

## **Curriculum Vitae of Dr. Satyandra K. Gupta**

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### **1. PERSONAL INFORMATION**

#### **A. RESEARCH INTERESTS**

Computer Aided Design, Manufacturing Automation, and Robotics

#### **B. EDUCATION**

- Ph.D. in Mechanical Engineering, University of Maryland, College Park, September 1994
- M.Tech. in Production Engineering, Indian Institute of Technology, Delhi, India, December 1989
- B.E. in Mechanical Engineering, University of Roorkee (presently known as Indian Institute of Technology, Roorkee), India, May 1988

#### **C. EMPLOYMENT HISTORY**

- Smith International Professor, Aerospace and Mechanical Engineering Department, University of Southern California, January 2016 to Present
- Director, Center for Advanced Manufacturing, University of Southern California, January 2016 to Present
- Associate Chair, Aerospace and Mechanical Engineering Department, University of Southern California, August 2017 to Present
- Professor, Mechanical Engineering Department and Institute for Systems Research, University of Maryland, July 2008 to December 2015
- Leader, Design and Reliability of Systems Division, Department of Mechanical Engineering, University of Maryland, January 2015 to December 2015
- Director, Maryland Robotics Center, University of Maryland, September 2014 to December 2015 (previously served in this position from March 2010 to September 2012)
- Co-Director, Simulation-Based System Design Lab, University of Maryland, January 2010 to December 2015
- Director, Advanced Manufacturing Lab, University of Maryland, July 2008 to December 2015
- Affiliate Professor, University of Maryland Institute for Advanced Computer Studies, January 2011 to December 2015
- Member, Autonomy Summer Study Task Force, Defense Science Board, February 2015 to August 2015

- Program Director, Information and Intelligent Systems Division, National Science Foundation, September 2012 to September 2014
- Senior Fellow, Engineering Laboratory, National Institute of Standards and Technology, September 2011 to August 2012
- Guest Researcher, National Institute of Standards and Technology, July 2004 to June 2005 (on sabbatical from the University of Maryland)
- Associate Professor, Mechanical Engineering Department and Institute for Systems Research, University of Maryland, July 2002 to June 2008
- Assistant Professor, Mechanical Engineering Department and Institute for Systems Research, University of Maryland, July 1998 to June 2002
- Research Scientist and Adjunct Assistant Professor, Robotics Institute and Graduate School of Industrial Administration, Carnegie Mellon University, July 1996 to June 1998
- Project Scientist, Robotics Institute, Carnegie Mellon University, January 1995 to June 1996
- Research Associate, Institute for Systems Research, University of Maryland, September 1994 to December 1994
- Senior Scientific Officer, Numerical Control Laboratory, Indian Institute of Technology, Delhi, February 1990 to August 1990

#### **D. FELLOWSHIPS, PRIZES, AND AWARDS**

##### **Awards**

- Best Paper Award in 2018 *ASME Computers and Information in Engineering Conference* for the paper “A. V. Shembekar, Y. J. Yoon, A. Kanyuck and S.K. Gupta. Trajectory planning for conformal 3d printing using non-planar layers. *ASME Computers and Information in Engineering Conference*, Montreal, Quebec City, Canada, August 2018”
- Best Paper Award in 2018 *IEEE International Symposium on Safety, Security, and Rescue Robotics* for the paper “P. Rajendran, T. Moscicki, J. Wampler, B. C. Shah, K. D. von Ellenrieder, S. K. Gupta. Wave-aware trajectory planning for unmanned surface vehicles operating in congested environments. *IEEE International Symposium on Safety, Security, and Rescue Robotics*, Philadelphia, PA, USA, August 2018”
- Best Paper Award (third place) in 2018 *ASME Manufacturing Science and Engineering Conference* for the paper “A.M. Kabir, A.V. Shembekar, R.K. Malhan, R.S. Aggarwal, J.D. Langsfeld, B.C. Shah, and S.K. Gupta. Robotic finishing of interior regions of geometrically complex parts. *ASME Manufacturing Science and Engineering Conference*, College Station, TX, June 2018”
- Judge’s Choice Award at 2018 *Reusable Abstractions of Manufacturing Processes Workshop* for Poster Titled “Hybrid Cell for Multi-Layer Prepreg Composite Sheet Layup” by R. Malhan, A. Kabir, B. Shah, T. Centea and S.K. Gupta
- ASME Computer Aided Product and Process Development Technical Committee's Best Paper Award in 2017 *ASME Computers and Information in Engineering Conference* for the paper “C.W. Morato, K.N. Kaipa, and S.K. Gupta. System state monitoring to facilitate safe and efficient human-robot collaboration in hybrid assembly cells. 2017 *ASME Computers and Information in Engineering Conference*, Cleveland, OH”
- First Place, Agile Robotics for Industrial Automation Competition (ARIAC), 2017

- Finalist, Kuka Innovation Award, 2017
- Distinguished Alumnus Award, Indian Institute of Technology, Roorkee, 2014
- ASME Computers and Information in Engineering Division's Excellence in Research Award, 2013
- ASME Computer Aided Product and Process Development Technical Committee's Prakash Krishnaswami Best Paper Award in 2013 *ASME Computers and Information in Engineering Conference* for the paper "C. Morato, K. Kaipa, B. Zhao, and S.K. Gupta. Safe human robot interaction by using exteroceptive sensing based human modeling. 2013 *ASME Computers and Information in Engineering Conference*, Portland, OR"
- Best Paper Award in 2012 *ASME Computers and Information in Engineering Conference* for the paper "S. Bista, S. Chowdhury, S.K. Gupta, and A. Varshney. Using GPUs for real time prediction of optical forces on microsphere ensembles. 2012 *ASME Computers and Information in Engineering Conference*, Chicago, IL"
- Finalist for Best Paper, *International Conference on Climbing and Walking Robots and the Support Technologies for Mobile Machines* for paper "T. Brewer, K. Kaipa, and S.K. Gupta. A quadruped robot with on-boarding sensing and parameterized gait for stair climbing. *15th International Conference on Climbing and Walking Robots and the Support Technologies for Mobile Machines*, Baltimore, MD, July 2012."
- 2012 Most Cited Paper Award from *Computer Aided Design Journal* for paper "A. Thakur, A.G. Banerjee, and S.K. Gupta. A survey of CAD model simplification techniques for physics-based simulation applications. *Computer Aided Design*, 41(2):64-80, 2009"
- Kos Ishii-Toshiba Award from American Society for Mechanical Engineers (ASME) Design for Manufacturing and the Life Cycle Committee, August 2011
- Compliant Mechanism Application Award in *2010 ASME Mechanism and Robotics Conference* for the paper "W. Bejgerowski, J.W. Gerdes, S.K. Gupta, H.A. Bruck, and S. Wilkerson, Design and fabrication of a multi-material compliant flapping wing drive mechanism for miniature air vehicles, *ASME Mechanism and Robotics Conference*, Montreal, Canada, August 2010"
- Bioinspiration & Biomimetics Highlights of 2009 (Paper "J.K. Hopkins, B.W. Spranklin, and S.K. Gupta, A survey of snake-inspired robot designs, *Bioinspiration and Biomimetics*, 4(2):021001, 2009" was selected as one of the six highlight articles of 2009 by the journal)
- Winner, 2007 Invention of the Year Award in Physical Science Category, University of Maryland (Invention: Minimally Invasive Neurosurgical Intracranial Robot; Inventors: Jaydev P. Desai, Marc J. Simard, Satyandra K. Gupta, Rao Gullapalli, Nicholas Pappafotis, and Wojciech Bejgerowski)
- Finalist, 2007 Invention of the Year Award in Information Science Category, University of Maryland (Invention: Geometry Based Search Software; Inventors: Satyandra K. Gupta, Antonio Cardone, and Maxim Schwartz)
- Fellow of American Society of Mechanical Engineers (Elected in August 2007)
- Best Paper Award in *2006 ASME Computers and Information in Engineering Conference* for the paper "T. Peng and S.K. Gupta, A computational framework for point cloud construction using digital projection patterns, *ASME Computers and Information in Engineering Conference*, Philadelphia, PA, September 2006"
- Trailblazer Award from *Science Spectrum Magazine*, September 2006
- Winner of the First Place in 2003 University of Maryland's Business Plan Competition (Award was given to a team of three members: S.K. Gupta, R. Kumar, and A.K. Priyadarshi)

- Selected to attend National Academy of Engineering's 2002 Frontiers in Engineering Symposium
- Presidential Early Career Award for Scientists and Engineers (PECASE), 2001
- National Science Foundation CAREER Award, 2001
- Robert W. Galvin Outstanding Young Manufacturing Engineer Award, Society of Manufacturing Engineers, 2001
- Outstanding Systems Engineering Faculty Award, Institute for Systems Research, 2001
- Highly Commended Award from Literati Club for the paper "S.K. Gupta, C.J. Paredis, R. Sinha, and P.F. Brown, Intelligent Assembly Modeling and Simulation, *Assembly Automation*, 21(3):215--235, 2001"
- Office of Naval Research Young Investigator Award, 2000
- Best Paper Award in *1999 ASME Design for Manufacturing Conference* for the paper "R.K. Arni and S.K. Gupta, Manufacturability analysis for solid freeform fabrication, *ASME Design for Manufacturing Conference*, Las Vegas, Nevada, September 1999"
- Best Paper Award in the area of Artificial Intelligence and Feature-Based Design and Manufacturing in *1994 ASME Computers in Engineering Conference* for the paper "D. Das, S.K. Gupta, and D.S. Nau, Reducing setup cost by automated generation of redesign suggestions, *ASME Computers in Engineering Conference*, Minneapolis, MN, September 1994"
- Institute for Systems Research's Outstanding Systems Engineering Graduate Student Award, 1994
- Gold Medal for First Rank in Bachelor of Engineering in Mechanical Engineering, University of Roorkee, 1988
- Gold Medal for the Best Engineering Design Project, University of Roorkee, 1988
- First Prize, Science and Technology Entrepreneurship Park, Roorkee Chapter Project Competition, 1988

### **Fellowships and Scholarships**

- Institute for Systems Research Graduate Fellowship, University of Maryland (1992-1994)
- Graduate School Fellowship, University of Maryland (1990-1992)
- University Grant Commission Fellowship, Indian Institute of Technology, Delhi (1988-1989)
- University Merit Scholarship, University of Roorkee (1984-1988)

## **2. RESEARCH, SCHOLARLY, AND CREATIVE ACTIVITIES**

### **A. BOOKS**

#### **Edited Books**

1. D.K. Anand, S.K. Gupta, and R.A. Kavetsky (editors), *Simulation Driven Innovation and Discovery in Energetics Applications*, CALCE EPSC Press, College Park, 2011.

#### **Authored Books**

1. E.B. Magrab, S.K. Gupta, F.P. McCluskey, and P. Sandborn. *Integrated Product and Process Design and Development: The Product Realization Process*. Second Edition, CRC Press, July 2009.

2. S.K. Gupta, D.K. Anand, J.E. Brough, M. Schwartz, and R.A. Kavetsky. *Training in Virtual Environments: A Safe, Cost-Effective, and Engaging Approach to Training*. CALCE EPSC Press, College Park, July 2008.

### **Chapters in Books**

1. W. Bejgerowski, J. Gerdes, J. Hopkins, L. Lee, M.S. Narayanan, F. Mendel, V. Krovi, and S.K. Gupta. An engineering approach to utilizing bio-inspiration in robotics applications. In A. Goel, D. McAdams and R. Stone (editors), *Biologically Inspired Design*, Springer-Verlag, 2014.
2. M. Schwartz, P. Svec, A. Thakur, and S.K. Gupta. Simulation based synthesis of planning logic for autonomous unmanned sea surface vehicles. *Simulation Driven Innovation and Discovery in Energetics Applications*, CALCE EPSC Press, College Park, 2011.
3. A. Ananthanarayanan, W. Bejgerowski, J. Gerdes, D. Mueller, S.K. Gupta, and S. Wilkerson. Simulation-based design of drive mechanism for flapping wing micro air vehicles. *Simulation Driven Innovation and Discovery in Energetics Applications*, CALCE EPSC Press, College Park, 2011.
4. P. Svec and S.K. Gupta. Automated planning logic synthesis for autonomous unmanned vehicles in competitive environments with deceptive adversaries. *New Horizons in Evolutionary Robotics*, Studies in Computational Intelligence, Springer, pp. 171-193, 2011.
5. A.L. Gershon, L.S. Gyger, Jr., H.A. Bruck, and S.K. Gupta. In situ characterization of residual strains near electronic components embedded in thermoplastic polymers during processing and operation. *Advances in Mathematical Modeling and Experimental Methods for Materials and Structures*. The Jacob Aboudi Volume, Leslie Banks-Sills and Rivka Gilat (editors), Springer, 2009.
6. S.K. Gupta, D.S. Nau, W.C. Regli, and G. Zhang. A methodology for systematic generation and evaluation of alternative operation plans. In *Advances in Feature Based Manufacturing*, pages 161-184, Elsevier Science Publishers, 1994.
7. D.S. Nau, G. Zhang, S.K. Gupta, and R.R. Karinithi. Evaluating product machinability for concurrent engineering. In *Concurrent Engineering: Contemporary Issues and Modern Design Tools*, pages 264-279, Chapman and Hall, 1993.

## **B. ARTICLES IN JOURNALS**

### **Accepted/Published Articles in Journals**

1. L.S. Santos, S.K. Gupta, and H.A. Bruck. Simulation of buckling of internal features during selective laser sintering of metals. *Additive Manufacturing*. Accepted for publication.
2. G.E. Mullins, C. Kessens, and S.K. Gupta. An adaptive sampling approach for evaluating robot self-righting capabilities. *IEEE Robotics and Automation Letters*. Accepted for publication.
3. K.N. Kaipa, C.W. Morato, and S.K. Gupta. Design of hybrid cells to facilitate safe and efficient human-robot collaboration during assembly operations. *ASME Journal of Computing and Information Science in Engineering*. 18(3):031004, 2018.
4. Z. Kootbally, T. Kramer, C. Schlenoff, and S.K. Gupta. Implementation of an ontology-based approach to enable agility in kit building applications. *International Journal of Semantic Computing*, 12(1):5-24, 2018.

5. J.D. Langsfeld, A.M. Kabir, K.N. Kaipa, and S.K. Gupta. Integration of planning and deformation model estimation for robotic cleaning of elastically deformable objects. *IEEE Robotics and Automation Letters*, 3(1): 352-359, 2018.
6. Z. Kootbally, C. Schlenoff, B. Antonishek, F. Proctor, T. Kramer, W. Harrison, A. Downs, and S. K. Gupta. Enabling robot agility in manufacturing kitting applications. *Integrated Computer-Aided Engineering*, 25(2):193-212, 2018.
7. A.M. Kabir, J.D. Langsfeld, K.N. Kaipa, and S.K. Gupta. Identifying optimal trajectory parameters in robotic finishing operations using minimum number of physical experiments. *Integrated Computer-Aided Engineering Journal*, 25(2):111-135, 2018.
8. S. Shriyam. B. C. Shah, and S.K. Gupta. Decomposition of collaborative surveillance tasks for execution in marine environments by a team of unmanned surface vehicles. *ASME Journal of Mechanisms and Robotics*, 10(2):025007-025007-7, 2018.
9. N. B. Kumbla, S. Thakar, K. N. Kaipa, J. A. Marvel, and S. K. Gupta. Handling perception uncertainty in simulation based singulation planning in robotic bin picking. *ASME Journal of Computing and Information Science in Engineering*, 18(2):021004-021004-10, 2018.
10. A.E. Holness, H.A. Bruck and S.K. Gupta. Characterizing and modeling the enhancement of lift and payload capacity resulting from thrust augmentation in a propeller-assisted flapping wing air vehicle. *International Journal of Micro Air Vehicles*, 10(1):50–69, 2018.
11. G.E. Mullins, P.G. Stankiewicz, R.C. Hawthorne, and S.K. Gupta. Adaptive generation of challenging scenarios for testing and evaluation of autonomous vehicles. *Journal of Systems and Software*, 137:197-215, March 2018.
12. J.D. Langsfeld, K.N. Kaipa, and S.K. Gupta. Selection of trajectory parameters for dynamic pouring tasks based on exploitation-driven updates of local metamodels. *Robotica*, 36(1):141-166, January 2018.
13. M.J. Kuhlman, M.W. Otte, D.A. Sofge, and S.K. Gupta. Multipass target search in natural environments. *Sensors*, 17(11), 2514, 2017.
14. L.J. Roberts. H. A. Bruck, and S.K. Gupta. Modeling of dive maneuvers for executing autonomous dives with a flapping wing air vehicle. *ASME Journal of Mechanisms and Robotics*, 9(6):061919-061919-11, December 2017.
15. J.W. Gerdes, H.A. Bruck, and S.K. Gupta. Improving prediction of flapping-wing motion by incorporating actuator constraints with models of aerodynamic loads using in-flight data. *ASME Journal of Mechanisms and Robotics*, 9(2):021011-021011-11, 2017.
16. A.M. Kabir, K.N. Kaipa, J. Marvel, S.K. Gupta. Automated planning for robotic cleaning using multiple setups and oscillatory tool motions. *IEEE Transaction on Automation Science and Engineering*, 14(3):1364-1377, July 2017.
17. A. Perez-Rosado, H.A. Bruck and S.K. Gupta. Integrating solar cells into flapping wing air vehicles for enhanced flight endurance. *ASME Journal of Mechanisms and Robotics*, 8(10):051006, October, 2016.
18. B. C. Shah, P. Svec, I.R. Bertaska, W. Klinger, A.J. Sinisterra, K. v. Ellenrieder, M. Dhanak, and S.K. Gupta. Resolution-adaptive risk-aware trajectory planning for surface vehicles operating in congested civilian traffic. *Autonomous Robots*, 40(7): 1139–1163, 2016.
19. Y.S. Kim, H. Shi, N.G. Dagalakis, and S.K. Gupta. Design of a MEMS-based motion stage based on a lever mechanism for generating large displacements and forces, *Journal of Micromechanics and Microengineering*, 26(9): 095008, 2016.

20. K.N. Kaipa, A.S. Kankanhalli-Nagendra, N.B. Kumbha, S. Shriyam, S. S. Thevendria-Karthic, J.A. Marvel, and S.K. Gupta. Addressing perception uncertainty induced failure modes in robotic bin-picking. *Robotics and Computer Integrated Manufacturing*, 42(12):17-38, 2016.
21. I.R. Bertaska, B. Shah, K. von Ellenrieder, P. Svec, W. Klinger, A.J. Sinisterra, M. Dhanak, and S.K. Gupta. Experimental evaluation of automatically-generated behaviors for USV operations. *Ocean Engineering*, 106:496—514, 2015.
22. A. Perez-Rosado, R.D. Gelhar, S. Nolen, S.K. Gupta, and H.A. Bruck. Design, fabrication, and characterization of multifunctional wings to harvest solar energy in flapping wing air vehicles. *Smart Materials and Structures*, 24(6):065042, 2015.
23. Z. Kootbally, C. Schlenoff, C. Lawler, T. Kramer, and S.K. Gupta. Towards robust assembly with knowledge representation for the planning domain definition language (PDDL). *Robotics and Computer-Integrated Manufacturing*, 33:42-55, 2015.
24. E. Raboin, P. Svec, D. S. Nau, and S.K. Gupta. Model-predictive asset guarding by team of autonomous surface vehicles in environment with civilian boats. *Autonomous Robots*, 38(3):261-282, 2015.
25. J.W. Gerdes, A. Holness, A. Perez-Rosado, L. Roberts, A. Greisinger, E. Barnett, J. Kempny, D. Lingam, C.H. Yeh, H.A. Bruck, and S.K. Gupta. Robo Raven: A flapping wing air vehicle with highly compliant and independently controlled wings. *Soft Robotics*, 1(4):275--288, 2014.
26. C. Wang, S. Chowdhury, M. Driscoll, C. Parent, S. K. Gupta, and W. Losert. The interplay of cell-cell and cell-substrate adhesion in collective cell migration. *Interface, Journal of the Royal Society*, 11: 20140684, 2014.
27. Y.S. Kim, N.G. Dagalakis, and S.K. Gupta. Design of MEMS based 3-axis motion stage by incorporating a nested structure. *Journal of Micromechanics and Microengineering*. 24(7): 075009, 2014.
28. M. Mani, J. Madan, J.H. Lee, K.W. Lyons, and S.K. Gupta. Sustainability characterization for manufacturing processes. *International Journal of Production Research*, 52(20): 5895-5912, 2014.
29. A.G. Banerjee, S. Chowdhury, and S.K. Gupta. Optical tweezers: Autonomous robots for the manipulation of biological cells. *IEEE Robotics and Automation Magazine*. 21(3): 81-88, 2014.
30. A. Thakur, S. Chowdhury, P. Svec, C. Wang, W. Losert, and S.K. Gupta. Indirect pushing based automated micromanipulation of biological cells using optical tweezers. *International Journal of Robotics Research*, 33(8):1098-1111, 2014.
31. J.K. Hopkins and S.K. Gupta. Design and modeling of a new drive system and exaggerated rectilinear-gait for a snake-inspired robot. *ASME Journal of Mechanism and Robotics*, 6(2):021001, 2014.
32. P. Svec, A. Thakur, E. Raboin, B.C. Shah, and S.K. Gupta. Target following with motion prediction for unmanned surface vehicle operating in cluttered environments. *Autonomous Robots*, 36(4): 383-405, 2014.
33. S. Chowdhury, A. Thakur, P. Svec, C. Wang, W. Losert, and S.K. Gupta. Automated manipulation of biological cells using gripper formations controlled by optical tweezers. *IEEE Transactions on Automation Science and Engineering*, 11(2): 338-347, 2014.
34. C. Morato, K.N. Kaipa, B. Zhao, and S.K. Gupta. Toward safe human robot collaboration by using multiple Kinects based real-time human tracking. *ASME Journal of Computing and Information Science in Engineering*, 14(1): 011006, Jan 2014.

