engineering: Competition and Education,” Invited speaker, University High School Engineering Club, host: James Xue, September 27, 2012.

2015

“Kinematic Synthesis,” Invited speaker, Mechanical Engineering Graduate Student Research Symposium, University of California, Riverside, May 14, 2015.

2016

“Algebraic Synthesis of Mechanisms and Robotics,” Seminar Beijing Jiaotong University, Beijing, China, September 17, 2016. Host Sheng Guo.

“Algebraic Synthesis of Mechanisms and Robotics,” Seminar Beihang University (formerly BUAA), Beijing, China, September 18, 2016. Host Xilun Ding.

“Algebraic Synthesis of Mechanisms and Robotics,” Seminar Tsinghua University, Beijing, China, September 18, 2016. Host Jing-Shan Zhao.

“Kinematic Synthesis and Computer Aided Invention,” Seminar Beijing University of Posts and Telecommunications, Beijing, China, September 19, 2016. Host Duanling Li.

“Algebraic Synthesis of Mechanisms and Robotics,” Seminar Dalian University of Technology, Dalian, China, September 21, 2016. Host Delun Wang.

“Algebraic Synthesis of Mechanisms and Robotics,” Seminar Tianjin University, Tianjin, China, September 22, 2016. Host Yan Chen.

“Algebraic Synthesis of Mechanisms and Robotics,” Seminar Xidian University, Xi’An, China, September 24, 2016. Host Guimin Chen.

2017

“Design of Linkage Systems to Draw Specified Curves,” Invited Presentation, Polynomials, Kinematics, and Robotics, A Conference Honoring Charles Wampler, University of Notre Dame, June 5-7, 2017.

"Design of Linkage Systems to Draw Specified Curves," Seminar Department of Aerospace and Mechanical Engineering, University of Southern California, September 20, 2017. S. K. Gupta, Host.

2018

"Design of Linkage Systems to Draw Specified Curves," Seminar General Robotics, Automation, Sensing and Perception Laboratory, University of Pennsylvania, May 8, 2018. Daniel Lee, Host.

"Design of Linkage Systems to Draw Specified Curves," Seminar Robotics and Automation Laboratory, Beijing Posts and Telecommunications, May 18, 2018. Duanling Li, Host.

"Kinematic Synthesis," Class Lecture, Tennessee Tech, October 9, 2018. Kwon-lon Ting, Host.

"Computer Aided Invention of a Linkage System to Draw a Given Curve," Seminar, Tennessee Tech University, October 9, 2018. Kwon-lon Ting, Host.

"Computer Aided Invention of a Linkage System to Draw a Given Curve," Seminar, Oak Ridge National Labs, October 10, 2018. Jy-An Wang, Host.

"Computer Aided Invention of a Linkage System to Draw a Given Curve," Seminar, University of Tennessee, Knoxville, October 10, 2018. Brett Compton, Host.

2019

"Computer Aided Design of a Mechanical System to Draw a Curve," Invited Presentation, Sigma Xi Research Society of Orange County, November 19, 2019. Peter Kurzhals, Host.

2020

"Computer Aided Invention of a Linkage System to Draw a Given Curve," Invited Seminar, Department of Mechanical Engineering, California Polytechnic University, San Luis Obispo, September 22, 2020, Prof. Saeed Niku, Host.

2021

"Mechanical Walking Robots," Invited Seminar, Department of Mechanical Engineering, California Polytechnic University, San Luis Obispo, September 28, 2021, Prof. Saeed Niku, Host.

2022

"Mechanical Walking Robots," Invited Seminar, Department of Mechanical Engineering, California Polytechnic University, San Luis Obispo, September 20, 2022, Prof. Saeed Niku, Host.

Invited Presentations at Professional Meetings:

1996 "Teamwork and Vision: The University, Industry and the Professional Society," Keynote Lecture, Professional Development Seminar on Mechatronics and Automation, by the Orange County Chapter of the American Society of Mechanical Engineers, Flour Daniel Complex, April 27, 1996

2005 "The Kinematic Synthesis of Mechanisms," Keynote Lecture, 2005 ASME International Design Engineering Technical Conferences, Mechanisms and Robotics Conference, Long Beach, CA, Sept. 27, 2005.

2007 "Geometric Design of Linkage Systems," Invited Speaker, Workshop on Geometric Methods in Mechanism Science (GeMS '07), (host: Andrew Somease) University of Notre Dame, March 4, 2007

2009 "Task Centered Design of Complex Articulated Systems," Invited Speaker, Chinese Mechanical Engineering Society Workshop on Task Centered Design of Mechanisms and Robotic Systems, Shanghai Jiao Tong University, August 14, 2009 (host Prof. Feng Gao)

- "Beyond Four-bar Linkages: A Design Strategy for Six and Eight-bar Linkages and More," Keynote Lecture, 8th International Chinese Conference on Applied Mechanisms and Machine Science, Wuhan, China, August 18, 2009.
- "Kinematic Synthesis of Complex Articulated Systems," Plenary Lecture, Chinese Society of Mechanism and Machine Theory (host, Zhang Hua Fong, Dean National Chung Cheng University), Taiwan, November 6, 2009.
- 2010 "Opportunities and Challenges in Kinematic Synthesis," Keynote Lecture, Chinese Conference on Mechanism and Machine Science, (host, Feng Gao), Shanghai, China, July 22, 2010.
- "Kinematic Synthesis of Complex Articulated Systems," Lecture, Indo-US Workshop on Product Design – Impact from Research to Education to Practice. (host, P. Radhakrishnan Director, PSG Institute of Advanced Studies, Coimbatore, India), March 15-17, 2010.
- "Opportunities and Challenges in Kinematic Synthesis," Lecture, Award Ceremony for Certified Visiting Scholar, Beijing University of Posts and Telecommunications, (host, Qizheng Liao), Beijing, China, July 27, 2010.
- 2011 "The Task Specification Problem in Kinematic Synthesis," Plenary Lecture, International Conference on the Theory of Mechanisms and Machine Systems, (IFTOMMS), Guanajuato, Mexico, June 19-22, 2011.
- "Acceptance Speech for Mechanisms and Robotics Award," Mechanism and Robotics Lunch, 2011 Design Engineering Technical Conference, Washington, DC.
- 2012 "Computer-aided Invention of Mechanical Movement," Invited speaker, 10th International Conference on Frontiers of Design and Manufacturing (ICFDM 2012), Chongqing, China, June 11, 2012.
- 2014 "Synthesis of Planar Six-bar and Eight-bar Linkages," Invited speaker, Kinematics Summer School, University at Buffalo, Buffalo, NY, August 15-16, 2014, organized by Carl Nelson and Anurag Purwar.
- 2016 "Kinematic Synthesis and Computer Aided Invention," 2016 Changzhou International Technology Communication Conference on Robotics and Intelligent Manufacturing, September 27, 2016. Host Huiping Shen, Changzhou University.
- "Algebraic Synthesis of Mechanisms and Robotics," The Second Workshop on Fundamental Issues and Novel Methods in Mechanism Theory, September 28, 2016. Host Huiping Shen, Changzhou University.
- 2017 "Design of Robotics Systems to Draw Specified Curves," Invited Presentation, Emerging Robotics Technology, IEEE International Conference on Robotics and Automation, Singapore, May 30, 2017. Gim Song Soh, Host.
- 2019 "A Project Based Approach to Kinematic Synthesis," Invited Presentation, Kinematics Summer School sponsored by the ASME Mechanisms and Robotics Technical Committee provided in coordination with the 2019 ASME International Design Engineering and Technical Conferences, Anaheim, CA. Prof. Anurag Purwar, organizer.
- 2020 "Mechanical Walkers as Parallel Mechanisms," Invited Presentation, Future Directions, challenges and opportunities on R&D of Parallel Mechanism/Robot/Machines. Prof. Yan Jin, organizer.
- 2021 "Design of Leg Mechanisms for Mechanical Walking Robots," Keynote Presentation, 2021 Australasian Conference on Robotics and Automation, Dec 5, 2021, Prof. Elahe Abdi, host.
- 2023 "Design of Multi-Legged Modular Robot," Advanced International Forum II, December 19, 2023, SUSTech Institute of Robotics, Prof. Jian Dai organizer.
- 2024 "Quaternions in Kinematics" Keynote Presentation, 2024 MSR-Romansy Symposium, St. Petersburg, FL, Prof. Pierre Larochelle organizer.