35. D. Vogtman, S.K. Gupta, and S. Bergbreiter. Characterization and modeling of elastomeric joints in miniature compliant mechanisms. *ASME Journal of Mechanism and Robotics*, 5(4): 041017, 2013.
36. J.W. Gerdes, K.C. Cellon, H.A. Bruck, S.K. Gupta. Characterization of the mechanics of compliant wing designs for flapping-wing miniature air vehicles. *Experimental Mechanics*, 53: 1561-1571, 2013.
37. S. Chowdhury, P. Svec, C. Wang, K.T. Seale, J.P. Wikswo, W. Losert, and S.K. Gupta. Automated cell manipulation in optical tweezers-assisted microfluidic chamber. *IEEE Transactions on Automation Science and Engineering*, 10(4): 980-989, Oct. 2013.
38. S. Balakirsky, Z. Kootbally, T. Kramer, A. Pietromartire, C. Schlenoff, and S.K. Gupta. Knowledge driven robotics for kitting applications. *Robotics and Autonomous Systems*, 61(11):1205–1214, 2013.
39. C. Morato, K.N. Kaipa, and S.K. Gupta. Improving assembly precedence constraint generation by utilizing motion planning and part interaction clusters. *Computer-Aided Design*, 45(11):1349--1364, 2013.
40. A.G. Banerjee and S.K. Gupta. Research in automated planning and control for micro manipulation. *IEEE Transactions on Automation Science and Engineering*, 10(3): 485--495, July 2013.
41. S. Bista, S. Chowdhury, S.K. Gupta, and A. Varshney. Using GPUs for real time prediction of optical forces on microsphere ensembles. *ASME Journal of Computing and Information Science in Engineering*, 13(3): 031002, April 2013.
42. Y.S. Kim, N.G. Dagalakis, and S.K. Gupta. Creating large out-of-plane displacement electrothermal motion stage by incorporating beams with step features. *Journal of Micromechanics and Microengineering*, 23(5):055008, 2013.
43. C. Wang, S. Chowdhury, S.K. Gupta, and W. Losert. Optical micromanipulation of active cells with minimum perturbations: direct and indirect pushing. *Journal of Biomedical Optics*, 18(4):45001, 2013.
44. A. Thakur, P. Svec, and S.K. Gupta. GPU based generation of state transition models using simulations for unmanned sea surface vehicle trajectory planning. *Journal of Robotics and Autonomous System*, 60(12):1457-1471, December 2012.
45. A. Thakur and S.K. Gupta. Improving performance of rigid body dynamics simulation by removal of inaccessible regions from geometric models. *Computer Aided Design*, 44(12):1190-1204, December 2012.
46. A.G. Banerjee, S. Chowdhury, W. Losert, and S.K. Gupta. Real-time path planning for coordinated transport of multiple particles using optical tweezers. *IEEE Transaction on Automation Science and Engineering*, 9(4):669-678, October 2012.
47. Y.S. Kim, J.M. Yoo, S.H. Yang, Y.M. Choi, N.G. Dagalakis, and S.K. Gupta. Design and fabrication of a MEMS XY-stage using a serial kinematic mechanism for multi-finger manipulation. *Journal of Micromechanics and Microengineering*, 22(8): 085029, 2012.
48. A. Balijepalli, J. Gorman, S.K. Gupta, and T. LeBrun. Significantly improved trapping lifetime of nanoparticles in an optical trap using feedback control. *Nano Letters*, 12 (5), 2347-2351, 2012.
49. J.W. Gerdes, S.K. Gupta, and S. Wilkerson. A review of bird-inspired flapping wing miniature air vehicle designs. *ASME Journal of Mechanism and Robotics*, 4(2), 021003.1-021003.11, 2012.



50. R. Patro, J. Dickerson, S. Bista, S.K. Gupta, and A. Varshney. Speeding up particle trajectory simulations under moving force fields using GPUs. *ASME Journal of Computing and Information Science in Engineering*, 12(2):021006, June 2012.
51. P. Svec and S.K. Gupta. Automated synthesis of action selection policies for unmanned vehicles operating in adverse environments. *Autonomous Robots*, 32(2), 149-164, 2012.
52. J.G. Cevallos, A.E. Bergles, A. Bar-Cohen, P. Rodgers, and S.K. Gupta. Polymer heat exchangers - History, opportunities, and challenges. *Heat Transfer Engineering*, 33(13), 1075-1093, 2012.
53. A. Ananthanarayanan, L. Ehrlich, J.P. Desai, and S.K. Gupta. Design of revolute joints for in-mold assembly using insert molding. *ASME Journal of Mechanical Design*, 133(12):121010, Dec 2011.
54. W. Bejgerowski, J.W. Gerdes, S.K. Gupta, and H.A. Bruck. Design and fabrication of miniature compliant hinges for multi-material compliant mechanisms. *International Journal of Advanced Manufacturing Technology*, 57(5):437-452, 2011.
55. J. Cevallos, S.K. Gupta, A. Bar-Cohen. Incorporating moldability considerations during the design of thermally enhanced polymer heat exchangers. *ASME Journal of Mechanical Design*, 133(8):081009, August 2011.
56. A.G. Banerjee, S. Chowdhury, W. Losert, and S.K. Gupta. Survey on indirect optical manipulation of cells, nucleic acids, and motor proteins. *Journal of Biomedical Optics*, 16(5), 051301, May 2011.
57. A. Weissman, M. Petrov, S.K. Gupta, X. Fiorentini, R. Sudarsan, and R. Sriram. A computational framework for authoring and searching product design specifications. *Advanced Engineering Informatics*, 25(3):516-534, August 2011.
58. D. Bourne, J. Corney, and S.K. Gupta. Recent advances and future challenges in automated manufacturing planning. *ASME Journal of Computing and Information Science in Engineering*, 11(2): 021006, June 2011.
59. A. Thakur and S.K. Gupta. Real-time dynamics simulation of unmanned sea surface vehicles for virtual environments. *ASME Journal of Computing and Information Science in Engineering*, 11(3):031005, September 2011.
60. J.K. Hopkins, B.W. Spranklin, and S.K. Gupta. A case study in optimization of gait and physical parameters for a snake-inspired robot based on a rectilinear gait. *ASME Journal of Mechanism and Robotics*, 3(1):014503, February 2011.
61. B. Koss, S. Chowdhury, T. Aabo, S.K. Gupta, and W. Losert. Indirect optical gripping with triplet traps. *Journal of Optical Society of America B*, 28(5), 982-985, 2011.
62. A. Ananthanarayanan, S.K. Gupta, and H.A. Bruck. Modeling and characterization to minimize effects of melt flow fronts on premolded component deformation during in-mold assembly of mesoscale revolute joints. *ASME Journal of Manufacturing Science and Engineering*, 132 (4): 041006, 2010.
63. A. Ananthanarayanan, S.K. Gupta, and H.A. Bruck. Characterization of a reverse molding sequence at the mesoscale for in-mold assembly of revolute joints. *Journal of Polymer Engineering and Science*, 50(9): 1843-1852, 2010.
64. D. Mueller, H.A. Bruck, and S.K. Gupta. Measurement of thrust and lift forces associated with drag of compliant flapping wing for micro air vehicles using a new test stand design. *Experimental Mechanics*, 50(6):725-735, 2010.

65. A. Balijepalli, T.W. LeBrun, and S.K. Gupta. Stochastic simulations with graphics hardware: Characterization of accuracy and performance. *ASME Journal of Computing and Information Science in Engineering*, 10(1): 011010, March 2010.
66. A.G. Banerjee, A. Pomerance, W. Losert, and S.K. Gupta. Developing a stochastic dynamic programming framework for optical tweezers based automated particle transport operations. *IEEE Transactions on Automation Science and Engineering*, 7(2), 218 – 227, 2010.
67. W. Bejgerowski, S.K. Gupta, and H.A. Bruck. A systematic approach for designing multi-functional thermally conducting polymer structures with embedded actuators. *ASME Journal of Mechanical Design*, 131(11): 111009, 2009.
68. T. Peng, A. Balijepalli, S.K. Gupta, and T. LeBrun. Algorithms for extraction of nanowire lengths and positions from optical section microscopy image sequence. *ASME Journal of Computing and Information Science in Engineering*, 9(4), December 2009.
69. W. Bejgerowski, A. Ananthanarayanan, D. Mueller, and S.K. Gupta. Integrated product and process design for a flapping wing drive-mechanism. *ASME Journal of Mechanical Design*, 131: 061006, 2009.
70. A.G. Banerjee, A. Balijepalli, S.K. Gupta, and T.W. LeBrun. Generating simplified trapping probability models from simulation of optical tweezers system. *ASME Journal of Computing and Information Science in Engineering*, 9(2):021003, June 2009.
71. J.K. Hopkins, B.W. Spranklin, and S.K. Gupta. A survey of snake-inspired robot designs. *Bionispiration and Biomimetics*, 4(2):021001, 2009.
72. A. Thakur, A.G. Banerjee, and S.K. Gupta. A survey of CAD model simplification techniques for physics-based simulation applications. *Computer Aided Design*, 41(2):64-80, 2009.
73. A.K. Priyadarshi and S.K. Gupta. Algorithms for generating multi-stage molding plans for articulated assemblies. *Robotics and Computer Integrated Manufacturing*, 32(3/4):350-365, 2009.
74. A. Ananthanarayanan, S.K. Gupta, and H.A. Bruck. Characterization and control of plastic deformation in mesoscale premolded components to realize in-mold assembled mesoscale revolute joints. *Polymer Engineering and Science*, 49(2):293-304, 2009.
75. A.L. Gershon, L.J. Gyger, Jr., H.A. Bruck and S.K. Gupta. Thermoplastic polymer shrinkage in emerging molding processes. *Experimental Mechanics*, 48(6):789-798, 2008.
76. T. Peng and S.K. Gupta. Algorithms for generating adaptive projection patterns for 3-D shape measurement. *ASME Journal of Computing and Information Science in Engineering*, 8(3), 2008.
77. A.S. Deshmukh, A.G. Banerjee, S.K. Gupta, and R. Sriram. Content-based assembly search: A step towards assembly reuse. *Computer Aided Design*, 40(2):244-261, 2008.
78. T. Peng and S.K. Gupta. Model and algorithms for point cloud construction using digital projection patterns. *ASME Journal of Computing and Information Science in Engineering*, 7(4): 372-381, 2007.
79. T. Peng, A. Balijepalli, S.K. Gupta, and T. LeBrun. Algorithms for on-line monitoring of microspheres in an optical tweezers-based assembly cell. *ASME Journal of Computing and Information Science in Engineering*, 7(4):330-338, 2007.
80. A.G. Banerjee and S.K. Gupta. Geometric algorithms for automated design of side actions in injection molding of complex parts. *Computer Aided Design*, 39(10):882-897, 2007.

81. J.E. Brough, M. Schwartz, S.K. Gupta, D.K. Anand, R. Kavetsky, and R. Pettersen. Towards development of a virtual environment-based training system for mechanical assembly operations. *Virtual Reality*, 11(4):189-206, 2007.
82. H.A. Bruck, A.L. Gershon, I. Golden, S.K. Gupta, L.S. Gyger, Jr., E. B. Magrab, and B.W. Spranklin. Training Mechanical Engineering students to utilize biological inspiration during product development. *Bionispiration and Biomimetics*, 2:S198-S209, 2007.
83. A. Banerjee, X. Li, G. Fowler, and S.K. Gupta. Incorporating manufacturability considerations during design of injection molded multi-material objects. *Research in Engineering Design*, 17(4):207-231, March 2007.
84. L.S. Gyger, Jr., P. Kulkarni, H.A. Bruck, S.K. Gupta, and O.C. Wilson, Jr. Replamineform Inspired Bone Structures (RIBS) using multi-piece molds and advanced ceramic gelcasting technology. *Materials Science and Engineering C*, 27(4):646-653, 2007.
85. A.K. Priyadarshi, S.K. Gupta, R. Gouker, F. Krebs, M. Shroeder, and S. Warth. Manufacturing multi-material articulated plastic products using in-mold assembly. *International Journal of Advanced Manufacturing Technology*, 32(3-4):350-365, March 2007.
86. R.M. Gouker, S.K. Gupta, H.A. Bruck, and T. Holzschuh. Manufacturing of multi-material compliant mechanisms using multi-material molding. *International Journal of Advanced Manufacturing Technology*, 30(11-12):1049-1075, 2006.
87. A. Cardone, S.K. Gupta, A. Deshmukh, and M. Karnik. Machining feature-based similarity assessment algorithms for prismatic machined parts. *Computer Aided Design*, 38(9):954-972, 2006.
88. S.K. Gupta, S.K. Saini, B.W. Spranklin, and Z. Yao. Geometric algorithms for computing cutter engagement functions in 2.5D milling operations. *Computer Aided Design*, 37(14):1469-1480, 2005.
89. M.V. Karnik, S.K. Gupta, and E.B. Magrab. Geometric algorithms for containment analysis of rotational parts. *Computer Aided Design*, 37(2):213-230, 2005.
90. X. Li and S.K. Gupta. Geometric algorithms for automated design of rotary-platen multi-shot molds. *Computer Aided Design*, 36(12):1171-1187, 2004.
91. Z. Yao and S.K. Gupta. Cutter path generation for 2.5D milling by combining multiple different cutter path patterns. *International Journal of Production Research*, 42(11):2141-2161, 2004.
92. H. Bruck, G. Fowler, S.K. Gupta, and T. Valentine. Towards bio-inspired interfaces: Using geometric complexity to enhance the interfacial strengths of heterogeneous structures fabricated in a multi-stage multi-piece molding process. *Experimental Mechanics*, 44(3):261-271, 2004.
93. A. Priyadarshi and S.K. Gupta. Geometric algorithms for automated design of multi-piece permanent molds. *Computer Aided Design*, 36(3):241-260, 2004.
94. S. Dhaliwal, S.K. Gupta, J. Huang, and A. Priyadarshi. Algorithms for computing global accessibility cones. *ASME Journal of Computing and Information Science in Engineering*, 3(3):200-209, 2003.
95. J. Huang, S.K. Gupta, and K. Stoppel. Generating sacrificial multi-piece molds using accessibility driven spatial partitioning. *Computer Aided Design*, 35(13):1147-1160, 2003.
96. S.K. Gupta, Y.S. Chen, S. Feng, and R. Sriram. A system for generating process and material selection advice during embodiment design of mechanical components. *SME Journal of Manufacturing Systems*, 22(1):28-45, 2003.

97. A. Cardone, S.K. Gupta, and M. Karnik. A survey of shape similarity assessment algorithms for product design and manufacturing applications. *ASME Journal of Computing and Information Science in Engineering*, 3(2):109-118, 2003.
98. S. Bellam and S.K. Gupta. An efficient geometric algorithm for extracting structural elements to facilitate automated MEMS extraction. *ASME Journal of Computing and Information Science in Engineering*, 3(2):155-165, 2003.
99. Z. Yao, S.K. Gupta, and D. Nau. Algorithms for selecting cutters in multi-part milling problems. *Computer Aided Design*, 35(9):825-839, 2003.
100. S.K. Gupta and D. Rajagopal. Sheet metal bending: Forming part families for shared setup generation. *SME Journal of Manufacturing Systems*, 21(5):329-350, 2002.
101. M. Kumar and S.K. Gupta. Automated design of multi-stage molds for manufacturing multi-material objects. *ASME Journal of Mechanical Design*, 124(3):399-407, 2002.
102. B. Baidya, S.K. Gupta, and T. Mukherjee. An extraction based verification methodology for MEMS. *IEEE/ASME Journal of Microelectromechanical Systems*, 11(1):2-11, 2002.
103. R. Sinha, S.K. Gupta, C.J. Paredis, P.K. Khosla. Extracting articulation models from CAD models of parts with curved surfaces. *ASME Journal of Mechanical Design*, 124(1):106-114, 2002.
104. S. Dhaliwal, S.K. Gupta, J. Huang, and M. Kumar. A feature based approach to automated design of multi-piece sacrificial molds. *ASME Journal of Computing and Information Science in Engineering*, 1(3):225-234, 2001.
105. S.K. Gupta, C.J. Paredis, R. Sinha, and P.F. Brown. Intelligent assembly modeling and simulation. *Assembly Automation*, 21(3):215-235, 2001.
106. Z. Yao, S.K. Gupta, and D.S. Nau. A geometric algorithm for finding the largest milling cutter. *SME Journal of Manufacturing Processes*, 3(1):1-16, 2001.
107. U. Alva and S.K. Gupta. Automated design of sheet metal punches for bending multiple parts in a single setup. *Robotics and Computer Integrated Manufacturing*, 17(1/2):33-47, 2001.
108. R.K. Arni and S.K. Gupta. Manufacturability analysis of flatness tolerances in solid freeform fabrication. *ASME Journal of Mechanical Design*, 123(1):148-156, 2001.
109. H. Last, M. Deeds, D. Garvick, B. Kavetsky, P. Sandborn, E.B. Magrab, and S.K. Gupta. Nano-to-millimeter scale integrated systems. *IEEE Transactions on Components and Packaging Technologies*, 22(2):338-343, 1999.
110. S.K. Gupta. Sheet metal bending operation planning: Using virtual node generation to improve search efficiency. *SME Journal of Manufacturing Systems*, 18(2):127-139, 1999.
111. S.K. Gupta and D.A. Bourne. Sheet metal bending: Generating shared setups. *ASME Journal of Manufacturing Science and Engineering*, 121:689-694, 1999.
112. S.K. Gupta, D.A. Bourne, K. Kim, and S.S. Krishnan. Automated process planning for sheet metal bending operations. *SME Journal of Manufacturing Systems*, 17(5):338-360, 1998.
113. S.K. Gupta, D.S. Nau, and W.C. Regli. IMACS: A case study in real-world planning. *IEEE Intelligent Systems*, 13(3):49-60, 1998.
114. S.K. Gupta. Using manufacturing planning to generate manufacturability feedback. *ASME Journal of Mechanical Design*, 119:73-79, March 1997.

115. S.K. Gupta, D. Das, W.C. Regli, and D.S. Nau. Automated manufacturability analysis: A survey. *Research in Engineering Design*, 9(3):168-190, 1997.
116. W.C. Regli, S.K. Gupta, and D.S. Nau. Towards multiprocessor feature recognition. *Computer Aided Design*, 29(1):37-51, 1997.
117. D. Das, S.K. Gupta, and D.S. Nau. Generating redesign suggestions to reduce setup cost: A step towards automated redesign. *Computer Aided Design*, 28(10):763-782, 1996.
118. S.K. Gupta and D.S. Nau. Systematic approach to analyzing the manufacturability of machined parts. *Computer Aided Design*, 27(5):323-342, 1995.
119. W.C. Regli, S.K. Gupta, and D.S. Nau. Extracting alternative machining features: An algorithmic approach. *Research in Engineering Design*, 7(3):173-192, 1995.
120. S.K. Gupta, T.R. Kramer, D.S. Nau, W.C. Regli, and G. Zhang. Building MRSEV models for CAM applications. *Advances in Engineering Software*, 20(2-3):121-139, 1994.
121. S.K. Gupta, W.C. Regli, and D.S. Nau. Integrating DFM with CAD through design critiquing. *Concurrent Engineering: Research and Applications*, 2(2):85-95, 1994.
122. S.K. Gupta, D.S. Nau, and G.M. Zhang. Concurrent evaluation of machinability during product design. *IEEE Computer*, 26(1): 62-63, 1993.
123. S.K. Gupta, P.N. Rao, and N.K. Tewari. Development of a CAPP system for prismatic parts using feature based design concepts. *International Journal of Advanced Manufacturing Technology*, 7:306-313, 1992.

### **Editorials**

124. S.K. Gupta and V. Kumar. Exciting trends for automation in manufacturing. *IEEE Transactions on Automation Science and Engineering*, 10(2):225-226, April 2013.
125. J. Corney and S.K. Gupta, Introduction to special issue on Advances in Computer Aided Manufacturing. *ASME Journal of Computing and Information Science in Engineering*, 7(3):185-185, September 2007.
126. S.K. Gupta and W.C. Regli. Introduction to special issue on Feature-Based Manufacturing. *Computer Aided Design*, 33(9):619-620, 2001.

### **Book Reviews**

127. S.K. Gupta. Review of *Computer-Aided Injection Mold Design and Manufacture* (by JYH Fuh, YF Zhang, AYC Nee, MW Fu). *Computer Aided Design*, 37(14):1543, 2005.

## **C. CONFERENCE PUBLICATIONS**

### **Full Paper Refereed Publications in Conference Proceedings**

1. S. Al-Hussaini, J. M. Gregory and S. K. Gupta. Generation of context-dependent policies for robot rescue decision-making in multi-robot teams. *IEEE/RSJ International Conference on Intelligent Robots and Systems*, Madrid, Spain, October 1-5, 2018.
2. D. Jones, M.J. Kuhlman, D.A. Sofge, S.K. Gupta, and G. A. Hollinger. Stochastic optimization for autonomous vehicles with limited control authority. *IEEE/RSJ International Conference on Intelligent Robots and Systems*, Madrid, Spain, October 1-5, 2018.

3. S. Al-Hussaini, J. M. Gregory, and S. K. Gupta. A policy synthesis-based framework for robot rescue decision-making in multi-robot exploration of disaster sites. *IEEE International Symposium on Safety, Security, and Rescue Robotics*, Philadelphia, PA, USA, August 2018.
4. P. Rajendran, T. Moscicki, J. Wampler, B. C. Shah, K. D. von Ellenrieder, S. K. Gupta. Wave-aware trajectory planning for unmanned surface vehicles operating in congested environments. *IEEE International Symposium on Safety, Security, and Rescue Robotics*, Philadelphia, PA, USA, August 2018.
5. S. Thakar, L. Fang, B. C. Shah, and S. K. Gupta. Towards time-optimal trajectory planning for pick-and-transport operation with a mobile manipulator. *IEEE International Conference on Automation Science and Engineering*, Munich, Germany, Aug 2018.
6. N.B. Kumbla, J.A. Marvel, and S.K. Gupta. Enabling fixtureless assemblies in human-robot collaborative workcells by reducing uncertainty in the part pose estimate. *IEEE International Conference on Automation Science and Engineering*, Munich, Germany, Aug 2018.
7. A. M. Kabir, B. C. Shah, and S. K. Gupta. Trajectory Planning for manipulators operating in confined workspaces. *IEEE International Conference on Automation Science and Engineering*, Munich, Germany, Aug 2018.
8. R. K. Malhan, A. M. Kabir, A. V. Shembekar, B. C. Shah, T. Centea, and S. K. Gupta. Hybrid cells for multi-layer prepreg composite sheet layup. *IEEE International Conference on Automation Science and Engineering*, Munich, Germany, Aug 2018.
9. A. V. Shembekar, Y. J. Yoon, A. Kanyuck and S.K. Gupta. Trajectory planning for conformal 3d printing using non-planar layers. *ASME Computers and Information in Engineering Conference*, Montreal, Quebec City, Canada, August 2018.
10. S. Shriyam and S.K. Gupta. Task assignment and scheduling for mobile robot teams. *ASME Mechanism and Robotics Conference*, Quebec City, Canada, August 2018.
11. P.M. Bhatt, M. Peralta, H.A. Bruck, and S.K. Gupta. Robot assisted additive manufacturing of thin multifunctional structures. *ASME Manufacturing Science and Engineering Conference*, College Station, TX, June 2018.
12. A.M. Kabir, A.V. Shembekar, R.K. Malhan, R.S. Aggarwal, J.D. Langsfeld, B.C. Shah, and S.K. Gupta. Robotic finishing of interior regions of geometrically complex parts. *ASME Manufacturing Science and Engineering Conference*, College Station, TX, June 2018.
13. R.K. Malhan, Y. Shahapurkar, A.M. Kabir, B.C. Shah, and S.K. Gupta. Integrating impedance control and learning based search scheme for robotic assemblies under uncertainty. *ASME Manufacturing Science and Engineering Conference*, College Station, TX, June 2018.
14. L. Zhao and S.K. Gupta. Design, manufacturing, and characterization of a pneumatically-actuated soft hand. *ASME Manufacturing Science and Engineering Conference*, College Station, TX, June 2018.
15. R.K. Malhan, A.M. Kabir, B. Shah, T. Centea, S.K. Gupta. Automated prepreg sheet placement using collaborative robotics. *SAMPE*, Long Beach, CA, May 2018.
16. S. Shriyam, and S.K. Gupta. Incorporating potential contingency tasks in multi-robot mission planning. *IEEE International Conference on Robotics and Automation*, Brisbane, Australia, May 2018.
17. G.E. Mullins, A.G. Dress, P.G. Stankiewicz, J.D. Appler, and S.K. Gupta. "Accelerated Testing and Evaluation of Autonomous Vehicles via Imitation Learning. *IEEE International Conference on Robotics and Automation*, Brisbane, Australia, May 2018.

18. J. Gregory, I. Brookshaw, J. Fink, and S.K. Gupta. An investigation of goal assignment for a heterogeneous robotic team to enable resilient disaster-site exploration. *IEEE International Symposium on Safety, Security, and Rescue Robotics*, Shanghai, China, October 2017.
19. J.W. Gerdes, H.A. Bruck, S.K. Gupta. Experimental power model identification of a flapping wing air vehicle with flight test data. *ASME Mechanisms and Robotics Conference*, Cleveland, OH, August 2017.
20. S. Shriyam, B.C. Shah, and S.K. Gupta. On-line task decomposition for collaborative surveillance of marine environment by a team of unmanned surface vehicles. *ASME Mechanisms and Robotics Conference*, Cleveland, OH, August 2017.
21. C.W. Morato, K.N. Kaipa, and S.K. Gupta. System state monitoring to facilitate safe and efficient human-robot collaboration in hybrid assembly cells. *ASME Computers and Information in Engineering Conference*, Cleveland, OH, August 2017.
22. N. Bhatt, S. Thakar, K.N. Kaipa, J. Marvel, and S.K. Gupta. Simulation-based on-line evaluation of singulation plans to handle perception uncertainty in robotic bin-picking. *ASME Manufacturing Science and Engineering Conference*, Los Angeles, CA, USA, June 2017.
23. A. Alsharhan, T. Centea, and S.K. Gupta. Enhancing the mechanical properties of thin-walled structures using non-planar extrusion-based additive manufacturing. *ASME Manufacturing Science and Engineering Conference*, Los Angeles, CA, USA, June 2017.
24. A.M. Kabir, J.D. Langsfeld, C. Zhuang, K.N. Kaipa, and S.K. Gupta. A systematic approach for minimizing physical experiments to identify optimal trajectory parameters for robots. *IEEE International Conference on Robotics and Automation*, Singapore, May 2017.
25. G.E. Mullins, P.G. Stankiewicz, and S.K. Gupta. Automated generation of diverse and challenging scenarios for test and evaluation of autonomous vehicles. *IEEE International Conference on Robotics and Automation Conference*, Singapore, May 2017.
26. M.J. Kuhlman, MW. Otte, D.A. Sofge, and S.K. Gupta. Maximizing mutual information for multipass target search in changing environments. *IEEE International Conference on Robotics and Automation Conference*, Singapore, May 2017.
27. K.N. Kaipa, C. Morato, J.Liu, and S.K. Gupta. Towards automated generation of multimodal assembly instructions for human operators. *International Conference on Systems Engineering Research*, Redondo Beach, CA, March 2017.
28. L. Johnson, H.A. Bruck, and S.K. Gupta. Design, fabrication, and characterization of a soft, multi-fingered hand. *ASME International Mechanical Engineering Congress and Exposition*, Phoenix, AZ, November 11-17, 2016.
29. L. Roberts, H.A. Bruck, and S.K. Gupta. Using a large two degree of freedom tail for autonomous aerobatics on a flapping wing unmanned serial vehicle. *ASME Mechanisms and Robotics Conference*, Charlotte, NC, August 2016.
30. J. Gerdes, H.A. Bruck, and S.K. Gupta. Instrumenting a flapping wing air vehicle system for free flight measurement. *ASME Mechanisms and Robotics Conference*, Charlotte, NC, August 2016.
31. A. Holness, E. Steins, H.A. Bruck, M. Peckerar, and S.K. Gupta. Performance characterization of multifunctional wings with integrated flexible batteries for flapping wing unmanned air vehicles. *ASME Mechanisms and Robotics Conference*, Charlotte, NC, August 2016.
32. A.M. Kabir, J.D. Langsfeld, S. Shriyam, V. Rachakonda, C. Zhaung, K.N. Kaipa, J. Marvel, and S.K. Gupta. Planning algorithms for multi-setup multi-pass robotic cleaning with oscillatory

- moving tools. *IEEE International Conference on Automation Science and Engineering*, Fort Worth, TX, August, 2016.
33. J.D. Langsfeld, A.M. Kabir, K.N. Kaipa, and S.K. Gupta. Robotic bimanual cleaning of deformable objects with online learning of part and tool models. *IEEE International Conference on Automation Science and Engineering*, Fort Worth, TX, August 2016.
  34. K. N. Kaipa, A. S. Kankanhalli-Nagendra, N. B. Kumbala, S. Shriyam, S. S. Thevendria-Karthic, J. A. Marvel, and S. K. Gupta. Enhancing robotic unstructured bin-picking performance by enabling remote human interventions in challenging perception scenarios. *IEEE International Conference on Automation Science and Engineering*, Fort Worth, TX, August 2016.
  35. M. Bollavaram, P. Sane, S. Chowdhury, S.K. Gupta, and A. G. Banerjee. Automated detection of live cells and microspheres in low contrast bright field microscopy. *International Conference on Manipulation, Automation and Robotics at Small Scales*, Paris, France, July 2016.
  36. B.C. Shah and S.K. Gupta. Speeding up A\* search on visibility graphs defined over quadrees to enable long distance path planning for unmanned surface vehicles. *International Conference on Automated Planning and Scheduling*, London, UK, June 2016.
  37. J.D. Langsfeld, A. M. Kabir, K.N. Kaipa, and S.K. Gupta. Online learning of part deformation models in robotic cleaning. *ASME Manufacturing Science and Engineering Conference*, Blacksburg, USA, June 2016.
  38. K.N. Kaipa, S. Shriyam, N. Kumbala, and S.K. Gupta. Resolving occlusions through simple extraction motions in robotic bin picking. *ASME Manufacturing Science and Engineering Conference*, Blacksburg, USA, June 2016.
  39. A.M. Kabir, J.D. Langsfeld, C. Zhuang, K.N. Kaipa, and S.K. Gupta. Automated learning of operation parameters for robotic cleaning by mechanical scrubbing. *ASME Manufacturing Science and Engineering Conference*, Blacksburg, USA, June 2016.
  40. A. Narayanan, A. Kanyuck, S.K. Gupta, and S. Rachuri. Machine condition detection for milling operations using low cost ambient sensors. *ASME Manufacturing Science and Engineering Conference*, Blacksburg, USA, June 2016.
  41. L.J. Roberts, H.A. Bruck, and S.K. Gupta. Modeling of dive maneuvers in flapping wing unmanned aerial vehicles. *IEEE International Symposium on Safety, Security, and Rescue Robotics*, West Lafayette, IN, October 2015.
  42. G. Mullins and S.K. Gupta. Adversarial blocking techniques for autonomous surface vehicles using model-predictive motion goal computation. *IEEE/RSJ International Conference on Intelligent Robots and Systems*, Hamburg, Germany, Sept 28-October 2, 2015.
  43. K.N. Kaipa, S.S. Thevendria-Karthic, S. Shriyam, A.M. Kabir, J. D. Langsfeld, and S.K. Gupta. Resolving automated perception system failures in bin-picking tasks using assistance from remote human operators. *IEEE International Conference on Automation Science and Engineering*, Gothenburg, Sweden, August 24-28, 2015.
  44. A. Holness, H.A. Bruck, and S.K. Gupta. Design of propeller-assisted flapping wing air vehicles for enhanced aerodynamic performance. *ASME Mechanism and Robotics Conference*, Boston, MA, August 2015.
  45. J.W. Gerdes, H.A. Bruck, and S.K. Gupta. A systematic exploration of wing size on flapping wing air vehicle performance. *ASME Mechanism and Robotics Conference*, Boston, MA, August 2015.



46. A. Perez-Rosado, H.A. Bruck, and S.K. Gupta. Enhancing the design of solar-powered flapping wing air vehicles using multifunctional structural components. *ASME Mechanism and Robotics Conference*, Boston, MA, August 2015.
47. M.J. Kuhlman, J. Hays, D. Sofge, and S.K. Gupta. Stabilizing task-based omnidirectional quadruped locomotion with virtual model control. *IEEE International Conference on Robotics and Automation*, Seattle, WA, May 2015.
48. S. Chowdhury, M. Diakite, T. Shin, and R. P. Gullapalli, J. Desai, and S. K. Gupta. Towards the development of a low-cost highly articulated MRI-compatible neurosurgical robot. *ASME Dynamic Systems and Control Conference*, San Antonio, TX, USA, October 2014.
49. B. C. Shah, P. Svec, I. R. Bertaska, W. Klinger, A. J. Sinisterra, K. von Ellenrieder, M. Dhanak, and S.K. Gupta. Trajectory planning with adaptive control primitives for autonomous surface vehicles operating in congested civilian traffic. *IEEE/RSJ International Conference on Intelligent Robots and Systems*, Chicago, IL, USA, September 14-18, 2014.
50. C. Morato, K.N. Kaipa, J. Liu, and S.K. Gupta. A framework for hybrid cells that support safe and efficient human-robot collaboration in assembly operations. *ASME Computers and Information in Engineering Conference*, Buffalo, NY, August 2014.
51. G. Krummel, K.N. Kaipa, and S.K. Gupta. A horseshoe crab inspired surf zone robot with righting capabilities. *ASME Mechanism and Robotics Conference*, Buffalo, NY, August 2014.
52. L. Roberts, H.A. Bruck, S.K. Gupta. Autonomous loitering control for a flapping wing aerial vehicle with independent wing control. *ASME Mechanism and Robotics Conference*, Buffalo, NY, August 2014.
53. A. Perez-Rosado, A.G.J. Griesinger, H.A. Bruck, and S.K. Gupta. Performance characterization of multifunctional wings with integrated solar cells for miniature air vehicles. *ASME Mechanism and Robotics Conference*, Buffalo, NY, August 2014.
54. A. Vogel, K.N. Kaipa, G. Krummel, H.A. Bruck, and S.K. Gupta. Design of a compliance assisted quadrupedal amphibious robot. *IEEE International Conference on Robotics and Automation*, Hong Kong, China, May 31-June 7, 2014.
55. M.J. Kuhlman, P.Svec, K.N. Kaipa, D. Sofge, and S.K. Gupta. Physics-aware informative coverage planning for autonomous vehicles. *IEEE International Conference on Robotics and Automation*, Hong Kong, China, May 31-June 7, 2014.
56. L. Vallivullah, M. Mani, K.W. Lyons, and S.K. Gupta. Manufacturing process information models for sustainable manufacturing. *ASME Manufacturing Science and Engineering Conference*, Detroit, Michigan, June 2014.
57. P. Svec, B. C. Shah, I. R. Bertaska, J. Alvarez, A. J. Sinisterra, K. von Ellenrieder, M. Dhanak, and S.K. Gupta. Dynamics-aware target following for an autonomous surface vehicle operating under COLREGs in civilian traffic. *IEEE/RSJ International Conference on Intelligent Robots and Systems*, Tokyo, Japan, November 2013.
58. R. B. Bertaska, J. Alvarez, A. J. Sinisterra, K. Ellenrieder, M. Dhanak, B. Shah, P. Svec, and S.K. Gupta. Experimental evaluation of approach behavior for autonomous surface vehicles. *ASME Dynamic Systems and Control Conference*, Stanford University, Palo Alto, October 2013.
59. T. Kramer, Z. Kootbally, S. Balakirsky, C. Schlenoff, A. Pietromartire, S.K. Gupta. Performance evaluation of knowledge-based kitting via simulation. *IEEE International Conference on Automation Science and Engineering*, Madison, WI, August 2013.

60. C. Morato, K. Kaipa, B. Zhao, and S.K. Gupta. Safe human robot interaction by using exteroceptive sensing based human modeling. *ASME Computers and Information in Engineering Conference*, Portland, OR, August 2013.
61. M.F. Watkins, M. Mani, K.W. Lyons and S.K. Gupta. Sustainability characterization for die casting process. *ASME Computers and Information in Engineering Conference*, Portland, OR, August 2013.
62. S. Chowdhury, A. Thakur, C. Wang, P. Svec, W. Losert, and S.K. Gupta. Enhancing range of transport in optical tweezers assisted microfluidic chambers using automated stage motion. *ASME International Conference on Micro and Nanosystems*, Portland, OR, August 2013.
63. J. Hopkins and S.K. Gupta. Analysis of a low effort rectilinear gait for a snake-inspired robot. *ASME Mechanism and Robotics Conference*, Portland, OR, August 2013.
64. D.E. Vogtmann, S.K. Gupta, and S. Bergbreiter. Modeling and optimization of a miniature elastomeric compliant mechanism using a 3-spring pseudo rigid body model. *ASME Mechanism and Robotics Conference*, Portland, OR, August 2013.
65. J.W. Gerdes, L. Roberts, E. Barnett, J. Kempny, A. Perez-Rosado H.A. Bruck, and S.K. Gupta. Wing performance characterization for flapping wing air vehicles. *ASME Mechanism and Robotics Conference*, Portland, OR, August 2013.
66. S. Chowdhury, A. Thakur, C. Wang, P. Svec, W. Losert, and S.K. Gupta. Automated indirect manipulation of irregular shaped cells with optical tweezers for studying collective cell migration. *IEEE International Conference on Robotics and Automation*, Karlsruhe, Germany, May 2013.
67. E. Raboin, P. Svec, D. Nau, and S.K. Gupta. Model-predictive target defense by team of unmanned surface vehicles operating in uncertain environments. *IEEE International Conference on Robotics and Automation*, Karlsruhe, Germany, May 2013.
68. S. Balakirsky, Z. Kootbally, C. Schlenoff, T. Kramer, and S.K. Gupta. An industrial robotic knowledge representation for kit building applications. *IEEE/RSJ International Conference on Intelligent Robots and Systems*, Vilamoura, Algarve. Portugal, October 7-12, 2012.
69. S. Chowdhury, A. Thakur, C. Wang, P. Svec, W. Losert, S.K. Gupta. Automated indirect transport of biological cells using planar gripper formations. *IEEE International Conference on Automation Science and Engineering*, Seoul, Korea, August 2012.
70. A. Thakur, S. Chowdhury, P. Svec, C. Wang, W. Losert, and S.K. Gupta. Automated indirect optical micromanipulation of biological cells using indirect pushing for minimizing photo-damage. *ASME International Conference on Micro and Nanosystems*, Chicago, IL, August 2012.
71. Y. Kim, N.G. Dagalakis, and S.K. Gupta. Design and fabrication of a three-DOF MEMS stage based on nested structures. *ASME International Conference on Micro and Nanosystems*, Chicago, IL, August 2012.
72. P. Svec, A. Thakur, B.C. Shah, and S.K. Gupta. USV trajectory planning for time varying motion goals in an environment with obstacles. *ASME Mechanism and Robotics Conference*, Chicago, IL, August 2012.
73. J. Hopkins and S.K. Gupta. Dynamics-based model for a new class of rectilinear-gait for a snake-inspired robot. *ASME Mechanism and Robotics Conference*, Chicago, IL, August 2012.
74. M. Dabbeeru, J. Langsfeld, P. Svec, and S.K. Gupta. Towards energy efficient follow behaviors for unmanned ground vehicles over rugged terrain. *ASME Mechanism and Robotics Conference*, Chicago, August 2012.