TEACHING:

University of California, Irvine:

<u>Fall Quarter.</u>	<u>Winter Quarter.</u>	<u>Spring Quarter.</u>
24/25 Baja, EV, Solar Car I Spatial Mech Des. Six Capstone Projects	Baja, EV, Solar Car II Robotics Des. of Walking Robots	Baja, EV, Solar Car III CADes. of Mechanisms Fab of Walking Robots
23/24 Racecar Eng I Spatial Mech Des. Capstone Design	Racecar Eng II Robotics Des. of Walking Robots	Racecar Eng III CADes. of Mechanisms Fab of Walking Robots
22/23 Racecar Eng I Spatial Mech Des. Capstone Design	Racecar Eng II Robotics Des. of Walking Robots	Racecar Eng III CADes. of Mechanisms Fab of Walking Robots
21/22 Racecar Eng I Spatial Mech Des. Capstone Design	Racecar Eng II Robotics Des. of Walking Robots	Racecar Eng III CADes. of Mechanisms Fab of Walking Robots
20/21 Racecar Eng I Spatial Mech Des. Capstone Design	Racecar Eng II Robotics Des. of Walking Robots	Racecar Eng III CADes. of Mechanisms Fab of Walking Robots
19/20 Racecar Eng I Spatial Mech Des.	Racecar Eng II Robotics Des. of Walking Robots	Racecar Eng III CADes. of Mechanisms Fab of Walking Robots
19/20 Racecar Eng I Spatial Mech Des.	Racecar Eng II Robotics Des. of Walking Robots	Racecar Eng III CADes. of Mechanisms Fab. Walking Robots
18/19 Racecar Eng I Spatial Mech Des.	Racecar Eng II Robotics	Racecar Eng III CADes. of Mechanisms
17/18 sabbatical	sabbatical Stanford ME322 Kin Synthesis (Stanford University)	sabbatical
16/17 Racecar Eng I Spatial Mech Des.	Racecar Eng II Robotics	Racecar Eng III Theory of Machines
15/16 Racecar Eng I Elec Racecar Eng. I Spatial Mech Des.	Racecar Eng II Elec Racecar Eng. II Robotics	Racecar Eng III Elec Racecar Eng. III Theory of Machines
14/15 Racecar Eng I Elec Racecar Eng. I Spatial Mech Des.	Racecar Eng II Elec Racecar Eng. II Theoretical Kinematics	Racecar Eng III Elec Racecar Eng. III Theory of Machines
13/14 Racecar Eng I Elec Racecar Eng. I Spatial Mech Des. Spec. Topic: Clifford Alg. Grad. Racecar Engr.	Racecar Eng II Elec Racecar Eng. II Comp. Aided Des of Mech.	Racecar Eng III Elec Racecar Eng. III Theory of Machines
12/13 Racecar Eng I Elec Racecar Eng. I Spatial Mech Des.	Racecar Eng II Elec Racecar Eng. II Comp. Aided Des of Mech.	Racecar Eng III Elec Racecar Eng. III Theory of Machines
11/12 Racecar Eng I Elec Racecar Eng. I	Racecar Eng II Elec Racecar Eng. II	Racecar Eng III Elec Racecar Eng. III

10/11	Robotics Proj. Engr. 1A Racecar Eng I	Linkage Des. Spatial Mech Design Racecar Eng II	Linkage Des. Theory of Machines Racecar Eng III
09/10	CADes. of Mechanisms Proj. Engr. 1A Racecar Engineering I	Theoretical Kinematics Racecar Engineering II	Theory of Machines Racecar Eng III
08/09	Robotics Racecar Eng	Advanced Mech Design Formula Hybrid	Theory of Machines Formula Hybrid
07/08	CADes. of Mechanisms FSAE: Design	Theoretical Kinematics FSAE: Manufacture Formula Hybrid A	Theory of Machines FSAE: Test Formula Hybrid B
06/07	sabbatical Eng. Project Dev. A	Spatial Mech Design Eng. Project Dev. B XGR Car Design	Theory of Machines Eng. Project Dev. C XGR Construction
05/06	Robotics Eng. Project Dev. A	Eng. Project Dev. B XGR Car Design	Theory of Machines Eng. Project Dev. C XGR Construction Theo Kinematics
04/05	CADes. of Mechanisms Eng. Project Dev. A	Spatial Mechanism Design Eng. Project Dev. B	Theory of Machines Eng. Project Dev. C Protein Kinematics
03/04	Algebraic Kinematics Eng. Project Dev. A	Eng. Project Dev. B	Theory of Machines Eng. Project Dev. C Theo Kinematics
02/03	CAD of Mechanisms Geo Meth Mechanics Eng. Des. in Industry	Spatial Mechanism Design Mgmt Design Innovation	sabbatical
01/02	Theo. Kinematics	Robotics	Theory of Machines Eng. Des. in Industry
00/01	CADes. of Mechanisms Eng. Des. in Industry	Spatial Mechanism Design	Theory of Machines
99/00	Alg Geo in Kinematics Eng. Des. in Industry	Robotics Eng. Des. in Industry	Theory of Machines Eng. Des. in Industry
98/99	Theory of Machines Robotics Eng. Des. in Industry	Eng. Des. in Industry	CAD of Mechanisms Eng. Des. in Industry
97/98	Theory of Machines Eng. Des. in Industry	Spatial Mechanism Design	Diff. Kinematics Eng. Des. in Industry
96/97	Theory of Machines Eng. Des. in Industry	Intro. Theo. Kinematics	CAD of Mechanisms Eng. Des. in Industry
95/96	Eng. Des. in Industry	Spatial Mechanism Design	Intr. Theo. Kinematics
94/95	Appl. Mech: Statics CADes. of Mechanisms Honors Prog. Seminar	sabbatical Eng. Des. in Industry	Intr. Theo. Kinematics Eng. Des. in Industry
93/94	Appl. Mech: Statics Intr. Theo. Kinematics	Differential Kinematics Eng. Des. in Industry	CADes. of Mechanisms Eng. Des. in Industry
92/93	sabbatical	Appl. Mech: Statics Adv. Mechanism Design	Elem. Dynamics (E80)