75. D.E. Vogtmann, S.K. Gupta, and S. Bergbreiter. Characterization and modeling of elastomeric joints in miniature compliant mechanisms. *ASME Mechanism and Robotics Conference*, Chicago, IL, August 2012.
76. K. Kaipa, C. Morato, B. Zhao, and S.K. Gupta. Instruction generation for assembly operation performed by human operators. *ASME Computers and Information in Engineering Conference*, Chicago, IL, August 2012.
77. S. Bista, S. Chowdhury, S.K. Gupta, and A. Varshney. Using GPUs for real time prediction of optical forces on microsphere ensembles. *ASME Computers and Information in Engineering Conference*, Chicago, IL, August 2012.
78. B. Russ, M. M. Dabbeeru, A.S. Chorney, and S.K. Gupta. Automated assembly model simplification for finite element analysis. *ASME Computers and Information in Engineering Conference*, Chicago, IL, August 2012.
79. C. Morato, K. Kaipa, and S.K. Gupta. Assembly sequence planning by using dynamic multi-random trees based motion planning. *ASME Computers and Information in Engineering Conference*, Chicago, IL, August 2012.
80. M. Mani, J. Madan, J. H. Lee, K. Lyons, and S.K. Gupta. Characterizing sustainability for manufacturing performance assessment. *ASME Computers and Information in Engineering Conference*, Chicago, IL, August 2012.
81. T. Brewer, K. Kaipa, and S.K. Gupta. A quadruped robot with on-boarding sensing and parameterized gait for stair climbing. *International Conference on Climbing and Walking Robots and the Support Technologies for Mobile Machines*, Baltimore, MD, July 2012.
82. M.M. Dabbeeru, J.D. Langsfeld, P. Svec, and S.K. Gupta. Turn around behavior generation and execution for unmanned ground vehicles operating in rough terrain. *International Conference on Climbing and Walking Robots and the Support Technologies for Mobile Machines*, Baltimore, MD, July 2012.
83. T. Hall, A.V. Subramoniam, H.A. Bruck, and S.K. Gupta. Development of a fiber orientation measurement methodology for injection molded thermally-enhanced polymers. *ASME International Manufacturing Science and Engineering Conference*, Notre Dame, Indiana, June 2012.
84. A. Ananthanarayanan, L. Ehrlich, M. Ho, J.P. Desai and S.K. Gupta. Embedding shape memory alloy actuators in miniature articulating polymer structures using in-mold assembly. *North American Manufacturing Research Conference*, Notre Dame, IN, June 2012.
85. S. Chowdhury, P. Svec, C. Wang, W. Losert, and S.K. Gupta. Gripper Synthesis for indirect manipulation of cells using holographic optical tweezers. *IEEE International Conference on Robotics and Automation*, St. Paul, Minnesota, May 2012.
86. J. Hopkins and S.K. Gupta. Characterization of forward rectilinear-gait performance for a snake-inspired robot. *Performance Metrics for Intelligent Systems Workshop*, College Park, MD, March 2012.
87. Y.S. Kim, N.G. Dagalakakis, and S.K. Gupta. Design, fabrication and characterization of a single-layer out-of-plane electrothermal actuator for a MEMS XYZ stage. *Performance Metrics for Intelligent Systems Workshop*, College Park, MD, March 2012.
88. P. Svec, M. Schwartz, A. Thakur, and S.K. Gupta. Trajectory planning with look-ahead for unmanned sea surface vehicles to handle environmental uncertainties. *IEEE/RSJ International Conference on Intelligent Robots and Systems*, San Francisco, CA September 2011.

89. J. Hopkins and S.K. Gupta. Design of a drive mechanism for a rectilinear-gait based snake-inspired robot. *ASME Mechanisms and Robotics Conference*, Washington DC, August 2011.
90. A. Thakur, P. Svec, and S.K. Gupta. Generation of state transition model using simulation for unmanned sea surface vehicle trajectory planning. *ASME Mechanisms and Robotics Conference*, Washington DC, August 2011.
91. S. Chowdhury, P. Svec, C. Wang, K.T. Seale, J.P. Wikswo, W. Losert, and S.K. Gupta. Investigation of automated cell manipulation in optical tweezers assisted microfluidic chamber using simulation. *ASME International Conference on Micro and Nanosystems*, Washington DC, August 2011.
92. Y.S. Kim, N.G. Dagalakis, and S.K. Gupta. A two degree of freedom nanopositioner with electrothermal actuator for decoupled motion. *ASME International Conference on Micro and Nanosystems*, Washington DC, August 2011.
93. D. Vogtmann, S.K. Gupta, and S. Bergbreiter. A systematic approach to designing multi-material miniature compliant mechanisms. *ASME Mechanisms and Robotics Conference*, Washington DC, August 2011.
94. A. Weissman and S.K. Gupta. Selecting a design-stage energy estimation approach for manufacturing processes. *ASME Design for Manufacturing and the Life Cycle Conference*, Washington DC, August 2011.
95. T. Hall, M. Dabbeeru, and S.K. Gupta. A new approach for explicit construction of moldability based feasibility boundary for polymer heat exchangers. *ASME Design for Manufacturing and the Life Cycle Conference*, Washington DC, August 2011.
96. J. Cevallos, A. Bar-Cohen, and S.K. Gupta. An integrated approach to design of enhanced polymer heat exchangers. *ASME Design for Manufacturing and the Life Cycle Conference*, Washington DC, August 2011.
97. B. Russ, M. Dabbeeru, A. Chorney, D. Skelley, and S.K. Gupta. Suppressing features to generate simplified models for finite element analysis. *ASME Computers and Information in Engineering Conference*, Washington DC, August 2011.
98. W. Bejgerowski and S.K. Gupta. Runner optimization for in-mold assembly of multi-material compliant mechanisms. *ASME Computers and Information in Engineering Conference*, Washington DC, August 2011.
99. D. Vogtmann, S.K. Gupta, and S. Bergbreiter. Multi-material compliant mechanisms for mobile millirobots. *IEEE International Conference on Robotics and Automation*, Shanghai, China, May 2011.
100. A. Ananthanarayanan, L. Ehrlich, S.K. Gupta, and J.P. Desai. Design of revolute joints for insert molding: A step towards realizing low cost highly articulated robot structures. *ASME Design for Manufacturing and Lifecycle Conference*, Montreal, Canada, August 2010.
101. W. Bejgerowski, J.W. Gerdes, S.K. Gupta, H.A. Bruck, and S. Wilkerson. Design and fabrication of a multi-material compliant flapping wing drive mechanism for miniature air vehicles. *ASME Mechanism and Robotics Conference*, Montreal, Canada, August 2010.
102. J.W. Gerdes, S.K. Gupta, and S. Wilkerson. A review of bird-inspired flapping wing miniature air vehicle designs. *ASME Mechanism and Robotics Conference*, Montreal, Canada, August 2010.
103. A. Weissman, A. Ananthanarayanan, S.K. Gupta, and R. Sriram. A systematic methodology for accurate design-stage estimation of energy consumption for injection molded parts. *ASME Design for Manufacturing and Lifecycle Conference*, Montreal, Canada, August 2010.

104. A. Thakur and S.K. Gupta. A computational framework for real-time unmanned sea surface vehicle motion simulation. *ASME Computers in Engineering Conference*, Montreal, Canada, August 2010.
105. A. Bar-Cohen, P. Luckow, J.G. Cevallos, and S.K. Gupta. Thermal anisotropy in injection molded polymer composite fins. *International Heat Transfer Conference*, Washington DC, August 2010.
106. P. Svec, A. Thakur, D.K. Anand, S.K. Gupta, and M. Schwartz. A simulation based framework for discovering planning logic for autonomous unmanned surface vehicles. *ASME Engineering Systems Design and Analysis Conference*, Istanbul, Turkey, July 2010.
107. E. Raboin, D. Nau, U. Kuter, S.K. Gupta, and P. Svec. Strategy generation in multi-agent imperfect-information pursuit games. *9th Int. Conf. on Autonomous Agents and Multiagent Systems* (AAMAS 2010), Toronto, Canada, May, 10–14, 2010.
108. M. Schwartz, P. Svec, A. Thakur, and S.K. Gupta. Evaluation of automatically generated reactive planning logic for unmanned surface vehicles. *Performance Metrics for Intelligent Systems Workshop*, Gaithersburg, MD, September 2009.
109. A. Balijepalli, T.W. LeBrun, J. Gorman, and S.K. Gupta. Evaluation of a trapping potential measurement technique for optical tweezers using simulations and experiments. *ASME International Conference on Micro and Nano Systems*, San Diego, August 30-September 2, 2009.
110. A.G. Banerjee, W. Losert, and S.K. Gupta. A decoupled and prioritized stochastic dynamic programming approach for automated transport of multiple particles using optical tweezers. *ASME International Conference on Micro and Nano Systems*, San Diego, August 30-September 2, 2009.
111. A. Thakur and S.K. Gupta. Context dependent contact preserving off-line model simplification for interactive rigid body dynamics simulations. *ASME Computers and Information in Engineering Conference*, San Diego, August 30-September 2, 2009.
112. W. Bejgerowski, H.A. Bruck, and S.K. Gupta. A modeling approach for simulating heat dissipation from actuators and electronic components embedded in thermally conducting polymers. *ASME Computers and Information in Engineering Conference*, San Diego, August 30-September 2, 2009.
113. A. Weissman, S.K. Gupta, X. Fiorentini, R. Sudarsan, and R. Sriram. Formal representation of product design specifications for validating product design. *ASME Computers and Information in Engineering Conference*, San Diego, August 30-September 2, 2009.
114. D. Mueller, J. Gerdes, and S.K. Gupta. Incorporation of passive wing folding in flapping wing miniature air vehicles. *ASME Mechanism and Robotics Conference*, San Diego, August 30-September 2, 2009.
115. A. Ananthanarayanan, S.K. Gupta, H.A. Bruck. Characterization and control of pin diameter during in-mold assembly of mesoscale revolute joints. *North American Manufacturing Research Conference*, Greenville, SC, 2009.
116. A.G. Banerjee and S.K. Gupta. Use of simulation in developing and characterizing motion planning approaches for automated particle transport using optical tweezers. *Virtual Manufacturing Workshop*, Turin, Italy, October 2008.
117. A. Ananthanarayanan, S.K. Gupta and H. A. Bruck. Characterization and control of plastic deformation in premolded components in in-mold assembled mesoscale revolute joints using bi-directional filling strategy. *All India Manufacturing Technology Development and Research Conference*, Chennai, India, December 2008.

118. S.K. Gupta, D.K. Anand, J.E. Brough, R.A. Kavetsky, M. Schwartz, and A. Thakur. A survey of the virtual environments-based assembly training applications. *Virtual Manufacturing Workshop*, Turin, Italy, October 2008.
119. A.G. Banerjee, A. Balijepalli, S.K. Gupta, and T.W. LeBrun. Radial basis function based simplified trapping probability models for optical tweezers. *ASME Computers and Information in Engineering Conference*, Brooklyn, NY, August 2008.
120. N. Pappafotis, W. Bejgerowski, R. Gullapalli, J.M. Simard, S.K. Gupta, and J.P. Desai. Towards design and fabrication of a miniature MRI-compatible robot for applications in neurosurgery. *ASME Mechanisms and Robotics Conference*, Brooklyn, NY, August 2008.
121. J.K. Hopkins, B.W. Spranklin, and S.K. Gupta. System-level optimization model for a snake-inspired robot based on a rectilinear gait. *ASME Mechanisms and Robotics Conference*, Brooklyn, NY, August 2008.
122. A. Ananthanarayanan, W. Bejgerowski, D. Mueller and S.K. Gupta. Development of a multi-piece multi-gate mold for manufacturing a flapping wing drive-mechanism. *North American Manufacturing Research Conference*, Monterrey, Mexico, May 2008.
123. T. Peng and S.K. Gupta. Algorithms for generating adaptive projection patterns for 3-D shape measurement. *ASME Computers and Information in Engineering Conference*, Las Vegas, Nevada, September 2007.
124. T. Peng, A. Balijepalli, S.K. Gupta, and T.W. Lebrun. Algorithms for extraction of nanowires attributes from optical section microscopy images. *ASME Computers and Information in Engineering Conference*, Las Vegas, Nevada, September 2007.
125. A.K. Priyadarshi and S.K. Gupta. Generating multi-stage molding plans for articulated assemblies. *IEEE International Symposium on Assembly and Manufacturing*, Ann Arbor, Michigan, July 2007.
126. A. Ananthanarayanan, C. Thamire, and S.K. Gupta. Investigation of revolute joint clearances created by in-mold assembly process. *IEEE International Symposium on Assembly and Manufacturing*, Ann Arbor, Michigan, July 2007.
127. C. Ip and S.K. Gupta. Retrieving matching CAD models by using partial 3D point clouds. *CAD Conference*, Hawaii, June 2007.
128. M. Schwartz, S.K. Gupta, D.K. Anand, J.E. Brough, and R. Kavetsky. Using virtual demonstrations for creating multi-media training instructions. *CAD Conference*, Hawaii, June 2007.
129. A. Ananthanarayanan, S.K. Gupta, H.A. Bruck, Z. Yu, and K.P. Rajurkar. Development of in-mold assembly process for realizing mesoscale revolute joints. *North American Manufacturing Research Conference*, Ann Arbor, MI, May 2007.
130. T. Peng and S.K. Gupta. A computational framework for point cloud construction using digital projection patterns. *ASME Computers and Information in Engineering Conference*, Philadelphia, Pennsylvania, September 2006.
131. A. Balijepalli, T.W. Lebrun, and S.K. Gupta. A flexible system framework for a nanoassembly cell using optical tweezers. *ASME Computers and Information in Engineering Conference*, Philadelphia, Pennsylvania, September 2006.
132. T. Peng, A. Balijepalli, S.K. Gupta, and T.W. Lebrun. Algorithms for on-line monitoring of components in an optical tweezers-based assembly cell. *ASME Computers and Information in Engineering Conference*, Philadelphia, Pennsylvania, September 2006.

133. A.G. Banerjee and S.K. Gupta. A step towards automated design of side actions in injection molding of complex parts. *Geometric Modeling and Processing Conference*, Pittsburgh, PA, July 2006.
134. A.K. Priyadrashi and S.K. Gupta. Finding mold-piece regions using computer graphics hardware. *Geometric Modeling and Processing Conference*, Pittsburgh, PA, July 2006.
135. A. Cardone and S.K. Gupta. Similarity assessment based on face alignment using attributed vectors. *CAD Conference*, Phuket Island, Thailand, June 2006.
136. S.K. Gupta, A. Cardone, and A. Deshmukh. Content-based search techniques for searching CAD databases. *CAD Conference*, Phuket Island, Thailand, June 2006.
137. H.A. Bruck, A.L. Gershon, I. Golden, S.K. Gupta, L.S. Gyger, Jr., E.B. Magrab, and B.W. Spranklin. New educational tools and curriculum enhancements for motivating engineering students to design and realize bio-inspired products. *Design and Nature*, Wessex Institute of Technology Press, Southampton, UK, May 2006.
138. A. Deshmukh, S.K. Gupta, M.V. Karnik, and R. Sriram. A system for performing content-based searches on a database of mechanical assemblies. *ASME International Mechanical Engineering Congress & Exposition*, Orlando, FL, November 2005.
139. C. Xu, S.K. Gupta, Z. Yao, M. Gruninger, and R. Sriram. Towards computer-aided conceptual design of mechatronic devices with multiple interaction-states. *ASME Computers and Information in Engineering Conference*, Long Beach, CA, September 2005.
140. M.V. Karnik, S.K. Gupta, D.K. Anand, F.J. Valenta, and I.A. Wexler. Design Navigator system: A case study in improving product development through improved information management. *ASME Computers and Information in Engineering Conference*, Long Beach, CA, September 2005.
141. X.F. Zha, R. Sriram, and S.K. Gupta. Information and knowledge modeling for computer supported micro electro-mechanical systems design and development. *ASME Computers and Information in Engineering Conference*, Long Beach, CA, September 2005.
142. T. Peng, S.K. Gupta, and K. Lau. Algorithms for constructing 3-D point clouds using multiple digital fringe projection patterns. *CAD Conference*, Bangkok, Thailand, June 2005.
143. M.V. Karnik, D.K. Anand, E. Eick, S.K. Gupta, and R. Kavetsky. Integrated visual and geometric search tools for locating desired parts in a part database. *CAD Conference*, Bangkok, Thailand, June 2005.
144. H.A. Bruck, A.L. Gershon, and S.K. Gupta. Enhancement of mechanical engineering curriculum to introduce manufacturing techniques and principles for bio-inspired product development. *ASME International Mechanical Engineering Congress*, Anaheim, CA, November 2004.
145. C. Xu and S.K. Gupta. Algorithmic foundations for consistency-checking of interaction-States of mechatronic systems. *ASME Computers and Information in Engineering Conference*, Salt Lake City, UT, September 2004.
146. A. Cardone, S.K. Gupta, and M.V. Karnik. Identifying similar parts for assisting cost estimation of prismatic machined parts. *ASME Design for Manufacturing Conference*, Salt Lake City, UT, September 2004.
147. M.V. Karnik, S.K. Gupta, E.B. Magrab. Geometric containment analysis for rotational parts. *ASME Design Automation Conference*, Salt Lake City, UT, September 2004.

148. J.W. Herrmann, J. Cooper, C. Hayes, S.K. Gupta, K. Ishii, D. Kazmer, P. Sandborn, and W. Wood. New directions in design for manufacturing. *ASME Design for Manufacturing Conference*, Salt Lake City, UT, September 2004.
149. X. Li and S.K. Gupta. A step towards automated design of index-plate multi-shot molds. *Tools and Methods of Competitive Engineering Conference*, Lausanne, Switzerland, April 2004.
150. S.K. Gupta, C. Xu, and Z. Yao. A framework for conceptual design of multiple interaction state mechatronic systems. *Tools and Methods of Competitive Engineering Conference*, Lausanne, Switzerland, April 2004.
151. S.K. Gupta and G. Fowler. A step towards integrated product/process development of molded multi-material structures. *Tools and Methods of Competitive Engineering*, Lausanne, Switzerland, April 2004.
152. X. Li and S.K. Gupta. Manufacturability analysis of multi-material objects molded by rotary platen multi-shot molding process. *ASME International Mechanical Engineering Congress and Exposition*, Washington, DC, November 2003.
153. Z. Yao, S.K. Gupta, and G. Fowler. Milling cutter selection for 3D models acquired by scanning. *ASME Computers in Engineering Conference*, Chicago, IL, September 2003.
154. S.K. Gupta and A. Priyadarshi. Towards automated design of multi-piece molds. *ASME Design Automation Conference*, Chicago, IL, September 2003.
155. X. Li and S.K. Gupta. A step towards automated design of rotary-platen multi-shot molds. *ASME Design for Manufacturing Conference*, Chicago, IL, September 2003.
156. A. Montelaro, M. Henderson, C. Roberts, N. Hubele, C. Hayes, and S.K. Gupta. A comparison method for automated manufacturability analysis systems. *ASME International Mechanical Engineering Congress and Exposition*, New Orleans, Louisiana, November 2002.
157. S.K. Gupta, X. Li, and A. Priyadarshi. An algorithm for design of multi-stage molds for multi-material objects with complex interfaces. *ASME International Mechanical Engineering Congress and Exposition*, New Orleans, Louisiana, November 2002.
158. Z. Yao, S.K. Gupta, and D.S. Nau. Hybrid cutter path generation for 2.5D milling operation. *ASME Computers in Engineering Conference*, Montreal, Canada, September 2002.
159. S.K. Gupta and C. Xu. Estimating the optimal number of alternatives to be explored in large design spaces: A step towards incorporating decision making cost in design decision models. *ASME Computers in Engineering Conference*, Montreal, Canada, September 2002.
160. S.K. Gupta, E. Lin, A. Lo, and C. Xu. Web-based innovation alert services to support product design evolution. *ASME Computer in Engineering Conference*, Montreal, Canada, September 2002.
161. J. Huang and S.K. Gupta. Accessibility driven spatial partitioning for generating sacrificial multi-piece molds. *ASME Design for Manufacturing Conference*, Montreal, Canada, September 2002.
162. S. Dhaliwal, S.K. Gupta, J. Huang, and M. Kumar. A step towards automated design of sacrificial multi-piece molds. *ASME Design for Manufacturing Conference*, Montreal, Canada, September 2002.
163. S.K. Gupta and A.K. Samuel. Integrating the market research with the product development process: A step towards design for profit. *ASME Design for Manufacturing Conference*, Pittsburgh, PA, September 2001.