91/92	Design of Mechanisms	Appl. Mech: Statics Intr. Theo. Kinematics	Senior Design C
90/91	Grad. Dynamics		Senior Design C Robotics
89/90	Senior Design A		Senior Design C Robotics
88/89	Senior Design A	Grad. Diff. Geometry	Senior Design C Robotics
87/88	Senior Design A	Grad. Diff. Geometry	Senior Design C Robotics
86/87	Kinematics of Mach.	Grad. Kin. and Robotics	Senior Design C

University of Pennsylvania:

	<u>Fall Semester.</u>	<u>Spring Semester.</u>
86/87	Graduate Theoretical Kinematics Kinematics of Machinery	Graduate Kin. and Rob. (w. R. Paul)
84/85	Adv. Topics in Kinematics Kinematics of Machinery	Elementary Dynamics
83/84	Graduate Advanced Calculus	Elementary Dynamics
82/83		Elementary Dynamics Kinematics of Machinery (w. B. Paul)

Loyola Marymount University:

	<u>Fall Semester.</u>	<u>Spring Semester.</u>
82/83	Kinematics of Machinery Solid Mechanics Lab (w. G. Blaine) Graduate Numerical Analysis Introductory Computer Programming (Graphics)	(moved to Univ. of Pennsylvania)
81/82	Kinematics of Machinery Solid Mech Lab (w. G. Blaine) Graduate Numerical Analysis Statics	Elementary Dynamics (2 sections) Heat Transfer for Electrical Engineers
80/81	Kinematics of Machinery Solid Mech Lab (w. G. Blaine) Graduate Numerical Analysis	Elementary Dynamics (2 sections) Graduate Dynamics

Engineering Design in Industry Projects

- "Titanium Matrix Composite Piston Design," Juan Loera, Vincent Chiangtong, Conrado Galamgam, Tu Tran, for Parker Aerospace. Spring 98
- "Part Placement in Surface Mount Tech Line," Mark Setele, Tony Shen, Matthew Yacono, for Toshiba America Information Systems. Spring 98
- "Filter Press Modeling," Sergio Flores, Michael Mallari, Meric Wank, for Pacific Press. Spring 98
- "Air Motor Design for a High Speed Dental Drill"—Mai Bui, Jun Canaveral, Monish Doshi, David Perales, Ernesto Villasenor, for Micro Motors, Inc. Fall 98
- "High Volume Manufacturing of Gold Dot Miniature Mezzanine Interconnects," Jeff Chandsawangbhuwana, Charlie Chang, Sio Fu, Sabina Lin, for Packard Hughes Interconnect, Inc. Winter 99
- "No Tools, No Training Connector Development," Monish Doshi, Gus Monico, Marc Worrel, for Packard Hughes Interconnect, Inc. Winter 99

"Hyper-Gravity Exercise System," Hiram Channell, Maria Godoy, Khiet Le, Raymond Le, Shelly Natarnicola, Eric Phan, for UCI Program in Gravitational Biology. Spring 99

"Fine Wire Tensioner," Daniel Carpio, Ricardo Chavez, Manuel Salguero, Vincent Seah, Jung-Sik Moon, for Orthodyne Electronics, Inc. Spring 99

"Single User Radar Speed Detector," Billy Lee, Billy Yim, Omar Miranda, Michael Bledl, Jay Chen, for Road and Track Magazine. Spring 99

"Hair Graft Extraction Tool," Brian Kaino, Joe Luo, Mark Hermanto, Michael Kondo, for Pioneer Medical Inc. Fall 99

"Environmentally Friendly Packaging," Patrick Couch, Jose Tong, Eric Martinson, Jeong Gim, for Toshiba America Information Systems. Fall 99

"In-Line Hydraulic Fluid Particulate Detector," Jon Dannenberg, Derek Drenke, Emil Krapetian, Arnold Tuason, for Eaton Corp. Winter 2000

"Aerospace Hydraulic Project," Sun Gov, Ryan Kelly, Thanh Nguyen, Terrence Yao, for Parker Aerospace, Inc. Winter 2000

"Loading Stem-Sleeve Rivet Assemblies into the MS Press," Carlos Sotelo, Claude Vol, Matthew Rickard, Chris Jung, for Cherry Textron Inc. Spring 2000

"Quality Cutting of Pericardial Tissue," Panda Chandsawangbhuwana, Ignacio Diaz, Charles Huang, Eugene Kwak, for Edwards Lifesciences, Inc. Spring 2000

"Emerging Markets for Gold Dot Technology," John Luong, Vu Minh Phi, Budiarto the, In Mo Yeo, for Packard Hughes Interconnect, Fall 2000.

"The Allowance Calculator," Joanne Francisco, Kristine Gamatero, Patusa Papartasse and Yu How Low, for a private inventor, Spring 2002.

Senior Projects

97-98 "Deployable Accessories for Quadriplegics," Scott Cohen, Monish Doshi, Mark Setele, Tony Shen, Matthew Yacono.

98-99 "Human Powered Vehicle, " Jun Canaveral, Jeff Chandasawangbhuwana, Hiram Channell, Sio Fu, Khiet Le, Izlay Mercankaya

2002-03 Mini-Baja race car. Demobilizer BattleBot. Battle-Zot BattleBot.

2003-04 Mini-Baja racecar. A student team (10 students) designed, constructed, tested, reengineered and retested an off-road vehicle as part of training in engineering leadership (MAE 195, three quarters). Competed in the SAE Mini-Baja West, April 22-24, 2004, Portland, Oregon. Ranked 75 out of 99 cars.

2004-05 Mini-Baja racecars: Two student teams "F-one" (12 students) and "Ramrod" (16 students). Two student teams designed, constructed, tested, reengineered and retested an off-road vehicle as part of training in engineering leadership (MAE 195, three quarters). Competed in the SAE Mini-Baja West, June 1-4, 2005, Tucson, AZ. F-one ranked 61 and Ramrod 85 out of 132 cars.

2005-06 Formula SAE race car. A student team "Formula iRacing" (30 students) designed, built a racecar and competed in the 2006 Formula SAE West competition at the Orange County Speedway on June 14-17, 2006. Ranked 48 out of 71 cars.

2006-07 Formula SAE race car. A student team "Formula A.E." (25 students) designed and manufactured a racecar to compete in the 2007 Formula SAE West competition at the Orange County Speedway on June 13-16, 2007.