164. S.K. Gupta and D. Rajagopal. A mixed integer programming formulation for generating shared pressbrake setups. *ASME Design for Manufacturing Conference*, Pittsburgh, PA, September 2001.
165. S.K. Gupta, S.K. Saini, and Z. Yao. An algorithm to generate efficient cutter path for pocket milling operations using modified zigzag strategy. *ASME Computers in Engineering Conference*, Pittsburgh, PA, September 2001.
166. S. Bellam and S.K. Gupta. An efficient geometric algorithm for extracting mechanical components: A step towards developing an automated extraction tool for MEMS. *ASME Computers in Engineering Conference*, Pittsburgh, PA, September 2001.
167. Z. Yao, S.K. Gupta, and D.S. Nau. A geometric algorithm for selecting optimal set of cutters for multi-part milling. *ACM Symposium on Solid Modeling and Applications*, Ann Arbor, June 2001.
168. M. Kumar and S.K. Gupta. A geometric algorithm for automated design of multi-stage molds for manufacturing multi-material objects. *ACM Symposium on Solid Modeling and Applications*, Ann Arbor, June 2001.
169. Y.S. Chen, S.K. Gupta, and S. Feng. A web-based process/material advisory system. *ASME International Congress and Exposition*, Orlando, Florida, November 2000.
170. Z. Yao, S.K. Gupta, and D.S. Nau. Finding the maximal cutter for 2D milling operations. *ASME Computers in Engineering Conference*, Baltimore, Maryland, September 2000.
171. R.K. Arni, S.K. Gupta, and M. Kumar. A web based tolerance analysis service for solid freeform fabrication. *ASME Design for Manufacturing Conference*, Baltimore, Maryland, September 2000.
172. S. Dhaliwal, S.K. Gupta, and J. Huang. Computing exact global accessibility cones for polyhedral object. *ASME Design for Manufacturing Conference*, Baltimore, Maryland, September 2000.
173. U. Alva and S.K. Gupta. Automated design of sheet metal bending tools. *Flexible Automation and Intelligent Manufacturing Conference*, College Park, MD, June 2000.
174. Z. Yao, S.K. Gupta, and D.S. Nau, A geometric algorithm for finding maximal cutter for 2-D milling operations. *Flexible Automation and Intelligent Manufacturing Conference*, College Park, MD, June 2000.
175. R.K. Arni and S.K. Gupta. Manufacturability analysis for solid freeform fabrication. *ASME Design for Manufacturing Conference*, Las Vegas, Nevada, September 1999.
176. U. Alva and S.K. Gupta. Automated punch shape synthesis for sheet metal bending operations. *ASME Design for Manufacturing Conference*, Las Vegas, Nevada, September 1999.
177. S.K. Gupta, Q. Tian, and L.E. Weiss. Finding near-optimal build orientation for shape deposition manufacturing. *Sculptured Surface Machining Conference*, Auburn Hills, MI, November 1998.
178. B. Baidya, S.K. Gupta, and T. Mukherjee. Feature recognition for MEMS extraction. *ASME Mechanisms Conference*, Atlanta, GA, September 1998.
179. S. Rajagopalan, J.M. Pinilla, P. Losleben, Q. Tian, and S.K. Gupta. Integrated design and manufacturing over the Internet. *ASME Computers in Engineering Conference*, Atlanta, GA, September 1998.
180. S.K. Gupta. Formation of part families for shared setups generation in sheet metal bending. *ASME Computers in Engineering Conference*, Atlanta, GA, September 1998.
181. R. Sinha, C.J. Paredis, S.K. Gupta, and P.K. Khosla. Capturing articulation in assemblies from component geometry. *ASME Design Automation Conference*, Atlanta, GA, September 1998.

182. S. Sachdev, C.J. Paredis, S.K. Gupta, and S.N. Talukdar. Generating 3D spatial layouts using A-Teams. *ASME Design Automation Conference*, Atlanta, GA, September, 1998.
183. S.K. Gupta, C. J. Paredis, C.H. Wang, R. Sinha, and P.F. Brown. An intelligent environment for simulating mechanical assembly operations. *ASME Design for Manufacturing Conference*, Atlanta, GA, September 1998.
184. S.K. Gupta, C.J. Paredis, and P.F. Brown. Micro planning for mechanical assembly operations. *IEEE Robotics and Automation Conference*, Leuven, Belgium, May 1998.
185. T.N. Madhusudan and S.K. Gupta. Spatial synthesis of electro-mechanical products. *ASME Design for Manufacturing Conference*, Sacramento, CA, September 1997.
186. S.K. Gupta and D.A. Bourne. Multi-part setup planning for sheet metal bending operations. *ASME Computers in Engineering Conference*, Sacramento, CA, September 1997.
187. D.A. Bourne, S.K. Gupta, and K. Kim. Cooperatively planning sheet metal bending. *ASME Design for Manufacturing Conference*, Irvine, CA, August 1996.
188. S.K. Gupta and D.A. Bourne. Using virtual node generation to speed up sheet metal bending operation planning. *ASME Computers in Engineering Conference*, Irvine, CA, August 1996.
189. S.K. Gupta, J.W. Herrmann, G. Lam, and I. Minis. Automated high level process planning for agile manufacturing. *ASME Design Automation Conference*, pages 835-852, Boston, MA, September 1995.
190. W.C. Regli, S.K. Gupta, and D.S. Nau. Interactive feature recognition using multi-processor methods. *ASME Design Automation Conference*, pages 927-938, Boston, MA, September 1995.
191. S.K. Gupta, D. Das, W.C. Regli, and D.S. Nau. Current trends and future challenges in automated manufacturability analysis. *ASME Computers in Engineering Conference*, pages 655-665, Boston, MA, September 1995.
192. D. Das, S.K. Gupta, and D.S. Nau. Estimation of setup time for machined parts: Accounting for work holding constraints. *ASME Computers in Engineering Conference*, pages 619-631, Boston, MA, September 1995.
193. D.S. Nau, S.K. Gupta, and W.C. Regli. AI planning versus manufacturing operation planning: A case study. *International Joint Conference on Artificial Intelligence*, pages 1670-1676, Montreal, Canada, August 1995.
194. S.K. Gupta, W.C. Regli, and D.S. Nau. Manufacturing feature instances: Which ones to recognize? *ACM Symposium on Solid Modeling and Applications*, pages 141-152, Salt Lake City, Utah, May 1995.
195. D.S. Nau, M. Ball, S.K. Gupta, I. Minis, and G. Zhang. Design for manufacture in multi-enterprise partnerships: Current status and future directions. Concurrent Product Design Symposium, *ASME Winter Annual Meeting*, pages 117-125, November 1994.
196. W.C. Regli, S.K. Gupta, and D.S. Nau. Feature recognition for manufacturability analysis. *ASME Computers in Engineering Conference*, pages 93-104, Minneapolis, MN, September 1994.
197. D. Das, S.K. Gupta, and D.S. Nau. Reducing setup cost by automated generation of redesign suggestions. *ASME Computers in Engineering Conference*, pages 159-170, Minneapolis, MN, September 1994.
198. S.K. Gupta, D.S. Nau, and G.M. Zhang. Interpreting product designs for manufacturability evaluation. In Intelligent Concurrent Design, *ASME Winter Annual Meeting*, volume DE-Vol. 66, pages 33-44, New Orleans, LA, November 1993.

199. D.S. Nau, S.K. Gupta, T.R. Kramer, W.C. Regli, and G.M. Zhang. Development of machining alternatives, based on MRSEVs. *ASME Computers in Engineering Conference*, pages 47-57, San Diego, CA, August 1993.
200. S.K. Gupta and D.S. Nau. Generation of alternative feature-based models and precedence orderings for machining applications. *Symposium on Solid Modeling Foundations and CAD/CAM Applications*, Montreal, Canada, May 1993.
201. D.S. Nau, G.M. Zhang, and S.K. Gupta. Generation and evaluation of alternative operation sequences. Quality Assurance through Integration of Manufacturing Processes and Systems. *ASME Winter Annual Meeting*, volume PED-Vol. 56, pages 93-108, Anaheim, CA, November 1992.

#### **Other Publications in Conference and Workshop Proceedings**

1. N.B. Kumbala, J.A. Marvel, and S.K. Gupta. Using sensor feedback to estimate part pose in a gripper. Workshop on *Introspective Methods for Reliable Autonomy* held at *IEEE/RSJ International Conference on Intelligent Robots and Systems*, Vancouver, Canada, September 2017.
2. A. Holness, H.A. Bruck, and S.K. Gupta. Flexible energy harvesting/storage structures for flapping wing air vehicles. *Annual Conference on Experimental and Applied Mechanics*, Indianapolis, June 2017.
3. K.Y. Lin and S.K. Gupta. Soft fingers with controllable compliance to enable realization of low cost grippers. *Living Machines Conference*, Stanford, CA, July 2017.
4. P. Rajendran, B.C. Shah, and S.K. Gupta. Dynamics-aware reactive planning for unmanned ground vehicles to avoid collisions with dynamic obstacles on uneven terrains. Workshop on *Planning and Robotics (PlanRob)*, held at *International Conference on Automated Planning and Scheduling*, Pittsburgh, PA, June 2017.
5. Z. Kootbally, T. R. Kramer, C. Schlenoff, and S. K. Gupta. Overview of an ontology-based approach for kit building applications. *IEEE 11th International Conference on Semantic Computing*, San Diego, CA, January 2017.
6. J.W. Gerdes, H.A. Bruck, and S.K. Gupta. Validation of flight power modeling by direct measurement of a flapping wing aerial vehicle. *AIAA Atmospheric Flight Mechanics Conference*, AIAA SciTech Forum, Texas, January 2017.
7. A.E. Holness, A. Perez-Rosado, H.A. Bruck, M. Peckerar, and S.K. Gupta. Multifunctional wings with flexible batteries and solar cells for robotic birds. *SEM Annual Conference and Exposition*, Orlando, FL, June 2016.
8. B.C. Shah, Petr Svec, Atul Thakur, and S. K. Gupta. Path Planning for Unmanned Vehicles Operating in Time-Varying Flow Fields. *Workshop on Planning and Robotics, held at International Conference on Automated Planning and Scheduling*, London, UK, June 2016.
9. J. Gregory, J. Fink, J. Rogers, and S. K. Gupta. A Risk-Based Framework for Incorporating Navigation Uncertainty Into Exploration Strategies. *Workshop on Planning and Robotics, held at International Conference on Automated Planning and Scheduling*, London, UK, June 2016.
10. K.N. Kaipa, A. S. Kankanhalli-Nagendra, and S. K. Gupta. Toward estimating task execution confidence for robotic bin-picking applications. *AAAI Fall Symposium: Self-Confidence in Autonomous Systems*, Arlington, VA, November 2015.
11. K.N. Kaipa, S. Shriyam, N-B. Kumbala, and S. K. Gupta. Automated plan generation for robotic singulation from mixed bins. Workshop on Task Planning for Intelligent Robots in Service and

- Manufacturing, held at *IEEE/RSJ International Conference on Intelligent Robots and Systems*, Hamburg, Germany, October 2015.
12. K.N. Kaipa, N-B. Kumbla, and S. K. Gupta. Characterizing performance of sensorless fine positioning moves in the presence of initial position uncertainty. Workshop on Task Planning for Intelligent Robots in Service and Manufacturing, held at *IEEE/RSJ International Conference on Intelligent Robots and Systems*, Hamburg, Germany, October 2015.
  13. J. D. Langsfeld, K. N. Kaipa, and S. K. Gupta. Generation and Exploitation of Local Models for Rapid Learning of a Pouring Task. Workshop on Machine Learning in Planning and Control of Robot Motion, held at *IEEE/RSJ International Conference on Intelligent Robots and Systems*, Hamburg, Germany, October 2015.
  14. A. Perez-Rosado, S.K. Gupta, and H.A. Bruck. Mechanics of multifunctional wings with solar cells for robotic birds. SEM Annual Conference and Exposition, Costa Mesa, CA, June 2015
  15. A.G. Banerjee, A. Barnes, K.N. Kaipa, J. Liu, S. Shriyam, N. Shah, and S. K. Gupta. An Ontology to Enable Optimized Task Partitioning in Human-Robot Collaboration for Warehouse Kitting Operations. *SPIE Sensing Technology + Applications Symposium, Sensors for Next-Generation Robotics II Conference*, Baltimore, MD, 2015.
  16. V. Shivashankar, K. N. Kaipa, D. S. Nau, and S. K. Gupta. Towards Integrating hierarchical goal networks and motion planners to support planning for human robot collaboration in assembly cells. *AAAI Fall Symposium: Artificial Intelligence for Human-Robot Interaction*, Arlington, VA, November 2014.
  17. M.J. Kuhlman, J. Hays, D. Sofge and S.K. Gupta. Central pattern generator based omnidirectional locomotion for quadrupedal robotics. *Workshop on Real-time Motion Generation & Control – Constraint-based Robot Programming*, held at *IEEE/RSJ International Conference on Intelligent Robots and Systems*, Chicago, IL, September 2014.
  18. J. D. Langsfeld, K. N. Kaipa, R. J. Gentili, J. A. Reggia, and S.K. Gupta. Incorporating failure-to-success transitions in imitation learning for a dynamic pouring task. *Workshop on Compliant Manipulation: Challenges and Control*, held at *IEEE/RSJ International Conference on Intelligent Robots and Systems*, Chicago, IL, September 2014.
  19. V. Shivashankar, K. N. Kaipa, D. S. Nau, and S.K. Gupta. Towards integrating hierarchical goal networks and motion planners to support planning for human-robot teams. *AI and Robotics Workshop*, held at *IEEE/RSJ International Conference on Intelligent Robots and Systems*, Chicago, IL, September 2014.
  20. K.N. Kaipa, C.W. Morato, J. Liu, and S.K. Gupta. Human-robot collaboration for bin-picking tasks to support low-volume assemblies. *Human-Robot Collaboration for Industrial Manufacturing Workshop*, held at *Robotics: Science and Systems Conference*, Berkely, CA, July 2014.
  21. P. Svec, B.C. Shah, I.R. Bertaska, W. Klinger, A. J. Sinisterra, K. von Ellenrieder, M. Dhanak, and S.K. Gupta. Adaptive sampling based COLREGS-compliant obstacle avoidance for autonomous surface vehicles. *Workshop on Persistent Autonomy for Marine Robotics*, held at *IEEE International Conference on Robotics and Automation*, Hong Kong, China, June 2014.
  22. A. Perez-Rosado, A. Philipps, E.Barnett, L. Roberts, J. Gerdes, S.K. Gupta, and H.A. Bruck. Compliant multifunctional wing structures for flapping wing MAVs. *SEM Annual Conference and Exposition*, Lombard, IL, 2013.

23. H.A. Bruck, S.K. Gupta, A. Perez-Rosado, A. Philipps, and L. Roberts. Compliant multifunctional wing structures for harvesting solar energy. *19th International Conference on Composite Materials*, Montreal, Canada, 2013.
24. H.A. Bruck, K. Cellon, S.K. Gupta, M. Kujawski, A. Perez-Rosado, E. Smela, and M. Yu. Mechanics of multifunctional skin structures. *SEM Annual Conference and Exposition*, Costa Mesa, CA, June 2012.
25. E. Raboin, U. Kuter, D. Nau, and S.K. Gupta. Adversarial planning for multi-agent pursuit-evasion games in partially observable Euclidean space. *Workshop on Artificial Intelligence in Adversarial Real-Time Games*, held at *AIIDE*, Palo Alto, California, October 8-12, 2012.
26. R. Madhavan, R. Bostelman, Z. Kootbally, R. Lakaemper, S.K. Gupta, and S. Balakirsky. Smart, flexible, and safe industrial mobile robots: Performance evaluation and standardization efforts. *International Test and Evaluation Association (ITEA) Tech. Review Conference*, Annapolis, MD, U.S.A., July 2011.
27. S.K. Gupta and A. Thakur. Algorithms for contact preserving model simplification for interactive rigid body dynamics simulations. *NSF CMMI Engineering Research and Innovation Conference*, Atlanta, GA, January 2011.
28. A. Ananthanarayanan, F. Bussemmer, J. Desai, and S.K. Gupta. Fabrication of highly articulated miniature snake robot structures using in-mold assembly of compliant joints. *International Symposium on Experimental Robotics (ISER)*, New Delhi, India, December 2010.
29. M. Ho, A. Ananthanarayanan, L. Ehrlich, R. Gullapalli, J. M. Simard, S.K. Gupta, and J.P. Desai. Towards a minimally invasive neurosurgical intracranial robot. *Workshop on Snakes, Worms and Catheters: Continuum and Serpentine Robots for Minimally Invasive Surgery*, held at *IEEE International Conference on Robotics and Automation*, Anchorage AK, May 2010.
30. P. Svec and S.K. Gupta. Competitive Co-evolution of high-level blocking controllers for unmanned surface vehicles. *Exploring New Horizons in Evolutionary Design of Robots Workshop*, held at *International Conference on Intelligent Robots and Systems*, October 2009.
31. A. Balijepalli, T.W. LeBrun, J.J. Gorman, S.K. Gupta. Enhanced force measurement techniques to extend optical trapping towards nanoscale manipulation. *IEEE International Conference on Nanotechnology*, Genoa, Italy, July 2009.
32. W. Bejgerowski, S. K. Gupta, and H.A. Bruck. Multifunctional structures using filled polymers for in-mold assembly of embedded electronic components. *SEM Annual Conference and Exposition*, Albuquerque, NM, 2009.
33. S.K. Gupta, A. Ananthanarayanan, W. Bejgerowski, and H.A. Bruck. Characterizing melt flow and premolded part interactions during in-mold assembly of mesoscale rigid body revolute joints. *NSF CMMI Engineering Research and Innovation Conference*, Honolulu, Hawaii, June 2009.
34. S.K. Gupta and A. Thakur. Off-line model simplification for interactive rigid body dynamics simulations. *NSF CMMI Engineering Research and Innovation Conference*, Honolulu, Hawaii, June 2009.
35. R. Primerano, D. Wilkie, W. Regli, and S.K. Gupta. Engineering informatics education with biologically inspired robots. *Biorobotics: Research Advances, Standards, and Education Workshop*, held at *IEEE International Conference on Robotics and Automation*, Pasadena, CA, USA, May 2008.
36. A. Bar-Cohen, S.K. Gupta, P. Rodgers, J.G. Cevallos, and M. Adi. Mold filling meta model for polymer composite heat exchanger. *Proceedings of the Second International Energy 2030 Conference*, November 4-5, 2008, Abu Dhabi, U.A.E.

37. S.K. Gupta, K. Rajurkar, A. Ananthanarayanan, W. Bejgerowski, and H.A. Bruck. Progress towards In-Mold Assembly of Mesoscale Rigid Body Revolute Joints. *NSF CMMI Engineering Research and Innovation Conference*, Knoxville, TN, January 2008.
38. S.K. Gupta and K. Suresh. Automatic generation of context-dependent simplified models to support interactive virtual assembly. *NSF CMMI Engineering Research and Innovation Conference*, Knoxville, TN, January 2008.
39. A. Balijepalli, T.W. LeBrun, J.J. Gorman, and S.K. Gupta. Methods to directly measure the trapping potential in optical tweezers. *Optical Trapping and Optical Micromanipulation Conference, SPIE Symposium on NanoScience & Engineering*, San Diego, California, August 2008.
40. A. Ananthanarayanan, S.K. Gupta and H.A. Bruck. Mechanical characterization of cold weld-lines and meld lines in mesoscopic revolute joints for bioinspired structures. *SEM Annual Conference and Exposition*, Orlando, Florida, June 2008.
41. M. Schwartz, S.K. Gupta, D.K. Anand, and R. Kavetsky. Virtual mentor: A step towards proactive user monitoring and assistance during virtual environment-based training. *Performance Metrics for Intelligent Systems (PerMIS) Workshop*, Gaithersburg, MD, August 2007.
42. A.L. Gershon, L.S. Gyger, Jr., H.A. Bruck, and S.K. Gupta. Process characterization and modeling for biologically-inspired Embedded Controls, Actuators, and Power Element (ESCAPE) structures. *SEM Annual Conference and Exposition*, Springfield, Massachusetts, June 2007.
43. S.K. Gupta, A. Ananthanarayanan, and H.A. Bruck. Development of multi-stage molding methods for manufacturing of mesoscopic 3D articulated devices. *NSF Design, Service and Manufacturing Grantees and Research Conference*, St. Louis, Missouri, July 2006.
44. S.K. Gupta, A.G. Banerjee, X. Li, and G. Fowler. Development of a manufacturability analysis framework for injection molded multi-material objects. *NSF Design, Service and Manufacturing Grantees and Research Conference*, St. Louis, Missouri, July 2006.
45. L.S. Gyger, Jr., B. Spranklin, S.K. Gupta, and H.A. Bruck. Bio-inspired, modular, and multifunctional Thermal and Impact Protected (TIPed) Embedded Sensing Controls Actuation Power Element (ESCAPE) structures. *SEM Annual Conference and Exposition*, St. Louis, Missouri, June 2006.
46. A. Ananthanarayanan, H.A. Bruck and S.K. Gupta. Interfacial adhesion in multi-stage injection molded components. *SEM Annual Conference and Exposition*, St. Louis, Missouri, June 2006.
47. J.E. Brough, M. Schwartz, S.K. Gupta, D.K. Anand, C.F. Clark, R. Pettersen, and C. Yeager. Virtual Training Studio: A step towards virtual environment assisted training. *IEEE Virtual Manufacturing Workshop*, Alexandria, Virginia, March 2006.
48. L.S. Gyger, Jr., P. Kulkarni, H.A. Bruck, S.K. Gupta, and O.C. Wilson. Porous gelcast ceramics for bone repair implants. *SEM Annual Conference and Exposition*, Portland, OR, June 2005.
49. S.K. Gupta. Progress towards design and manufacturing of multi-material compliant mechanisms using multi-material molding. *NSF Design, Service and Manufacturing Grantees and Research Conference*, Scottsdale, AZ, January 2005.
50. Z. Tuncali, S.K. Gupta, D.K. Anand, and Z. Yao. Design and operation of a storage facility in a virtual environment. *International Conference on Manufacturing Automation*, pp. 521--528, Wuhan, China, October 2004.

51. S.K. Gupta. Progress towards automated manufacturability analysis of molded multi-material objects. *NSF Design, Service and Manufacturing Grantees and Research Conference*, Dallas, TX, January 2004.
52. S.K. Gupta and J. Huang. Manufacturability-driven spatial partitioning: A systematic approach to computational shape synthesis in manufacturing applications. *Computational Synthesis, AAAI Spring Symposium*, Stanford, CA, March 2003.
53. S.K. Gupta. Progress towards development of a geometric algorithm for designing multi-material molds. *NSF Design, Service and Manufacturing Grantees and Research Conference*, Birmingham, AL, January 2003.
54. G. Fowler, S.K. Gupta, and H.A. Bruck. Manufacturing of bio-inspired heterogeneous structures with improved interfacial strength using a multi-stage multi-material molding technique. *SEM Annual Conference and Exposition*, Milwaukee, WI, June 2002.
55. S.K. Gupta and D. Rajagopal. Forming part families for generating shared press-brake setups. *NSF Design, Service, and Manufacturing Conference*, Tampa, FL, January 2001.
56. S.K. Gupta and U. Alva. Automated punch design for multi-part process planning. *NSF Design and Manufacturing Conference*, Vancouver, Canada, January 2000.
57. B. Baidya, S.K. Gupta, and T. Mukherjee. MEMS component extraction. *Modeling and Simulation of Microsystems (MSM) Conference*, San Juan, Puerto Rico, April 1999.
58. S.K. Gupta. Shared setup generation for sheet metal bending. *NSF Design and Manufacturing Conference*, Long Beach, CA, January 1999.
59. S.K. Gupta and P.F. Brown. Integrated assembly design/planning systems: How far away are we from commercialization? *IFIP Workshop on Knowledge Intensive CAD*, Pittsburgh, PA, September 1996.
60. S.K. Gupta, D.S. Nau, W.C. Regli, and G. Zhang. IMACS: Interactive manufacturability analysis and critiquing system. *NSF Design and Manufacturing Grantees Meeting*, January 1996.
61. D.S. Nau, S.K. Gupta, and W.C. Regli. Manufacturing-operation planning versus AI planning. *AAAI Spring Symposium on Integrated Planning Applications*, 1995.
62. S.K. Gupta, D.S. Nau, and W.C. Regli. Systematically analyzing the manufacturability of machined parts. *NSF Design and Manufacturing Grantees Meeting*, January 1995.
63. D.S. Nau, M. Ball, S.K. Gupta, I. Minis, and G. Zhang. Design for manufacture by multi-enterprise partnerships. *Bridging the Generations: An International Workshop on the Future Directions of Computer-Aided Engineering*, pages 149--154, June 1994.
64. G.M. Zhang, D.S. Nau, W. Ko, and S.K. Gupta. Economic evaluation of alternative machining operation plans. *NSF Design and Manufacturing Grantees Meeting*, January 1994.
65. S.K. Gupta, D.S. Nau, and G.M. Zhang. Systematically generating and evaluating alternative operation plans. *NSF Design and Manufacturing Grantees Meeting*, January 1994.
66. D.S. Nau, S.K. Gupta, T.R. Kramer, W.C. Regli, and G. Zhang. Using MRSEVs to develop machining alternatives. *AAAI/SIGMAN Workshop on Intelligent Manufacturing*, 1993.
67. S.K. Gupta, D.S. Nau, and G.M. Zhang. Generation of machining alternatives for machinability evaluation. *NSF Design and Manufacturing Systems Conference*, pages 1771--1780, University of North Carolina, Charlotte, NC, January 1993.

68. S.K. Gupta, P.N. Rao, and N.K. Tewari. Use of part features for process planning. *Fifth International Conference on CAD/CAM Robotics and Factories of the Future*, pages 211--216, Norfolk, VA, December 1990.

#### **D. PATENTS**

1. S. K. Gupta and D. A. Bourne. *Apparatus and Method for Multi-Part Setup Planning for Sheet Metal Bending Operations*. U.S. Patent 6,233,538. Awarded on May 15, 2001.
2. B. Shah, P. Svec, and S. K. Gupta. *Surface Vehicle Trajectory Planning Systems, Devices, and Methods*. U.S. Patent 10,019,006, Awarded on July 10, 2018.

#### **E. INVITED PRESENTATIONS AND SEMINARS**

##### **Invited Presentations at Conferences, Workshops, and Panels**

1. Speaker, NSF Summer School on Decision Making in Large Systems, Los Angeles, CA, June 2018 (Presentation Title: *Decision Making and Robotics*)
2. Workshop Speaker, Aerospace and Defense Manufacturing Conference, Long Beach, CA, March 2018 (Presentation Title: *Smart Robotic Assistants for Small Volume Manufacturing Tasks*)
3. Panelist, International Conference on Systems Engineering Research, Redondo Beach, CA, March 2017 (Presentation Title: *Realizing Smart Manufacturing by Making Informed Decisions*)
4. Panelist, Advanced Manufacturing Partnership, Southern California, Los Angeles, CA, March 2017 (Presentation Title: *Recent Advances in Industrial Robots and their Implications on Advanced Manufacturing*)
5. Invited Speaker, Emerging Disruptive Technologies Assessment Symposium, Sydney, Australia July 2015 (Presentation Title: *Challenges and Opportunities in Human Robot Collaboration*)
6. Invited Speaker, A Global Dialogue on Emerging Technology for Emerging Needs, American Red Cross, Washington DC, December 2014 (Presentation Title: *The Role of Robots in Disaster Response*)
7. Invited Speaker, All India Manufacturing Technology, Design and Research, Guwahati, India, December 2014 (Presentation Title: *Towards Automated Manufacturing of Geometrically-Complex Heterogeneous Structures*)
8. Invited Speaker, UMD/NVIDIA GPU Summit, College Park, MD, October 2014 (Presentation Title: *GPU-Enabled Computing in Robotics and Advanced Manufacturing Applications*)
9. Invited Speaker, Robo Business, Boston, MA, October 2014 (Presentation Title: *Government Programs for Supporting Robotics Technology Commercialization*)
10. Invited Speaker, Industry Form, IEEE/RSJ International Conference on Intelligent Robots and Systems, Chicago, IL, September 2014 (Presentation Title: *NSF Programs for Supporting Technology Commercialization in Robotics*)
11. Invited Speaker, Robots for Good: How Robotics is Changing our World, Washington DC, August 2014 (Presentation Title: *Recent Advances in Industrial Robots and Their Implications on Advanced Manufacturing*)
12. Invited Speaker, Motion Planning for Industrial Robots Workshop, Hong Kong, June 2014 (Presentation Title: *Automated Planning for Supporting Human Robot Collaboration in Assembly Cells*)
13. Panelist, British Embassy Science and Technology Conference, Washington DC, May 2014 (Presentation Title: *Robotics and Autonomy Challenges and Opportunities*)



14. Keynote Speaker, Symposium on The Intersection of Robust Intelligence and Trust in Autonomous Systems, Stanford University, CA, March 2014 (Presentation Title: *Realizing Autonomous Systems that Exhibit Robust Intelligence and Engender Human Trust*)
15. Invited Speaker, Conference on Machines and Mechanisms (iNACoMM 2013), Roorkee, India, December 2013 (Presentation Title: *Design and Manufacturing of Biologically Inspired Robots*)
16. Invited Speaker, International Forum on Industry-Academia Collaboration in Robotics Planning and Programming Technologies for Industrial Robots, International Robotics Exhibition, Tokyo, Japan, November 2013 (Presentation Title: *What will it Take to Deploy Industrial Robots in Small and Medium Manufacturing Enterprises?*)
17. Keynote Speaker, IEEE Robotic and Sensors Environments (ROSE), Washington DC, October 2013 (Presentation Title: *Physics-Aware Planning for Autonomous Robots: A Step Towards Realizing Unmanned Sea Surface Vehicles*)
18. Panelist, National Robotics Initiative Panel, ASME Mechanism and Robotics Conference, Portland OR, August 2013 (Presentation Title: *Overview of National Robotics Initiative*)
19. Invited Speaker, Intelligent Robotics Systems Workshop, Bellevue, WA, July 2013 (Presentation Title: *Planning for Autonomous Robots: Challenges and Opportunities*)
20. Invited Speaker, Combining Task and Motion Planning Workshop, Karlsruhe, Germany, May 2013 (Presentation Title: *Planning for Autonomous Robots: Challenges and Opportunities*)
21. Invited Speaker, ARO Workshop on “Planning and Learning in Multi-Agent Adversarial Environments” College Park, MD, April 2012 (Presentation Title: *Learning Challenges and Opportunities in Physics-Aware Planning*)
22. Invited Speaker, AFRL/AFOSR Workshop on “Compliant Mechanisms in Aerospace System Design” Dayton, OH, March 2012 (Presentation Title: *In-Mold Assembly of Miniature Compliant Mechanisms*)
23. Keynote Speaker, Performance Metrics for Intelligent Systems (PerMIS'12) Workshop, College Park, MD, March 2012 (Presentation Title: *Simulation-Based Design and Evaluation of Physics-Aware Planners for Robotic Operations in Challenging Environments*)
24. Invited Speaker, USA-Finland Joint Networking Workshop on Digital Product Process, Washington DC, September 2011 (Presentation Title: *Simulation Based Computational Synthesis*)
25. Invited Speaker, Robotics in Endoscopy Workshop, Hyderabad, India, July 2011 (Presentation Title: *Towards a New Manufacturing Approach to Realizing Miniature Robots*)
26. Invited Speaker, NSF Workshop on Bio-Inspired Design, Palo Alto, CA, March 2011 (Presentation Title: *Bio-Inspired Robotics*)
27. Keynote Speaker, All India Manufacturing Technology, Design and Research, Visakhapatnam, India, December 2010 (Presentation Title: *Towards a New Manufacturing Approach to Realizing Bio-Inspired Robots with Mesoscale Features*).
28. Keynote Speaker, Tools and Methods of Competitive Engineering, Ancona, Italy, April 2010 (Presentation Title: *Recent Advances and Potential of Simulation Driven Innovation and Discovery for Intelligent Systems*).
29. Panelist, Tools and Methods of Competitive Engineering, Ancona, Italy, April 2010 (Panel: *Mobile and Ubiquitous Technologies in Design and Engineering*).

30. Keynote Speaker, Northrop Grumman Design Automation Summit, Baltimore, September 2009 (Presentation Title: *Towards Next Generation Design Automation*).
31. Panelist, NSF CMMI Engineering Research and Innovation Conference, Honolulu, Hawaii, June 2009 (Panel: *Getting the Word Out*).
32. Invited Speaker, IEEE Spring Symposium on Technology for the Golden Years, College Park, MD, May 2008 (Presentation Title: *Product Development Challenges and Opportunities for Meeting the Needs of People with Disability*)
33. Invited Speaker, NIST Second Workshop on 3D and 2D Content Representation, Analysis and Retrieval, Gaithersburg, MD, May 2008 (Presentation Title: *Part Similarity Assessment for Injection Molding Applications*)
34. Invited Speaker, NIST First Workshop on 3D and 2D Content Representation, Analysis and Retrieval, Gaithersburg, MD, April 2007 (Presentation Title: *Feature-Based Part Similarity Assessment*)
35. Panelist, Maryland Modeling, Simulation, and Analysis Council Conference, Annapolis, MD January 2007 (Presentation Title: *Virtual Prototyping*)
36. Invited Tutorial Speaker, Computer Aided Design Conference, Phuket Island, Thailand, June 2006 (Presentation Title: *Content Based Search Techniques for Searching CAD Databases*)
37. Keynote Speaker, NSF Sponsored Symposium on Biologically Inspired Design, Georgia Institute of Technology, Atlanta, GA, May 2006 (Presentation Title: *Using Biologically Inspired Robots as Case Studies for Teaching Bio-Inspired Product Development*)
38. Panelist, Design, Analysis and Manufacturing Panel, ACM Symposium on Solid and Physical Modeling, Boston, MA, June 2005 (Presentation Title: *Geometric Computing Challenges in Micro and Nano Manipulation Using Optical Tweezers*)
39. Invited Speaker, Intergovernmental Workshop on Intelligent Information Use in Manufacturing, National Science Foundation, Arlington, VA, September 2004 (Presentation Title: *Improving Product Realization Through Intelligent Design Information Management*)
40. Panelist, Design for X Panel, ASME Computers and Information in Engineering Conference, Salt Lake City, UT, October 2004 (Presentation Title: *Implications of Emerging Manufacturing Processes on DFMA Research and Education*)
41. Keynote Speaker, Tools and Methods of Competitive Engineering Conference, Lausanne, Switzerland, April 2004 (Presentation Title: *A Step towards Integrated Product and Process Development of Molded Multi-Material Structures*)

#### **Invited Seminars at Universities, Government Labs, and Industry**

42. *Realizing Next Generation Additive Manufacturing through Use of Advanced Robotics*, Aerospace Corporation, El Segundo, California, June 2018
43. *Realizing Next Generation Additive Manufacturing through Use of Advanced Robotics*, Army Research Laboratory, Aberdeen Proving Ground, MD, May 2018
44. *Smart Robotic Assistants for Manufacturing Applications*, National Institute of Standards and Technologies, Gaithersburg, MD, May 2018
45. *Smart Robotic Assistants for Manufacturing Applications*, University of California, San Diego, CA, April 2018
46. *Smart Robotic Assistants for Manufacturing Applications*, University of California, Irvine, CA, April 2018

47. *Smart Robotic Assistants for Small Volume Manufacturing Tasks*, University of Michigan, Ann Arbor, MI, January 2018
48. *Smart Robotic Assistants for Small Volume Manufacturing Tasks*, Arizona State University, Tempe, AZ, October 2017
49. *Rapid Realization of Flexible Multifunctional Materails and Strcyures through Advances in Modeling, Characterization, Manufacturing*, Air Force Research Lab, Wright-Patterson Air Force Base, OH, October 2017
50. *Smart Robotic Assistants for Non-Repetitive Manufacturing Tasks*, University of California, Los Angeles, May 2017
51. *Bringing Positive Societal Change through Use of Autonomous Systems*, University of Maryland, College Park, September 2016
52. *Robo Raven: A Flapping Wing Air Vehicle with Compliant and Independently Controlled Wings*, Purdue University, West Lafayette, April 2016
53. *RoboSAM: Robotic Smart Assistant for Manufacturing*, Oregon State University, Corvallis April 2016
54. *RoboSAM: Robotic Smart Assistant for Manufacturing*, ABB Corporate Research Center, Windsor, CT, December 2015
55. *RoboSAM: Robotic Smart Assistant for Manufacturing*, Intelligent Systems Division, National Institute of Standards and Technology, Gaithersburg, MD, November 2015
56. *Robo Raven: A Flapping Wing Air Vehicle with Compliant and Independently Controlled Wings*, University of Connecticut, Storrs, March 2015
57. *Exploiting Synergy Between Robotics and Manufacturing*, Indian Institute of Technology Roorkee, India, November 2014
58. *Exploiting Synergy Between Robotics and Manufacturing*, University of California, San Diego, CA, October 2014
59. *Towards Automated Manufacturing of Geometrically-Complex Heterogeneous Structures*, Ohio State University, Columbus, OH, October 2014
60. *Towards Automated Optical Micromanipulation of Biological Cells*, City University of Hong Kong, Hong Kong, June 2014
61. *Exploiting Synergy Between Robotics and Manufacturing*, University of Illinois, Urbana Champaign, IL, April 2014
62. *Towards Automated Manufacturing of Geometrically-Complex Heterogeneous Structures*, University of Southern California, CA, April 2014
63. *Biologically Inspired Robots*, Meadowside Nature Center, Rockville, MD, April 2014
64. *Designing and Building Autonomous Robot for Challenging Environments*, Intelligent Automation Inc., Rockville, MD, April 2014
65. *Exploiting Synergy Between Robotics and Manufacturing*, Johns Hopkins University, Baltimore, MD, March 2014
66. *Design and Manufacturing of Biologically Inspired Robots*, George Washington University, Washington DC, December 2013

67. *Towards Automated Optical Micromanipulation of Biological Cells*, University of Buffalo, The State University of New York, NY, November 2013
68. *Physics-Aware Planning for Autonomous Robots*, Naval Research Lab, Washington DC, April 2013
69. *Physics-Aware Planning for Autonomous Robotic Operations in Challenging Environments*, Seoul National University, Seoul, South Korea, August 2012.
70. *Towards Assembly Automation at Small Scales*, University of California, Los Angeles, CA, May 2012.
71. *Planning for Autonomous Robotic Operations in Physically Challenging Environments*, University of Pennsylvania, Philadelphia, PA, February 2012.
72. *Automated Planning for Low Production Volume Robotic Assembly Workstations*, Intelligent Systems Division, National Institute of Standards and Technology, Gaithersburg, MD, November 2011.
73. *Towards Simulation-Based Computational Synthesis*, Systems Integration Division, National Institute of Standards and Technology, Gaithersburg, MD, November 2011.
74. *Planning for Autonomous Robotic Operations in Physically Challenging Environments*, Georgia Institute of Technology, Atlanta, GA, October 2011.
75. *Autonomous Unmanned Vehicles*, Intelligent Automation Inc., Rockville, MD, June 2011.
76. *Autonomous Unmanned Vehicles*, Applied Physics Lab, Laurel, MD, April 2011.
77. *Towards Simulation-Based Computational Synthesis of Robot Behaviors and Structures*, Johns Hopkins University, Baltimore, MD, March 2011.
78. *Towards Simulation-Based Computational Synthesis of Robot Behaviors and Structures*, Carnegie Mellon University, Pittsburgh, PA, October 2010.
79. *A Computational Framework for Simulation Driven Innovation and Discovery*, Drexel University, Philadelphia, PA, June 2010.
80. *A Computational Framework for Simulation Driven Innovation and Discovery*, Missouri University of Science and Technology, Rolla, MO, May 2010.
81. *A Simulation Based Framework for Automatically Synthesizing Planning Logic for Autonomous Unmanned Sea Surface Vehicles*, Northrop Grumman Undersea Systems, Annapolis, MD, April 2010.
82. *A Computational Framework for Simulation Driven Innovation and Discovery*, University of Maryland at Baltimore County, MD, November 2009.
83. *Towards a New Manufacturing Approach to Realizing Bio-Inspired Robots*, Johns Hopkins University, Baltimore, MD, April 2009.
84. *Towards a New Manufacturing Approach to Realizing Bio-Inspired Robots*, University of Connecticut, Storrs, CT, October 2008.
85. *Towards a New Manufacturing Approach to Realizing Bio-Inspired Robots*, Indian Institute of Technology, Kanpur, India, August 2008.
86. *Towards a New Manufacturing Approach to Realizing Bio-Inspired Robots*, Indian Institute of Technology, Roorkee, India, August 2008.