- 2007-2008 MAE 189 Formula SAE: Design (F07), Build (W08), Test (S08): A student team "Anteater Racing" (30 students) designed and built a racecar to compete in the 2008 Formula SAE West competition at the Orange County Speedway on June 18-21, 2008. MAE 189 Formula Hybrid (W08), Test (S08): A student team (15 students) modified the 2007 Formula SAE racecar to include electric motors driven by an ultra-capacitor and competed in the 2008 Formula Hybrid competition at the New Hampshire Motor Speedway, May 5-7, 2008.
- 2009 MAE 189 Formula Hybrid (W09), Test (S09): A student team (12 students) modified the 2008 Formula Hybrid racecar and competed in the 2009 Formula Hybrid competition at the New Hampshire Motor Speedway, May 4-6, 2009. They achieve 5th place out of 30 teams.
- 2010 MAE 189 Racecar Engineering (FWS 2009-2010): A student team of 30 students built the "Road Eater," a CNG driven racecar and won first place at the 2010 UCI Energy Invitational, then converted the engine to a supercharged gasoline engine and took 24th place at the 2010 FSAE California competition and 1st place in fuel economy.
- 2011 MAE 189 Racecar Engineering (FWS 2010-2011): A student team of 40 students built a CNG-hybrid racecar for the 2011 UCI Energy Invitational. The team also built a second FSAE racecar for competition in the 2011 FSAE California competition. This car won 1st place in fuel economy for a second year in row. A third team of electrical engineers completed an electric racecar for competition in the 2011 UCI Energy Invitational.
- 2012 MAE 189 Racecar Engineering, MAE Electric Racecar (FWS 2011-2012): A student team of 40 students rebuilt a CNG-hybrid racecar for the 2012 UCI Energy Invitational. A second team of electrical engineers completed an electric racecar for competition in the 2011 UCI Energy Invitational.
- 2013 MAE 189 Racecar Engineering, MAE 189 Electric Racecar (FWS 2012-2013) A student team of 40 students built an Electric racecar for the 2013 UCI Energy Invitational. The team also built a second Formula Electric racecar for competition in the 2013 FSAE Lincoln competition.
- 2014 MAE 189 Racecar Engineering, MAE 189 Electric Racecar (FWS 2013-2014) A student team of 60 students finalized the design and testing gas and CNG racecars for the 2014 UCI Energy Invitational. The team finalized the design and testing of two Electric racecars in preparation for the intercollegiate 2014 FSAE Electric competition in Lincoln, NE.
- 2015 MAE 189 Racecar Engineering, MAE 189 Electric Racecar (FWS 2014-2015) A student team of 70 students completed a MiniBaja off-road vehicle that competed at SAE Mini-Baja Oregon, an completed a gas powered FSAE racecar that competed in the FSAE Lincoln competition, and partially completed an electric racecar scheduled to compete in the 2016 FSAE Lincoln competition.
- 2016 MAE 189 Racecar Engineering, MAE 189 Electric Racecar (FWS 2015-2016) A student team of over 100 students are designing, building and testing four different racecars: (i) Raider, a mini-baja off-road vehicle competed at 2016 SAE Mini-Baja Gorman (placed 24 out of 94), (ii) Savage, an IC powered FSAE racecar that competed in the 2016 FSAE Lincoln (placed 37 out of 80), (iii) Electra, an electric racecar competed in the 2016 FSAE-Electric competition (placed 11 out of 29), and (iv) a natural gas racecar that competed in the UCI Energy Invitational (placed 2 out of 15).
- 2017 MAE 189 Racecar Engineering I, II, III with over 60 students, who constructed three vehicles for intercollegiate engineering competitions; (i) a Mini-Baja off-rode vehicle which placed

20th out of 100 race teams from around the world, (ii) Formula Electric racecar that competed in 2018, and (iii) a Formula SAE racecar that competed in Lincoln, NE on June 21, 2017 and placed 19th out of 80 race teams.

2018 on sabbatical

2019 MAE 189 Racecar Engineering I, II, III with over 80 students, who constructed three vehicles for intercollegiate engineering competitions; (i) a Mini-Baja off-road vehicle which competed in 2019 Mini Baja California, (ii) Formula Electric racecar that is preparing for the competition in 2020, and (iii) a Formula SAE racecar that competed in Lincoln, NE on June 21, 2019 and placed 46 out of 80 race teams.

2020 MAE 189 Racecar Engineering I, II, III. Guided 50 students in the design and fabrication of two vehicles for intercollegiate engineering competitions; (i) a Mini-Baja off-road vehicle which competed in 2020 Mini Baja California, and (ii) Formula Electric racecar that is preparing for the competition in 2020. Both events were shut down by Covid.

2022 MAE 189 Racecar Engineering I, II, III. Guided 60 students in the design and fabrication (i) a Mini-Baja off-road vehicle which competed in 2023 Mini Baja Oregon intercollegiate competition, and (ii) Formula Electric racecar that is preparing for the competition in 2024.

2023 MAE 151AB (Fall-Winter) Project 9: Design of an Steerable Walker,

2024 MAE 151AB (Winter-Spring) Project 4: Design of an Autonomous Walker, Project 19: Origami Micro-Robot for Surgery.

2024-2025. MAE 151 AB (Fall-Winter). Six Capstone Projects, Two Baja, Two EV and Two Solar Car subsystem designs.

Undergraduate Independent Study Projects

Mark Lengsfeld, Winter 98, Spring 98, "Belt-driven Track Bike," 7 units.

Maria Luisa Franco, Fall 99, "Analysis of Mechanisms," 4 units.

Scott Lassegard, Spring 99, "Bike Suspension Design," 2 units.

Chunliang Hsu, Fall 99, Winter 2000, "Design of a Prosthetic Thumb," 4 units

Sabina Lin, Winter 2000, "Research in Robotics," 2 units.

Other Teaching

1989 moderated 3 week session on Modern Technology, UCI Summer Science Institute for High School Science Teachers (Mare Taagapera and George Miller, directors).

1990 organized and moderated 1 week session on Modern Technology, UCI Summer Science Institute.

1990 Mentor, Student Recommended Faculty, Dr. Mohan Bodduluri, 1990-1991.

1991 Organized 3 week Course (w. Terry Shanahan) on Modern Technology, UCI Summer Science Institute.

1993 Organized a Graduate Special Topics course on mechanism design at University of Santa Clara, w. Prof. L. Sanchez and Dr. R. M. C. Bodduluri.

1993 Mentor for McNair/Star program, undergraduate research for minority students.

1993-2000 Faculty Advisor for the Engineering Academic Theme House, Arroyo Vista Housing.

- 96/97 Project: Mentors for Irvine Unified School District "Future Scientists and Engineers Clubs." (Serano Middle School)

- 97/00 Project: Mentors for Future Scientist and Engineers Clubs in local Middle Schools.

2003-present Faculty Advisor, Pi Tau Sigma, Mechanical Engineering Honor Society
 2004-present Faculty Advisor, ASME student chapter
 2022 Summer Mentor for UCInspire program, Chenhao Liu, Southern University of Science and Technology, Shenzhen, China.
 2023 Summer Mentor for UCInspire program, Ruiqi Mao, Huazhong University of Science and Technology, Wuhan, China.