87. *Towards Automated Micro and Nanoscale Assembly Using Optical Tweezers*, University of Michigan, Ann Arbor, MI, November 2007.
88. *Geometry Based Search Tool*, Toshiba Corporate Manufacturing Engineering Center, Yokohama, Japan, July 2007.
89. *Towards Automated Micro and Nanoscale Assembly Using Optical Tweezers*, Illinois Institute of Technology, Chicago, IL, April 2007.
90. *Virtual Training Studio: A Virtual Environment-Based Training System for Mechanical Assembly Operations*, Naval Research Laboratory, Washington DC, January 2007.
91. *Feature-Based Shape Similarity Assessment*. Departmental of Automation and Computer Aided Engineering, Chinese University of Science and Technology, Hong Kong, January 2006.
92. *Integrated Product and Process Development for Molded Multi-Material Structures*. Mechanical Engineering Department, Hanyang University, Korea, January 2006.
93. *Feature-Based Shape Similarity Assessment*. Mechanical Engineering Department, Sungkyunkwan University, Korea, January 2006.
94. *Improving Product Development through Intelligent Design Information Management*. Industrial and Systems Engineering Department, University of Wisconsin, Madison, WI, December 2005.
95. *Automated Shape Generation and Recognition: Applications in Automated Mold Design*. Solid Works Corporation, Boston, MA, November 2005.
96. *Improving Product Development through Intelligent Design Information Management*. School of Mechanical Engineering, Georgia Institute of Technology, Atlanta, GA, April 2005.
97. *Improving Product Development through Intelligent Design Information Management*. National Institute of Standards and Technology, Gaithersburg, MD, November 2004.
98. *Automated Design of Multi-Stage Molds: A Step towards Cost Effective Manufacturing of Multi-Material Objects*. Mechanical Engineering Department, University of Maryland at Baltimore County, Baltimore, MD, September 2004.
99. *Automated Design of Multi-Stage Molds: A Step towards Cost Effective Manufacturing of Multi-Material Objects*. Mechanical Engineering Department, Michigan Technological University, Houghton, MI, January 2004.
100. *Next Generation Process Planning Technologies*. Surfware Inc., Westlake Village, CA, December 2003.
101. *Automated Design of Multi-Stage Molds: A Step towards Cost Effective Manufacturing of Multi-Material Objects*. Industrial Engineering Department, University of Buffalo (SUNY), Buffalo, NY, April 2003.
102. *Automated Design of Multi-Stage Molds: A Step towards Cost Effective Manufacturing of Multi-Material Objects*. Mechanical and Industrial Engineering Department, University of Illinois, Urbana Champaign, IL, October 2002.
103. *Automated Design of Multi-Stage Molds: A Step towards Cost Effective Manufacturing of Multi-Material Objects*. Mechanical Engineering Department, University of California, Riverside, CA, October 2001.
104. *Parametric and Feature-Based Methodologies for Design and Manufacturing Integration*. United Technology Research Center, Hartford, CT, May 2001.

105. *Automated Design and Fabrication of Multi-Piece Molds: A Step towards Creating Geometrically Complex Objects.* Toshiba Corporate Manufacturing Engineering Center, Yokohama, Japan, February 2001.
106. *Web-Based Manufacturability Analysis: A Step towards Buying and Selling Manufacturing Services on the Internet.* Toshiba Corporate Manufacturing Engineering Center, Yokohama, Japan, February 2001.
107. *Automated Design and Fabrication of Multi-Piece Molds: A Step towards Creating Geometrically Complex Objects.* Mechanical Engineering Department, Indian Institute of Technology, Kanpur, India, December 2000.
108. *Automated Design and Fabrication of Multi-Piece Molds: A Step towards Creating Geometrically Complex Objects.* GRASP Lab, University of Pennsylvania, PA, November 2000.
109. *Web-Based Manufacturability Analysis: A Step towards Buying and Selling Manufacturing Services on the Internet.* Mechanical Engineering Department, Drexel University, PA, February 2000.
110. *Generating Shared Setups: A Step Towards Cost Effective Small Batch Manufacturing.* Department of Mechanical and Industrial Engineering, University of Massachusetts, Amherst, MA, February 1998.
111. *Generating Shared Setups: A Step Towards Cost Effective Small Batch Manufacturing.* Department of Industrial and Manufacturing Engineering, Pennsylvania State University, PA, February 1998.
112. *Generating Shared Setups: A Step Towards Cost Effective Small Batch Manufacturing.* Mechanical Engineering Department, University of Minnesota, MN, January 1998.
113. *Design for Manufacturing: A Computational Perspective.* Mechanical Engineering Department, University of Connecticut, CT, November 1997.
114. *Design for Manufacturing: A Computational Perspective.* Mechanical Engineering Department, Carnegie Mellon University, PA, Fall 1997.
115. *Composable Assembly Simulation and Visualization.* Lockheed Martin Missiles and Space Company, Palo Alto, CA, May 1997.
116. *Next Generation Process Planning Technologies.* Amada Inc., Isehara, Japan, February 1997.
117. *Integrating Feature Recognition with Process Planning.* Allied Signal, Kansas City, MO, November 1996.
118. *Next Generation Process Planning Technologies.* Electronic Data Systems, Cypress, CA, August 1996.
119. *Composable Assembly Simulation and Visualization.* Raytheon Company, Tewksbury, MA, April 1996.
120. *Automated Manufacturability Analysis for Machined Part.* National Institute of Standards and Technology, Gaithersburg, MD, April 1995.
121. *Automated Manufacturability Analysis for Machined Part.* Robotics Institute, Carnegie Mellon University, PA, May 1994.
122. *Automated Manufacturability Analysis for Machined Part.* Department of General Engineering, University of Illinois at Urbana Champaign, IL, April 1994.

123. *Design Critiquing for Machining Applications*. Mechanical Engineering Department, Indian Institute of Technology, Delhi, India, June 1993.
124. *Design Critiquing for Machining Applications*. Mechanical Engineering Department, Indian Institute of Science, Bangalore, India, June 1993.
125. *Design Critiquing for Machining Applications*. Research Development and Design Center, Pune, India, June 1993.

### **3. TEACHING, MENTORING, AND ADVISING**

#### **A. COURSES TAUGHT**

##### **University of Southern California**

- Bio-Inspired Robotics (AME 499): Spring 2017 and Spring 2018
- Foundations for Manufacturing Automation (AME 599): Fall 2016, Fall 2017, and Fall 2018

##### **University of Maryland**

- Bio-Inspired Robotics (ENME 489L): Spring 2006, Spring 2007, Spring 2008, Spring 2010, Spring 2011, and Fall 2014
- Computer Aided Design (ENME 414): Fall 2002
- Computer-Aided Manufacturing (ENME 616): Fall 1999 and Spring 2001
- Emerging Manufacturing Technologies (ENME 808B): Fall 2007 and Fall 2009
- Geometric Modeling for CAD/CAM Applications (ENME 611): Fall 1998, Spring 2000, Spring 2002, Fall 2003, and Fall 2005
- Integrated Product and Process Development (ENME 472): Fall 2006 and Spring 2009
- Manufacturing Automation (ENME 489M): Fall 2000, Fall 2001, Spring 2003, Spring 2004, and Fall 2008
- Planning for Autonomous Robots (ENME 696): Spring 2015
- Statics (ENES 102): Spring 1999

##### **Carnegie Mellon University**

- Advanced Product Realization Technologies (45-934): Spring 1997, Summer 1997 and Spring 1998

#### **B. CURRICULUM DEVELOPMENT**

##### **New Courses Developed at the University of Southern California**

- *Foundations for Manufacturing Automation (AME 599)*: This course covers fundamentals underlying the contemporary manufacturing automation. It covers the underlying building blocks of the automation system and also discusses mechanics-based models for designing automation system. It covers physical as well as decision making aspects of automation. The course is taught using a project-based learning approach. This course is intended for would be manufacturing system designers who intend to lead product development teams and play strategic roles in selection and deployment of advanced manufacturing automation technologies. This course provides students with the basic and the specialized training in using and deploying modern automation systems.

## New Courses Developed at the University of Maryland

- *Bio-Inspired Robotics (ENME 489L)*: This course is a senior elective and uses bio-inspired robots as a means to teach the principles behind bio-inspired designs and robotics. This course covers the following main topics: (1) fundamentals of traditional robotic manipulators, (2) fundamentals of biologically-inspired robots, (3) sensors and actuators for robotics, and (4) design and fabrication of biologically-inspired robots. Several examples of bio-inspired robots are discussed in detail, including the motivation and biological inspiration for their design, as well as technical specifications and comparisons to conventional robots. The examples include robots inspired by the cockroach, snake, and tuna. This course emphasizes hands-on learning. As a part of the course projects, student teams have an opportunity to design and build their own robots.
- *Geometric Modeling for CAD/CAM Applications (ENME 611)*: This is an introductory graduate course and introduces geometry representations, algorithms, and the underlying mathematical foundations, essential to solving geometry-related problems in computer-aided design and computer-aided manufacturing applications. This course covers (1) geometric representation of three dimensional solid objects, (2) curve and surface representation, (3) geometric algorithms for curves, surfaces, and solids, and (4) real-world applications of geometric modeling. This course is intended for graduate students who plan to work in computer-aided design, computer-aided manufacturing, computer-aided engineering analysis, robotics, and virtual prototyping areas.
- *Manufacturing Automation (ENME 489M)*: This course is a senior elective and covers fundamentals underlying the contemporary manufacturing automation technologies. The following two aspects of manufacturing automation are emphasized: (1) computer-based systems for automating and controlling manufacturing processes such as numerically controlled machines, industrial robots, rapid prototyping machines, coordinate measurement machines, and programmable logic controllers; and (2) use of software systems in facilitating information exchange between different components of manufacturing decision support systems. This course is intended for would-be manufacturing system designers who plan to play strategic roles in selection and deployment of advanced manufacturing automation technologies.
- *Emerging Manufacturing Technologies (ENME 808B)*: This is an advanced graduate course and provides an overview of several emerging manufacturing technologies. Representative technologies include: micro and nano manipulation, layered manufacturing, multi-material molding, powder injection molding, micro molding, nano-composite molding, and self assembly. For each of the topics, we provide technology overview, assessment of the current state of the technology, and examples of applications where the technology is being used. This course is intended for researchers interested in developing new manufacturing technologies and engineers interested in evaluating and deploying emerging manufacturing technologies.
- *Planning for Autonomous Robots (ENME 696)*: This is an introductory graduate course. Planning is a fundamental capability needed to realize autonomous robots. Planning in the context of autonomous robots is carried out at multiple levels. At the top level, task planning is performed to identify and sequence the tasks needed to meet mission requirements. At the next level, planning is performed to determine a sequence of motion goals that satisfy individual task goals and constraints. Finally, at the lowest level, trajectory planning is performed to determine actuator actions to realize the motion goals. Different algorithms are used to achieve planning at different levels. This graduate course introduces planning techniques for realizing autonomous robots. In addition to covering traditional motion planning techniques, this course emphasizes the role of physics in the planning process. Mobile robots are used as examples to illustrate the concepts during this course. However, techniques introduced in the course are equally applicable to robot manipulators.



## **New Courses Developed at Carnegie Mellon University**

- *Advanced Product Realization Technologies (45-934)*: The purpose of this course was to familiarize MBA students with new design, manufacturing, and information technologies. This course was a part of the Management of Technology specialization. The main course objectives were (1) introducing newly emerging technologies for improving the product realization process and (2) providing a realistic assessment of the effectiveness of these new technologies. As a part of this course, students performed a wide variety of case studies and experiments in the area of applying emerging technologies to improve the product realization process.

## **Significant Revision of Old Courses at the University of Maryland**

- Computer-Aided Manufacturing (ENME 616)

## **C. ADVISING**

### **Postdoctoral Fellows**

1. Brujal Shah (August 2016-Present)
2. Anantha Narayanan (July 2013-Present)
3. Iain Brookshaw (January 2016-June 2017)
4. Sagar Chowdhury (October 2013-September 2014)
5. Mahesh Mani (August 2011-June 2013)
6. Krishna Kaipa (May 2011-June 2013)
7. Atul Thakur (September 2011-August 2012)
8. Zeid Kootbally (June 2010-June 2012)
9. Madan Dabbeeru (June 2010-May 2012)
10. Petr Svec (August 2008-June 2011)
11. Arvind Ananthanarayanan (May 2009-May 2010)
12. Tao Peng (January 2007-December 2007)
13. XuanFang Zha (October 2005-January 2007)
14. Zhiyang Yao (August 2002-July 2003)

### **Research Engineers and Programmers**

1. Alec Kanyuck (September 2016 – Present)
2. Nithyanand Kumbla (July 2016 – June 2018)
3. Alexander Weismann (February 2007-August 2008)
4. Cheuk Ip (May 2005-July 2007)
5. Maxim Schwartz (May 2004-September 2007)

### **Ph.D. Dissertation Completed**

1. Michael J. Kuhlman, *Trajectory Planning for Autonomous Vehicles Performing Information Gathering Tasks*, August 2018
2. John W. Gerdes, *Improved Prediction of Flapping Wing Aerial Vehicle Performance through Component Interaction Modeling*, August 2018

3. Galen Mullins, *Adaptive Sampling Methods for Testing Autonomous Systems*, May 2018
4. Joshua Langsfeld, *Learning Task Models for Robotic Manipulation of Nonrigid Objects*, January 2017
5. Brual Shah, *Planning for Autonomous Operation of Unmanned Surface Vehicles*, July 2016
6. Carlos Morato, *Computational Foundations for Safe and Efficient Human-Robot Collaboration In Assembly Cells*, April 2016
7. Yong-Sik Kim, *Design of Three Degrees-of-Freedom Motion Stage for Micro Manipulation*, December 2014 (Co-advised with Dr. Nicholas Dagalakis)
8. James Hopkins, *Design and Analysis of Exaggerated Rectilinear Gait-Based Snake Inspired Robots*, February 2014
9. Juan Cevallos, *Thermal and Manufacturing Design of Polymer Composite Heat Exchangers*, December 2013 (Co-advised with Dr. Avram Bar-Cohen)
10. Sagar Chowdhury, *Planning for Automated Optical Micromanipulation of Biological Cells*, September 2013
11. Atul Thakur, *Physics-Aware Model Simplification For Interactive Virtual Environments*, August 2011
12. Arvind Balijeppali, *Modeling and Experimental Techniques to Demonstrate Nanomanipulation with Optical Tweezers*, January 2011 (Co-advised with Tom LeBrun)
13. Wojciech Bejgerowski, *In-Mold Assembly of Multi-Functional Structures*, November 2010
14. Ashis Banerjee, *Real-Time Path Planning for Automating Optical Tweezers based Particle Transport Operations*, August 2009
15. Arvind Ananthanarayanan, *Development of In-Mold Assembly Methods for Producing Mesoscale Revolute Joints*, May 2009
16. Tao Peng, *Algorithms and Models for 3-D Shape Measurement Using Digital Fringe Projections*, December 2006
17. Alok Priyadarshi, *Algorithms for Generating Multi-Stage Molding Plans for Articulated Assemblies*, September 2006
18. Antonio Cardone, *A Feature-Based Shape Similarity Assessment Framework*, August 2005
19. Changxin Xu, *Computational Foundations for Computer Aided Design of Multiple Interaction-State Mechatronic System*, May 2005
20. Xuejun Li, *Geometric Algorithms for Automated Design of Multi-Stage Molds for Manufacturing Multi-Material Objects*, July 2003
21. Zhiyang Yao, *Geometric Algorithms for Operation Planning of Geometrically Complex Milling Features*, August 2002 (Co-advised with Dr. Dana Nau)
22. Jun Huang, *Accessibility-Driven Spatial Partitioning: A Step towards Automated Design of Multi-Piece Molds*, December 2001

#### **Ph.D. Dissertation in Progress**

1. Shaurya Shriyam (Ph.D. Candidate)
2. Pradeep Rajendran (Ph.D. Candidate)
3. Ariyan Kabir (Ph.D. Candidate)

4. Shantanu Thakar (Passed Screening Exam)
5. Yeo Jung Yoon
6. Jason Gregory
7. Sarah Al-Hussaini
8. Rishi Malhan
9. Prahar Bhatt

### **M.S. Thesis Completed**

1. Lena Johnson, *SUR Hand: A Soft Underactuated Robotic Hand*, May 2016
2. Andrew Vogel, *Design of Compliance Assisted Gaits for a Quadrupedal Amphibious Robot*, May 2013
3. Brian Russ, *Development of a CAD Model Simplification Framework For Finite Element Analysis*, January 2012
4. Tom Brewer, *Development of a Quadruped Robot and Parameterized Stair-Climbing Behavior*, December 2011
5. Timothy Hall, *Manufacturability Analysis of Thermally-Enhanced Polymer Composite Heat Exchangers*, August 2011
6. John Gerdes, *Design, Analysis, and Testing of a Flapping Wing Miniature Air Vehicle*, May 2010
7. Abhijit Deshmukh, *Content Based Search of Mechanical Assemblies*, October 2006
8. Ashis Banerjee, *Computer Aided Design of Side Actions in Injection Molding of Complex Parts*, October 2006
9. John Brough, *Assessment of Training Modes and Features in the Virtual Training Studio*, August 2006 (Co-Advised with Dr. D.K. Anand)
10. Brent Spranklin, *Design, Analysis, and Fabrication of A Snake Inspired Robot with a Rectilinear Gait*, June 2006
11. Ira Golden, *Function-Based Archival and Retrieval: Developing a Repository of Biologically Inspired Product Concepts*, August 2005 (Co-Advised with Dr. E.B. Magrab)
12. Greg Fowler, *Cost And Performance Evaluation Models For Comparing Multi-Shot And Traditional Injection Molding*, August 2004
13. Mukul Karnik, *Geometric Containment Analysis System for Rotational Parts*, August 2003 (Co-advised with Dr. E. B. Magrab)
14. Alok Priyadarshi, *Geometric Algorithms for Automated Design of Multi-Piece Permanent Molds*, August 2003
15. Sunil Saini, *Algorithms for Computing Cutter Engagement in 2.5D Milling Operations*, August 2002
16. Sashidhar Bellam, *Geometric Algorithms for Automated Extraction and Emulation of MEMS Devices*, August, 2001
17. Yusheng Chen, *Process/Material Selection for Mechanical Components During Embodiment Design*, August 2001
18. Malay Kumar, *Automated Design of Multi-Stage Molds for Manufacturing Multi-Material Objects*, June 2001

19. Deepak Rajagopal, *Part Family Formation of Sheet Metal Parts for Generating Shared Press-brake Setups*, June 2001
20. Anoop Samuel, *Integrating Market Research with the Product Development Process*, November 2000
21. Ujval Alva, *Automated Design of Sheet Metal Tools for Bending Multiple Parts in a Single Setup*, July 2000
22. Ramakrishna Arni, *Web-Based Manufacturability Analysis for Solid Freeform Fabrication*, June 2000
23. Savinder Dhaliwal, *Automated Design of Sacrificial Molds*, June 2000
24. Bikram Baidya, *MEMS Extraction*, May 1999 (Co-advised with Dr. T. Mukherjee)

### **M.S. Scholarly Papers Completed**

1. Luke Roberts, *Physics-Aware Decision Making to Enable Autonomous Operation of a Highly Maneuverable Flapping Wing Unmanned Aerial Vehicle*, May 2016
2. Elisabeth LeBrun, *Overview of Terminal Sterilization Methods*, May 2013.
3. Alexander Weissman, *Selecting a Design-Stage Energy Estimation Approach for Manufacturing Processes*, August 2011
4. Jorge Diaz, *Use of Additive Manufacturing for the Fabrication of Load Bearing Implants*, June 2011
5. Jeffrey Coleman, *A Reduction Selection Process for Collaborative Technologies*, December 2001
6. Krishnakumar Venkatesan, *Generation of Atomic Representations for MEMS Extraction*, May 2000

### **B.S. Independent Study Completed**

1. J. Hugh, *Analysis and Optimization on the Compliant Flap and Leg Structure of the RoboTerp II Platform*, May 2015
2. Z. Gao, *RoboTerp III*, May 2015
3. G. Krummel, *Development of a Horseshoe Crab Inspired Robot for Surf Zone Traversal*, May 2014
4. R. Taeb, *Design and Functional Improvements to Four Legged Walking Platform*, December 2010
5. M. Stevens, *Design and Manufacturing of a Self-Charging Docking Station for a Robot*, December 2009
6. Z. Schramm, *Design and Manufacture a Prototype Prosthetic Hand Based on the Physiological Structure of the Human Hand*, July 2009
7. G. Ramu, *Izzy: The Lizard Robot*, May 2009
8. B. Freas, *Lizard Inspired Robot*, March 2007
9. J. Zuckerman, *Tool Design and Implementation for Polyhedral Body Editing Application*, May 2005
10. R. Gouker, *Rapid Prototyping Articulated Multi-Material Assemblies Using Multi-Piece Multi-Stage Molding*, May 2004
11. B. Spranklin, *Gelcasting of Geometrically Complex Objects*, December 2003
12. I. Golden, *Cutter Path Planning for 3D Replication*, December 2002
13. G. Fowler, *Design and Manufacturing Issues for Macroscopic Interfaces in Heterogeneous Assemblies*, December 2001
14. O. Morgan, *CNC Tool Path Generation for Three-Axis Machining of Sculptured Surfaces*, May 2000