SERVICE:

Professional Service:

2021 Member, Board of Advisors on Graduate Education, Department of Mechanical Engineering, Loyola Marymount University.
 2019-2023 Elected Member of the Executive Committee, International Federation on the Theory of Machines and Mechanisms.
 2018 Delegate, 12th Sino-American Technology and Engineering Conference (SATEC), May 13th to 20th, 2018. Zhang Jianguo, State Administration of Foreign Experts Affairs, P. R. China
 2017-present, Section Head, Systems Engineering Design, Department of Mechanical and Aerospace Engineering.
 2017-present Member, ASME Technical Committee on Publications and Communications.
 2017 Member, Provost's Committee on the Future of UCI Career Services
 Decade Mentor, Dept, of Mechanical and Aerospace Engineering, 2017-present.
 Member, UCI Student Fee Advisory Committee, 2016-present.
 Associate Editor, Chinese Journal of Mechanical Engineering (English Edition), August 2010-2015.
 Chair, Board of Governors, Southern California Section, SAE International, 2010-2011.
 Chair, Board of Governors, Southern California Section, SAE International, 2009-2010. Organized the Future Vehicle Technologies lecture series: Presentations by Quantum Technologies (Walter Dubno, September 28, 2009, UCI), Honda (Ryan Harty, October 26, 2009, UCI), Mazda (Tod Kaneko, November 23, 2009, UCI), AC Propulsion (Thomas Gage) and US Hybrid (Abas Goodarzi, February 24, 2010, CSUF), General Motors (Mark Korich, March 24, 2010, CSUF), Toyota (Justin Ward, April 28, 2010, CSUF)
 Secretary, Department of Mechanical and Aerospace Engineering, 2009-present. Prepared minutes for Departmental faculty meetings.
 Secretary, School of Engineering Faculty, Member of the Executive Committee. 2008-2010. Prepared minutes for School of Engineering Executive Committee Meetings.
 Editor (founding), ASME Journal of Mechanisms and Robotics, 2008-present.
 MAE Senior Project Coordinator, 2005-present
 Faculty Advisor:
 ASME student club, 2003-present
 Pi Tau Sigma, Mechanical Engineering Honor Society, 2003-present
 MAE, Undergraduate Studies Committee, 2003-2009.
 Editor, ASME Journal of Mechanical Design, 2003-2008, impact factor: 0.268 (2002), 1.103 (2007)
 Member Board of Editors, American Society of Mechanical Engineers. 2003-present.
 Associate Editor *Journal of Robotics Systems*, 1993 to 2005.
 Chair, Honors and Awards Subcommittee, ASME Mechanisms Committee 1998-2000.
 General Conference Chair for ASME Design Engineering Technical Conferences and Computers in Engineering. August 18-21, 1996
 Conference Chair, Mechanism Conference August 18-21, 1996.
 Chair, Mechanisms Committee, ASME Design Engineering Division 1994-1998.
 Chair, Mechanisms Committee, ASME Design Engineering Division 1994-1996

Member, Mechanisms Committee, ASME Design Engineering Division 1988-1992.
 Invited participant NSF-ASME Workshop on Research Needs in Machine Dynamics, Denver, CO, August 10-13, 1986.
 Associate Editor, *ASME Journal of Mechanical Design*, 1989-1993 (previously *ASME Journal of Mechanisms, Transmissions, and Automation in Design*)
 Host, L.A. Area Robotics and Automation Symposium, November 18, 1994. 80 attendees.
 Chartered Review Panel Member, National Science Foundation, 1991
 Paper Review Chairman, 1990 ASME Mechanisms Conference
 Member Program Committee for 1989 IEEE Robotics and Automation Conference

University Committee Activities

2017 Member, Provost's Committee on the Future of UCI Career Services
 2016-2018 Member, Provost's Student Fee Advisory Committee
 2012-2013 Organizer, 2012 Fall Design Review and Alumni BBQ, 2013 Winter Design Review, 2013 Spring Display Day and Commencement Celebration.
 2011-2012 Organizer, 2011 Fall Design Review and Alumni BBQ, 2012 Winter Design Review.
 2010-2011 Organizer, 2010 Fall Design Review and Alumni BBQ, 2011 Winter Design Review, 2011 Spring Display Day and Commencement Celebration.
 2006-2010 Member, School of Engineering, Executive Committee
 2008-present Member, Academic Senate Committee on Research, Computing and the Library.
 1998-2001 Member, Academic Senate Council on Education Policy 1999-2001
 00-01: Chair, Council on Educational Policy.
 99-00: Co-Chair, Acad. Rev. Committee for School of Physical Sciences.
 98-99: Chair, CEP Subcommittee for the Review of the School of Humanities.
 1993-1996 Chair, Academic Senate Committee on Undergraduate Admissions.
 1993-1994 Chair, Faculty of the School of Engineering
 1993-1994 Chair, Planning Group on Manufacturing and Materials Processing
 1993-1994 Chair, Committee on Instructional Computing
 1993-1994 Chair, Dean's Computer Advisory Committee
 1990-1991 Chair, School of Engineering Undergraduate Studies Committee.
 Member, Executive Committee, School of Engineering.
 1989-1991 Undergraduate Advisor, Department of Mechanical Engineering
 Member, School of Engineering Undergraduate Studies Committee
 1988-1991 Chairman, Computer Committee, School of Engineering.
 1988-1990 Member, Representative Assembly.
 Member, Executive Committee, School of Engineering.

Center for Engineering Science in Design

Senior Project Design Reviews:

2008-2009 Alumni BBQ, MAE Fall Design Review, HSSOE E-week BBQ, HSSOE Winter Design Review, HSSOE Spring Display Day,

2009-2010 HSSOE Alumni BBQ, MAE Fall Design Review, HSSOE Winter Design Review, HSSOE Spring Display Day and Commencement Celebration

2010-2011 HSSOE Alumni BBQ, MAE Fall Design Review, HSSOE Winter Design Review, HSSOE Career Night, HSSOE Spring Display Day and Commencement Celebration;

2011-2012 HSSOE Alumni BBQ and Fall Design Review, HSSOE Winter Design Review;

2012-2013 HSSOE Alumni BBQ and Fall Design Review, HSSOE Winter Design Review, HSSOE Spring Display Day and Commencement Celebration;

2013-2014 HSSOE Alumni BBQ and Fall Design Review, HSSOE Winter Design Review.

The Performance Engineering Program

2010 UCI Energy Invitational, March 22, 2010, California Avenue, UCI Campus

2011 UCI Energy Invitational, March 31, 2011, Willow Springs, CA.

2011-2012

OC STEM Fair Design Review, April 13, 2012

UCI Track Day, May 5, 2012, UCI 16H

UCI Energy Invitational, May 12, 2012, Adams Motorsports Park, Riverside, CA.

2012-2013

OC STEM Fair Design Review, April 12, 2014

UCI Track Day, May 4, 2013, UCI 16H

UCI Energy Invitational, May 11, 2013, Adams Motorsports Park, Riverside, CA.

Summer Program in Racecar Engineering, (16 participants), July 23 - August 3, 2014.

2013-2014

California Challenge, October 3-5, 2013, Orange County Great Park, Irvine, CA.

OC STEM Fair Design Review, April 11, 2014

UCI Track Day, May 3, 2014, UCI 16H

UCI Energy Invitational, May 10, 2014, Adams Motorsports Park, Riverside, CA.

Summer Program in Racecar Engineering, (28 participants), July 22 - August 2, 2014.

2014-2015

Rescue Robotics Workshop I, December 6, 2014

Rescue Robotics Workshop II, February 21, 2015

OC STEM Fair Design Reviews for Racecar and Rescue Robotics programs, April 24-25, 2015

Rescue Robotics Practice Event, April 26, 2015

UCI Track Day, May 16, 2015, UCI 16H

2015 UCI Energy Invitational, May 24, 2015, UCI Campus, East Peltason to Bison. Participants: Esperanza HS, Anaheim HS, Valley HS, Century HS, El Toro HS, Tustin HS, Foothill HS, Los Amigos HS, and Orange HS.

2015 UCI Rescue Robotics Challenge, May 31, 2015, UCI Campus. Participants: Serrano HS, La Paz HS, El Sol Art & Science Academy, Santiago HS, University HS, The Academy Charter HS, Valley High School, South Coast ROP, Beckman HS, Laguna Beach HS, Brea Olinda HS, Newport Mesa HS, Saddleback College, Orange Coast College, Fullerton College.

2015-2016

Rescue Robotics Workshop I, December 6, 2014
 Rescue Robotics Workshop II, February 21, 2015
 OC STEM Fair Design Reviews for Racecar and Rescue Robotics programs, April 24-25, 2015
 Rescue Robotics Practice Event, April 26, 2015
 UCI Track Day, May 16, 2015, UCI 16H
 2016 UCI Energy Invitational, May 6, 2017, UCI Campus, East Peltason to Bison. Participants:
 Orange HS, Santiago HS, Bolsa Grande HS, El Toro HS, Tustin HS, Foothill HS, Anaheim
 HS, Santa Ana HS, Century HS, Northwood HS (Irvine), and Westminster HS
 2016 UCI Rescue Robotics Challenge, May 31, 2015, UCI Campus. Participants: El Modena HS,
 Santiago HS, University HS, Irvine Valley College, The Academy Charter HS, Beckman
 HS, Fullerton College, Laguna Hills HS

2016-2017

Rescue Robotics Workshop I, December 6, 2014
 Rescue Robotics Workshop II, February 21, 2015
 OC STEM Fair Design Reviews for Racecar and Rescue Robotics programs, April 23-25, 2016
 Rescue Robotics Practice Event, April 26, 2017
 UCI Track Day, May 16, 2017, UCI 16H
 2017 UCI Energy Invitational, May 6, 2017, UCI Campus, East Peltason to Bison. Participants:
 Anaheim HS, Westminster HS, Esperanza HS, Century HS, Santiago HS, El Toro HS,
 Foothill HS, and Tustin HS
 2017 UCI Rescue Robotics Challenge, May 20, 2017, UCI Campus. Participants: Santiago Canyon
 College, El Modena HS, Mission Viejo HS, Tesoro HS, South Lake Middle School, Irvine
 Valley College, Samueli Academy Charter HS

2017-2018

OC STEM Fair Design Reviews for Racecar and Rescue Robotics programs, April 13-15, 2018
 UCI Track Day, April 21, 2018, UCI 16H
 2018 UCI Energy Invitational, April 28, 2018, UCI Campus, East Peltason to Bison. Participants:
 North Orange County ROP, Anaheim HS, Bolsa Grande HS, Santiago HS, Westminster
 HS, Santa Ana College, Century HS, El Toro HS, and Tustin HS
 2018 UCI Rescue Robotics Challenge, May 12, 2018, UCI Campus. Participants: Mission Viejo HS,
 El Modena HS, Laguna Hills HS, Middle College HS, Santiago Canyon College, and
 Santiago HS

2018-2019

OC STEM Fair Design Reviews for Racecar and Rescue Robotics programs, April 12-14, 2019
 UCI Track Day, April 20, 2019, UCI 16H
 2019 UCI Energy Invitational, April 27, 2019, UCI Campus, Lot 70. Participants: Tustin HS, Jordan
 HS, Ocean View HS, California Academy of Math and Science, Sato Academy, El Toro HS,
 Westminster HS, and Cabrillo HS.
 2019 UCI Rescue Robotics Challenge, May 5, 2019, UCI Campus. Participants: Godinez
 Fundamental HS, Santiago HS, Mission Viejo HS, Laguna Hills HS, El Toro HS, El
 Modina HS, Middle College HS

Fabrication Training

2012 Assisted coordinating the ET 409 Fabrication Lab and the hiring of Steve Heck.
 Coordinated fabrication training for MAE 151 and MAE 106

2013 Assisted in organizing the E195 Fabrication Safety and E195 Welding Safety courses and the hiring of Ed Lau. Organized the MAE 195 Additive Manufacturing course.

DEPOSITION AND TRIAL TESTIMONY:

Product Liability:

1. *Hugo Oropeza v. Jensen USA, Inc, et al.*, Superior Court of the State of California for the County of Riverside, Palm Spring Courthouse, Case No. PSC1904584, Allan F. Davis, Robinson Calcagnie, 19 Corporate Plaza Drive, Newport Beach, CA 92660. Deposition Testimony, September 6, 2022.
2. *Benito Zuniga v. Buckingham Manufacturing, Co, Inc*, Superior Court of the State of California for the County of San Diego, Case No. 37-2019-0002614-CU-PO-CTL Richard G. Barone, Rose Klein & Marias LLP, 801 S. Grand Ave., 11th Floor, Lost Angeles, CA 90017. Deposition Testimony, August 16, 2022.
3. *Luis Manuel Robledo v. Crafcro, Inc*, United States District Court, Central District of California, Case No. 2:19-cv-09171-GW Martin J. Kanarek, 9701 Wilshire Blvd, 12th Floor, Beverly Hills, CA 90212. Deposition Testimony, July 20, 2022.
4. *Bernd Behne v. The Home Depot, Inc.; Werner Co.; et al.*, Superior Court of the State of California for the County of Los Angeles, Case No. BC713664. John Noland, NP Law, 28494 Westinghouse Place, Suite 311, Valencia, CA 91355. Deposition Testimony, January 28, 2022.
5. *Amber de Jesus Avila, et al. v. Grinder and Polishing Machinery Corporation and Rockwell Collins*, United States District Court — Southern District, Case No. 8:20-cv-00295 DOC (ADSx) Richard G. Barone, Rose Klein & Marias LLP, 801 S. Grand Ave., 11th Floor, Lost Angeles, CA 90017. Deposition Testimony, July 20, 2021.
6. *Douglas Shea v Troy Orion Zeeman; City of Newport Beach*, Superior Court of California, County of Orange—Central Justice Center, Case No. 30-2018- 00982429 - CU-PA-CJC. Gerald E. Agnew, Agnew and Brusavich, 20355 Hawthorne Blvd, Torrance, CA 90503. Deposition Testimony, June 10, 2019.
7. *Ricardo Murguia Gen v The Irvine Company, LLC*, Superior Court of the State of California for the County of Orange—Central Justice Center, Case No 30-2017-00962045-CU-PL-CJC. Craig L. Chisvin, Chisvin Law Group, 11400 W. Olympic Blvd, Suite 200, Los Angeles, CA 90064. Deposition Testimony, May 14, 2019.
8. *Michelle Gorham v. Skin Renewal Center*, before the Worker's Compensation Appeals Board, State of California, Case No ADJ7274635 . Edvin Minassian, Tennenhouse, Minassian and Adham, 1101 North Pacific Ave, Suite 300, Glendale, CA 91202. Deposition Testimony, January 26, 2018.
9. *Joshua A. Meyers v Pacifica Companies*, before the Superior Court of the State of California for the County of San Diego, Case No 37- 2014- 00015599 CU-PO-CTL. Kathryn B. Meadows, Law Offices of Kathryn Meadows, 350 West C Street, Suite 1155, San Diego, California 92101. **Trial Testimony**, September 13, 2017.
10. *Donna Dux v Automatic Control Systems, Inc.*, before the Superior Court of the State of California for the County of Ventura, Case No 56-2013-00441508-CU-PL-VTA. Robert Mandell, The Mandell Law Firm 19400 Business Center Dr. Ste 102, Northridge, CA 91324. Deposition, August 15, 2016 and November 17, 2016, **Trial Testimony**, March 1, 2017.
11. *Roberto Inoue v AFM Engineering et al*, before the Superior Court of the State of California for the County of Orange, Case No 30-2013 00660381-CU-PL-CJC. Brad M. Simon, The Simon Law Group, 34 Hermosa Avenue, Hermosa Beach, CA 90254. Deposition, September 7, 2016.
12. *Roberto Briones v Ais Industrial Corporation, Pacific Forge, Inc, AIDA-Amrica Corp.*, before Superior Court of the State of California, County of San Bernardino, Central District, Case No. CIVDS1209680. Beau J. Nokes, Nokes & Nokes, 120 Vantis, Ste 520, Aliso Viejo, CA 92656, Deposition Testimony, January 30, 2015
13. *Richard Medina v. The Dutra Group*, before the United States District Court for the Central District of California, Case No CV13-04667-DSF(PJWx). Levi Plesset, Law Offices of Preston Easley,

- 2500 Via Cabrillo Marina, Suite 106, San Pedro, CA, 90731, Deposition Testimony, September 15, 2014.
14. *Eric Koff v. Trek Bicycle Corporation et al., before the Superior Court of California, County of Orange, Case No 30-2012-00602533.* Bruce Brusavich, Agnew & Brusavich, 20355 Hawthorne Blvd, Torrance, CA 90503, Deposition Testimony, September 6, 2013, **Trial Testimony**, March 21, 2014.
 15. *Robert Hefner v. Walt Disney Parks and Resorts U.S, Inc, et al before the Superior Court of California, County of Orange, Case No 30-2011-00502052.* Michael S. Fields, 11746 E. 187th Street, Artesia, CA 90701, Deposition Testimony, January 9, 2013
 16. *Mark Petraitis, v. Home Depot, Tricam Industries, et al. before the United States District Court, Central District of California – Southern Division, Case No. SACV10-00106 DOC (ANx).* Christopher E Purcell, Law Offices of Christopher Purcell, 1539 E. 4th Street, Santa Ana, CA 92701, **Trial testimony**, May 21, 2012.
 17. *Jose Guadalupe Naranjo et al. v Columbia Machine Inc., No. BC 428733, before the Superior Court of the State of California, Los Angeles—Central District.* Adam Shea and George Rosenberg, Panish, Shea & Boyle LLP, 11111 Santa Monica Blvd., Ste 700, Los Angeles, CA 90025. Deposition testimony, June 15, 2011.
 18. *Angelica Fernandez, vs. Sunstate Equipment Co, et al., before Superior Court of the State of California, County of Los Angeles, Central District, Case No. BC402195.* Gerald E Agnew, Agnew & Brusavich, 20355 Hawthorne Blvd, Torrance, CA 90503, Deposition Testimony, February 4, 2011
 19. *Susan Calles v. Scripto-Tokai, Corp. before the Circuit Court of Cook County, Illinois, Case No. 07-L-4577.* Keith Sipprelle, 5707 Corsa Ave, Ste 202, Westlake Village, CA 91362, Deposition testimony, January 21, 2010.
 20. *Lindsay Hansen v. Sevylor, Inc. before the Superior Court of California County of Orange Central District, Case No. 07CC03050.* Chris Purcell, 7700 Irvine Drive, Suite 200 Irvine, California 92618, Deposition testimony, March 12, 2009, **Trial Testimony**, April 27, 2009.
 21. *Mario de Jesus Miranda v. Amada America, Inc. before the Superior Court of California North Valley District, Case No. PC040285.* Scott Houtz, Greenberg and Rudman, 8383 Wilshire Blvd, Suite 336, Beverly Hills, CA. Deposition testimony: August 2008, **Trial testimony**, February 2009.
 22. *Mia Barlow, et al. v. Delta Faucet Company of Tennessee et al., Case Number 2:06-cv-01408-PMP-GWF 21658, which is pending in the United States District Court, District of Nevada.* James R. Christensen, Quon, Bruce, & Christensen, 2330 Paseo Del Prado, Suite C-101, Las Vegas, NV, Deposition testimony, 2007
 23. *Assurance Company of America v. Wagner Spray Tech Corp. et al., Case Number SC087610 Superior Court of the State of California, County of Los Angeles, West District, Santa Monica,.* Jeffrey Malek, Malek & Malek, 3625 Del Amo Blvd., #350, Torrance, CA 90503, (310) 540-5100, Deposition testimony , 2007
 24. *Jennifer Kryzak v. KB Home et al., Case Number GIS 21658, Superior Court of the State of California, County of San Diego, South County Regional Center.* Jeffrey Malek, Malek & Malek, 3625 Del Amo Blvd., #350, Torrance, CA 90503, (310) 540-5100, Deposition testimony, 2007
 25. *Awad v. Wynn Oil Co.. Allan Litovsky Esq., Greenberg Traurig, 650 Town Center. Ste. 1700, Costa Mesa, CA 92626, (714) 708-6500 Deposition 2006*
 26. *Munoz v. Smith Brothers Crane, Anthony de los Reyes, Thon, Beck and Vanni, 1100 East Green Steet, Pasadena, CA 91106. (626) 795-8333 x128 Deposition testimony, 2006*
 27. *Tomas v. Johnson Controls, Inc. David Campana, Kusion and Campana, 4541 Artesia Blvd., Lawndale, CA 90260, (310) 370-6164, Deposition testimony, 2006*
 28. *Caliboso v. Ellis Industries, Inc. Richard Koskoff, Booth and Koskoff, Iowa Courthouse Bldg, 18411 Crenshaw Blvd., Suite 380, Torrance, CA, 90504, (310) 515-1361, Deposition*

- testimony, 2006
29. *Patrick Lockridge, et al. v. Scripto-Tokai Corporation, Case Number 3-03-1058 United States District Court for the Middle District of Tennessee*, Mark Suzumoto, Van Etten, Suzumoto and Haag, 1620 26th St, Suite 6000 North, Santa Monica, CA, 90404, Fax: (310) 315-8210, Deposition testimony, 2004.
 30. *Chittenden et al. v. American Auto Service, et al. Case No. 02CC10157, Orange County Superior Court*. James D. Daily, Reinecke & Daily, LLP, 3300 Irvine, Avenue, Suite 300, Newport Beach, CA 92660, Phone 949-261-1616, Deposition testimony, 2004
 31. *Rosa v. Scripto-Tokai, et al.*, Case No. 98 L 2683, Circuit Court of Cook County, Illinois. Mark Suzumoto, Van Etten, Suzumoto and Haag, 1620 26th St, Suite 6000 North, Santa Monica, CA, 90404, Fax: (310) 315-8210, Deposition testimony, 2002.
 32. *Tadeo v. All-Save Destruction, Inc.*, Case No. TC013300, Compton, California, Los Angeles Superior Court, South Central District, Deposition testimony, 2002.
 33. *Mosser v. JET, Case No. BC218360, Central Los Angeles Superior Court/Transferred to Glendale (North Central District) Superior Court*. Jerry Agnew, Agnew and Brusavich, 20355 Hawthorne Blvd, Torrance, CA 90503, **Trial Testimony**, 2001.

Intellectual Property

1. *Meridian International Co, v ToughBuilt Industries, Inc. Before the United States District Court Central District of California, Case No. 8:24-CV-01840*, R. Tyler Kendrick, Perkins Cole, 1201 Third Avenue, Seattle, WA 98101. Deposition Testimony, October 18, 2024.
2. *Frameless Hardware Co. LLC v C.R. Laurence Co. Inc., Inter Partes Review No. IPR2022-00356 U.S. Patent No. 9,074,413*, Joshua P. Larsen, Barnes & Thornburg LLP 11 South Meridian Street Indianapolis, Indiana 46204, Deposition Testimony, January 5, 2023
3. *Midwest Athletics and Sports Alliance, LLC v Xerox Corp. Before United States District Court for the District of Nebraska, Case No.: 8:17-CV-00478-RFR-SMB*. Mark Baghdassarian, Kramer, Levin, Naftalis & Frankel, LLP, 1177 Avenue of the Americas, New York, NY 10001, USA. Deposition Testimony, October 8, 2021.
4. *Zap Surgical v Elekta Limited, Before the Patent Trial and Appeal Board of the United States Patent and Trademark Office. IPR2019-01659*. James Isbester, Brown Wegner, LLP, 2010 Main Street, Suite 1260, Irvine, CA 92614, USA. Deposition Testimony, June 12, 2020.
5. *National Products Inc v Bracketron, Inc, before the United States District Court for the State of Washington at Seattle, Case Not 2:16-cv-00109-JLR*. Terrance Newby, Maslon LLP, Wells Fargo Center, 90 South Seventh St., Ste 3300, Minneapolis, MN 55402. Deposition Testimony, April 26, 2018.
6. *Megdal Associates, LLC v La-Z-Boy, Inc., before the United States District Court Southern District of Florida, Case No. 9:14-cv-81476-ZLOCH*. Patrick Arenz, Robins, Kaplan, Miller & Ciresi, LLP, 800 LaSalle Ave, Minneapolis, MN 55402-2015, (612) 349-8500. Deposition, January 15, 2016 and **Trial Testimony**, February 24-25, 2016.
7. *Nelson Products, Inc. v Bal Seal Engineering, Inc., before the Patent Trial and Appeal Board of the United States Patent and Trademark Office, Case No. IPR2014-00573*. Daniel Fuller, Cadden & Fuller, LLP, 114 Pacifica, Ste 450, Irvine, DA 92618, Deposition Testimony, February 25, 2015.
8. *Intri-Plex Technologies, Inc. and MMI Holdings, Ltd v. Saint-Gobain Performance Plastics Rencol Limited, before the Patent Trial and Appeal Board, United States Patent and Trademark Office, Case No. IPR2014-00309*. Albin H. Gess, Snell & Wilmer, LLP, 600 Anton Boulevard, Suite 1400, Costa Mesa, CA 92626, Deposition Testimony, November 12, 2014
9. *Piao Shang Industry Co., Ltd., v. Bracketron, Inc., Case No. 2:11-CV-05992-PA-E before the United*

- States District Court, Central District of California, Los Angeles Division. Terrance C. Newby, Leffert Jay & Polglaze, P.A., U.S. Bank Plaza, North Tower, 200 South 6th Street, Suite 3200, Minneapolis, MN 55402, Deposition testimony, April 27, 2012.*
10. *Piao Shang Industry Co., Ltd., v. Best Buy Co., Inc., Case No. 2:11-CV-5994 PA (Ex) before the United States District Court, Central District of California. John Tran, RHEMA Law Group PC, 1 Park Plaza, Ste. 600, Irvine, CA 92614, Deposition testimony, April 30, 2012.*
 11. *Graco Children's Products, Inc v. Baby Trend, Inc., No. CV-10-05897 JST, before the United States District Court, Central District of California, Eastern Division. J. Rick Tache, Snell & Wilmer, LLP, 600 Anton Boulevard, Suite 1400, Costa Mesa, CA 92626-7689. Deposition testimony, October 24, 2011.*
 12. *McKesson Automation v. Translogic Corporation and Swisslog Italia SPA, Civil Action No. 1:06CV00028-SLR, before the United States District Court for the District of Delaware. Bryan DeMatteo, Dickstein Shapiro LLP, 1633 Broadway, New York, NY 10019, **Trial Testimony**, March 23-24, 2011.*
 13. *Spellbound Development Group, Inc. v. Pacific Handy Cutter, INC., et al. Civil Action No. SACV09-00951 DOC (ANx) pending before the United States District Court, Central District of California, Southern Division. William Brown, Brown, Wegner & Berliner, LLP 2603 Main Street, Suite 1050, Irvine, CA 92614, Deposition Testimony, February 9, 2011*
 14. *Accuride v. SSW Holding Co., Inc, and American Appliance Products, Inc. before the United States District Court, Central District of California, Illinois, Case No. CV-09-3377 PA (PJWx). Nathaniel Dilger, One LLP, 4000 MacArthur Blvd. West Tower, Suite 1100, Newport Beach, CA 92660, Deposition testimony, March 23, 2010.*
 15. *McKesson Automation v. Swisslog Italia SPA, Civil Action No. 1:06CV00028-SLR, U.S. District Court, Central District of Delaware. Rich LaCava and Bryan DeMatteo, Dickstein Shapiro LLP, 1177 Avenue of the Americas, New York, New York 10036-2714, Deposition testimony: August 2008*
 16. *Applied Medical Resources Corporation v. United States Surgical Corporation, Civil Action No. SACV 03-1267 CJC (MLGX). U.S. District Court, Central District of California. Glen E. Summers, Esq., Bartlit, Beck, Herman, Palenchar & Scott, 1899 Wynkoop Street, 8th Floor, Denver, CO 80202, **Trial testimony**: February 2008*
 17. *Applied Medical Resources, Corp. v. United States Surgical Corp. Case No. SACV 03-1267, U.S. District Court, Central District of California and U.S. Court of Appeals for the Federal Circuit. Glen E. Summers, Esq., Bartlit, Beck, Herman, Palenchar & Scott, 1899 Wynkoop Street, 8th Floor, Denver, CO 80202, Deposition testimony, 2005*
 18. *Currie Technologies, Inc. v. Christopher V. Martin, Case No. CV 02-7739 SVW (VBKx), United States District Court, Central District of California. Mark Suzumoto, Van Etten, Suzumoto and Haag, 1620 26th St, Suite 6000 North, Santa Monica, CA, 90404, Fax: (310) 315-8210 Deposition testimony, 2003.*
 19. *Alltrade v. Olympia Group, Inc., Case No. 02CIV9274, before the U.S. District Court, Central District of California. Deposition testimony, 2003.*
 20. *Odetics, Inc. v. Storage Technology, et al. Case Number: 98-1533, Judge: T. S. Ellis, III, before the United States District Court for the Eastern District of Virginia. Vincent Belusko of Graham & Jones, L.L.P., Los Angeles, California and Charles Anthony Jones of Ross, Dixon & Masback, Washington, D.C. **Trial testimony**, 1998.*
 21. *Odetics, Inc. v. Storage Technology, et al. Case Number: 95-CV-881, Judge: T. S. Ellis, III, before the United States District Court for the Eastern District of Virginia. Vincent Belusko of Graham & Jones, L.L.P., Los Angeles, California and Charles Anthony Jones of Ross, Dixon & Masback, Washington, D.C. **Trial testimony**, 1996.*