15. D. Butler, *Using Computer Vision for Determining Vise Position for Intelligent Machining*, December 1999

**Advisor for Undergraduate Students from Mannheim University of Applied Sciences, Germany**

- T. Jacob (September 2000 to February 2001); K. Stoppel (September 2001 to February 2002); S. Bennewitz (September 2002 to February 2003); M. Schroeder (March 2003 to August 2003); T. Holzschuh (September 2003 to February 2004); S. Schiefner (March 2004 to August 2004); E. Eick (March 2004 to August 2004); W. Mosler (September 2004 to February 2005); F. Kerbs (September 2004 to February 2005); S. Warth (March 2005 to August 2005); A. Gfell (March 2005 to August 2005); S. Koch (March 2006 to August 2006); P. Wandji (September 2006 to February 2007); D. Muller (March 2007 to August 2007); T. Karch (September 2007 to February 2008); Kenan Ozdemir (March 2009 to August 2009); Lester Ehrlich (March 2009 to August 2009); Felix Bussemer (September 2009 to February 2010); Lester Ehrlich (March 2010 to August 2010); Christoph Pazer (March 2015 to August 2015)

**Advisor for ISR REU Students**

- J. Hammer (Summer 2001); A. Lo (Summer 2001); W. Dickenson (Summer 2002); B. Spranklin (Summer 2003); L. Fomundan (Summer 2003); G. Gouker (Summer 2004); N. Charoosah (Summer 2004); G. Kung (Summer 2004); N. Deshpande (Summer 2005); K. Ledoux (Summer 2005); T. Oberc (Summer 2006); G. Brock (Summer 2006); W. Miranda (Summer 2006); D. Rich (Summer 2007); Suchit Bhattacharai (Summer 2008); B. Farris (Summer 2012); J. Trischler (Summer 2012)

**Ph.D. Thesis Committee Member**

- Manish Kumar Govil (March 1999); Antonio Diaz-Calderon (June 2000); Rajrishi Sinha (January 2002); Sameer Joshi (March 2002); Mandar Chincholkar (June 2002); Bikram Baidya (July 2003); Xinhua Long (November 2005); Maomao Chen (April 2006); Peng Xu (2008); Anand Pillarisetti (September 2008); Ion Matei (September 2010); Mark Paul Kujawski (February 2011); Sandip Haldar (2013); Mingyen Ho (2013); Cheuk Yiu Ip (2013); Sujal Bista (2014)

**M.S. Thesis Committee Member**

- S. Karthik (February 1999); S. Balasubramanian (July 1999); D. Pelinescu (September 2000); S. Saikumar (September 2000); V. Mathur (June 2001); H. Surendranath (July 2001); R. Kumar (May 2002); Z. Tuncali (May 2003); L. Gyger (August 2006); J. Krufft (January 2007)

**D. STUDENT AWARDS**

- Ariyan Kabir, First Place, Annual Poster Competition of Aerospace & Mechanical Engineering Department, University of Southern California, September 2016
- Sagar Chowdhury, 2015 ASME Computers and Information in Engineering Division's Best Dissertation Award, May 2014
- Gregory Krummel, Engineering Honors Program Outstanding Research Award for Undergraduate Honors Thesis titled *Development of a Horseshoe Crab-Inspired Robot for Surf Zone Traversal*, 2013
- Sagar Chowdhury, Dean's Doctoral Student Research Award, 2013
- Atul Thakur, 2013 ASME Computers and Information in Engineering Division's Best Dissertation Award, May 2013
- Sagar Chowdhury, 2013 ISR George Harhalakis Outstanding Systems Engineering Graduate Student Award, May 2013

- Luke Roberts, National Science Foundation Graduate Fellowship, 2013
- Arvind Balijepalli, NRC Postdoctoral Fellowship, February 2011
- Alex Weissman, NIST ARRA Fellowship, January 2011
- Ashis Banerjee, Best Dissertation Award, Mechanical Engineering Department, University of Maryland, April 2010
- Wojciech Bejgerowski, Best poster award for poster titled “In-Mold Assembly: A New Approach to Assembly Automation”, ME Research Review Day, April 2010
- Ashis Banerjee, Outstanding George Harhalakis Systems Engineering Graduate Student Award, 2009
- Ashis Banerjee, First prize for poster presentation at Graduate Research Interaction Day, 2009
- Atul Thakur, Best poster award for poster titled “A Virtual Environment-Based System for Simulating Mechanical Assembly Operations”, ME Research Review Day, March 2009
- Arvind Ananthanarayanan, NSF Travel Grant Award to attend 2008 NSF CMI Grantees Conference
- Wojciech Bejgerowski, NSF Travel Grant Award to attend 2008 NSF CMI Grantees Conference
- Arvind Ananthanarayanan, Best poster award for poster titled “Development of In-mold Assembly Methods for Producing Articulated Joints”, ME Research Review Day, March 2008
- Arvind Ananthanarayanan, Best poster award for poster titled “Development of In-mold Assembly Methods for Producing Articulated Joints”, ME Research Review Day, March 2007
- Jeb Brough, Best Poster Award for poster titled “Utilizing Virtual Environments to Facilitate Knowledge Preservation and Accelerated Learning”, ME Research Review Day, March 2007
- Arvind Ananthanarayanan, Future Faculty Fellow (2007 to 2009)
- Arvind Ananthanarayanan, NSF Travel Grant Award to attend 2006 NSF CMI Grantees Conference.
- Alok Priyadarshi, First prize for poster presentation at Graduate Research Interaction Day, 2003
- 

## **4. SERVICE**

### **A. PROFESSIONAL ACTIVITIES**

#### **Professional Society Membership**

- Fellow, American Society of Mechanical Engineers (ASME)
- Senior Member, Society of Manufacturing Engineers (SME)
- Senior Member, Institute of Electrical and Electronics Engineers (IEEE)

#### **Technical Committee Membership**

- Chair, ASME Design for Manufacturing Committee (July 2005-June 2007)
- Vice Chair, ASME Design for Manufacturing Committee (July 2003-June 2005)
- Secretary, ASME Design for Manufacturing Committee (July 2001-June 2003)
- Awards and Honors Chair, ASME Design for Manufacturing Committee (July 1999-June 2001)

## **Editorship**

- Editor, *ASME Journal of Computing and Information Science in Engineering* (July 2017 to present)
- Editor-in-Chief, *Advanced Manufacturing Book Series*, World Scientific Publishing Company (2016 to present)
- Member, Editorial Advisory Board, *Assembly Automation* (2015 to present)
- Associate Editor, *IEEE ICRA 2016*
- Associate Editor, *IEEE ICRA 2015*
- Associate Editor, *ASME Journal of Mechanisms and Robotics* (July 2014 to June 2017)
- Member, Advisory Board, *IEEE Transaction on Automation Science and Engineering* (2013 to 2016)
- Editor, Manufacturing Automation Track, *IEEE International Conference on Automation Science and Engineering*, 2012
- Guest Co-Editor, Special Issue on Manufacturing and Construction, *Virtual Reality Journal*, Volume 15, Number 1, 2011
- Associate Editor, *SME Journal of Manufacturing Processes* (April 2008 to December 2011)
- Guest Co-Editor, Special issue on Advances in Computer Aided Manufacturing, *ASME Journal of Computing and Information Science in Engineering*, Volume 7, Number 3, September 2007
- Associate Editor, *ASME Journal of Computing and Information Science in Engineering* (January 2006 to December 2011)
- Member, Editorial Advisory Board, *Computer Aided Design and Application* (2005 to present)
- Associate Editor, *IEEE Transaction on Automation Science and Engineering* (March 2004 to February 2006)
- Member, Editorial Advisory Board, *Assembly Automation* (2001 to 2013)
- Guest Co-Editor, Special issue on Feature Based Manufacturing, *Computer Aided Design Journal*, Volume 33, Number 9, August 2001

## **Paper Reviewer for Journals**

- *Computer Aided Design; Research in Engineering Design; ASME Journal of Mechanical Design; ASME Journal of Manufacturing Science and Engineering; ASME Journal of Computing and Information Science in Engineering; IEEE Transactions on Robotics and Automation; IEEE Transaction on Automation Science and Engineering; IEEE Transactions on Robotics; IEEE Transactions on Visualization and Computer Graphics; IEEE Transactions on Mechatronics, IIE Transactions; SME Journal of Manufacturing Systems; SME Journal of Manufacturing Processes; AI in Design and Manufacturing; International Journal of Expert Systems; International Journal of Production Research; Journal of Engineering Manufacture (Proceedings of the Institution of Mechanical Engineers Part B); Virtual Reality; Computer Integrated Manufacturing; Proceedings of the National Academy of Sciences*

## **Paper Reviewer for Conferences**

- *ASME Design for Manufacturing Conference; ASME Computers in Engineering Conference; ASME International Mechanical Engineering Congress and Exposition; ASME Design Automation Conference; ASME Mechanism and Robotics Conference; ASME Winter Annual Meeting; ACM Symposium on Solid and Physical Modeling; International Symposium on Tools and Methods for*

*Competitive Engineering; Computer Aided Design Conference; CAD and Graphics Conference; Geometric Modeling and Processing Conference; International Conference on Product Lifecycle Management; IEEE International Symposium on Assembly and Manufacturing; IEEE Conference on Automation Science and Engineering; IEEE Robotics and Automation Conference; North American Manufacturing Research Institute Conference; All India Machine Tool Design and Research Conference*

### **Conference Organization**

- Member, Advisory Committee, *Additive Manufacturing + 3D Printing*, Boston, MA, 2015
- Member, Advisory Committee, *ASME Advanced Design and Manufacturing Impact Forum*, Buffalo, NY, 2014
- Member, Scientific Committee, *International Conference on Mechanical Engineering and Mechatronics (ICMEM)*, 2014
- Member, Program Committee, *CLAWAR* 2014
- Member, Program Committee, *International Symposium on Experimental Robotics*, 2014
- Member, Program Committee, *International Symposium on Assembly and Manufacturing (ISAM)*, 2013
- Member, Scientific Committee, *International Conference on Mechanical Engineering and Mechatronics (ICMEM)*, 2013
- Member Scientific and Advisory Committee, *NEWTECH* 2013
- Member, Program Committee, *CLAWAR* 2013
- Member, Advisory Committee, *International Conference on Innovations in Automation and Mechatronics Engineering*, 2013
- Session Chair, *IEEE CASE*, 2012
- Member, Program Committee, *International Symposium on Experimental Robotics*, 2012
- Member, Program Committee, *ACM Solid and Physical Modeling Symposium*, 2012
- Member, Program Committee, *Performance Metrics for Intelligent Systems (PerMIS'12) Workshop*, 2012
- Member, Program Committee, *IEEE International Conference on Automation Science and Engineering*, 2012
- Member, Local Organizing Committee, *International Conference on Climbing and Walking Robots and the Support Technologies for Mobile Machines (CLAWAR)*, 2012
- Member, Scientific Committee, *NEWTECH*, 2011
- Member, Program Committee, *International Conference on Design and Advances in Mechanical Engineering*, 2011
- Member, Program Committee, *International Symposium on Assembly and Manufacturing*, 2011
- Member, Program Committee, *AIMTDR*, 2010
- Member, Program Committee, *ACM Solid and Physical Modeling Symposium*, 2010
- Member, Program Committee, *Computer Aided Design Conference*, 2009



- Member, Program Committee, *ACM Solid and Physical Modeling Symposium*, 2009
- Member, Program Committee, *Computer Aided Design Conference*, 2008
- Member, Program Committee, *IEEE CASE*, 2008
- Member, Program Committee, *Virtual Manufacturing Workshop*, 2008
- Member, Program Committee, *ACM Solid and Physical Modeling Symposium*, 2008
- Session Chair, *IEEE International Symposium on Assembly and Manufacturing*, 2007
- Member, Program Committee, *IEEE International Symposium on Assembly and Manufacturing*, 2007
- Member, Program Committee, *CAD and Graphics Conference*, 2007
- Member, Program Committee, *Computer Aided Design Conference*, 2007
- Member, Program Committee, *Product Lifecycle Management Conference*, 2007
- Member, Program Committee, *Product Lifecycle Management Conference*, 2006
- Member, Program Committee, *Geometric Modeling and Processing Conference*, 2006
- Member, Program Committee, *Computer Aided Design Conference*, 2006
- Member, Program Committee, *ACM Solid and Physical Modeling Conference*, 2006
- Session Chair, *ASME International Mechanical Engineering Congress and Exposition*, 2005
- Member, Program Committee, *CAD and Graphics Conference*, 2005
- Member, Program Committee, *Computer Aided Design Conference*, 2005
- Member, Program Committee, *ACM Solid and Physical Modeling Conference*, 2005
- Session Chair, *ASME Computers and Information in Engineering Conference*, 2005
- Session Chair, *Computer Aided Design Conference*, 2005
- Session Chair, *ASME Computers and Information in Engineering Conference*, 2004
- Session Chair, *International Symposium on Tools and Methods for Competitive Engineering*, 2004
- Session Organizer, *ASME International Mechanical Engineering Congress and Exposition*, 2003
- Conference Chair, *ASME Design for Manufacturing Conference*, 2003
- Session Chair, Manufacturing and Process Planning, *ASME Computers and Information in Engineering Conference*, 2003
- Session Chair, Layered Fabrication, *ASME Design for Manufacturing Conference*, 2003
- Session Co-Chair, Geometric Reasoning and Modeling for Manufacturing, *ASME Design for Manufacturing Conference*, 2003
- Program Chair, *ASME Design for Manufacturing Conference*, 2002
- Session Chair, Design Applications, *ASME Computers and Information in Engineering Conference*, 2002
- Session Chair, Design and Manufacturing Integration, *ASME Design for Manufacturing Conference*, 2002
- Paper Review Coordinator, *ASME Design for Manufacturing Conference*, 2001

- Session Chair, Design Approaches for Assemblies and Tooling, *ASME Computers and Information in Engineering Conference*, 2001
- Session Chair, Tool Path Planning for Freeform Surfaces and Pocket Features Session, *ASME Computers and Information in Engineering Conference*, 2001
- Session Chair, Design and Manufacturing Representation Session, *ASME Design for Manufacturing Conference*, 2001
- Session Chair, Design for Manufacturing Session, *ASME Mechanical Engineering Congress and Exposition*, 2000
- Session Chair, Advanced System Assembly Analysis Session, *ASME Design for Manufacturing Conference*, 2000
- Session Co-Chair, Process Planning Session, *ASME Computers in Engineering Conference*, 2000
- Session Co-Chair, Global Manufacturing Session, *Flexible Automation and Intelligent Manufacturing Conference*, 2000
- Paper Review Coordinator, *ASME Design for Manufacturing Conference*, 2000
- Exhibit Chair, *ASME Design Engineering Technical Conference*, 2000
- Papers Chair, *ASME Design for Manufacturing Conference*, 1999
- Session Co-Chair, *ASME Design for Manufacturing Conference*, 1999
- Co-Chair, Feature Recognition Session, *ASME Computers in Engineering Conference*, 1998
- Program Co-Chair, *ASME Design for Manufacturing Conference*, 1998
- Area-Chair, Integration of CAD and Planning, *ASME Design for Manufacturing Conference*, 1997
- Chair, Integrated Computing Environments, *ASME Computers in Engineering Conference*, 1997
- Area-Chair, Integration of CAD and Planning, *ASME Design for Manufacturing Conference*, 1996
- Chair, Industry Panel Discussion, *ASME Design for Manufacturing Conference*, 1996
- Chair, Feature Recognition Session, *ASME Computers in Engineering Conference*, 1996
- Co-Chair, Feature-Based Process Planning Session, *ASME Computers in Eng. Conference*, 1995
- Chair, Geometric Modeling Session, *ASME Computers in Engineering Conference*, 1995
- Vice-Chair, Feature-Based Applications Session, *ASME Computer in Engineering Conference*, 1994

#### **NSF Workshop Participation (Participation by invitation only)**

- 2007 NSF CI-TEAM Workshop, July 9-11, Washington, DC
- 2005 NSF EXCITED Workshop, February 28 - March 1, 2005, Arlington, VA
- 2004 NSF Engineering Design Workshop, March 26-29, 2004, Phoenix, AZ

#### **Proposal Reviewer**

- Department of Energy, 2013
- National Science Foundation (14 different panels between 1997 and 2016)
- University Grant Commission, Hong Kong (reviewed more than 40 proposals between 1997 and 2012)

- King Abdulaziz City for Science and Technology, 2011
- Air Force Office of Scientific Research, 2010
- Maryland Industrial Partnership Program, 2007
- National Institute of Standards and Technology, 2005
- Ohio University Baker Funds, 2001

## **B. INSTITUTIONAL SERVICE**

### **USC Viterbi School of Engineering**

- Member, Research Committee (Spring 2016 to present)

### **USC Aerospace and Mechanical Engineering**

- Member, AME Search Committee (Fall 2016, Spring 2017, Fall 2017, Spring 2018)
- Member Promotion Committee for Tim Centea (Spring 2016)

### **UMD College of Engineering**

- Member, ME Chair Search Committee (Fall 2010 and Spring 2011)
- Maryland Technology Extension Service Consulting for Maryland Thermoform, Marlin Steel, Cyto Pulse, and Advanced Thermal Batteries
- Advisory Committee for NIST-ARRA Fellowship (Spring 2010 to Summer 2012)
- Member, ISR Director Search Committee (Summer 2009)
- Member, Committee for Reviewing ISR Director (Spring 2007)
- Member, Selection Committee for Venture Accelerator Director (Fall 2004)
- Mechanical Engineering Representative, College APT Committee (Fall 2003)
- Mentor for Reginald McNeill, ESTEEM program participant (Spring 2010)
- Mentor for Umaru Sillah, ESTEEM program participant (Fall 2002 and Spring 2003)
- Mentor for Stefan Roxborough, ESTEEM program participant (Summer 1999, Fall 1999, and Spring 2000)
- Mechanical Engineering Representative, Engineering Council (1998-2000)

### **UMD Mechanical Engineering**

- Member, Faculty Advisory Committee (Spring 2015 to Fall 2015)
- Member, Academic Affairs Committee (Spring 2015 to Fall 2015)
- Member, APT Committee (Spring 2015 to Fall 2015)
- Chair, Faculty Search Committee (Fall 2014 to Spring 2015)
- Chair, APT Committee for Promotion of Dr. Elisabeth Smela (Summer 2010 and Fall 2010)
- Member, Graduate Committee (Spring 2008 to Summer 2012)
- Member, APT Committee (Spring 2008 to Summer 2012)
- Mentor for Sarah Bergbreiter (Fall 2008 to Spring 2014)

- Chair, Awards Committee (Spring 2007 to Summer 2010)
- Member, Risk Based Design Search Committee (Fall 2006 to Spring 2007)
- Member, APT Committee for Promotion of Dr. Peter Sandborn (Fall 2008)
- Chair, Energetics Technology Center Building Specification Committee (Spring 2007 to Fall 2007)
- Chair, Energetics Technology Center Coordinator Search Committee (Fall 2006 to Spring 2007)
- Chair, APT Committee for Appointment of Dr. Jaydev Desai as Tenured Associate Professor (Spring 2006)
- Member, Qualifying Exam Review Committee (Fall 2005 to Spring 2006)
- Co-Chair, Robotics Search Committee (Fall 2005 to Spring 2006)
- Member, Reliability-ME Integration Task Force (November 2002 to May 2003)
- Chair, Awards Committee (Spring 2002 to Summer 2004)
- Advisor, SME Student Chapter (July 2002 to June 2004)
- Chair, Adhoc Committee for Organizing SME LEAD Award Site Visit (Spring 2000)

#### **UMD Institute for Systems Research**

- Member, ISR Strategic Planning Committee (Spring 2014 to Fall 2015)
- Member, Executive Committee (July 2011 to August 2012)
- Chair, Robotics Initiative Committee (October 2009 to March 2010)
- Member, Education Committee (July 2008 to June 2010)
- Member, APT Committee (Fall 2008 to Spring 2009)
- Member, Facilities and Services Committee (July 2005 to June 2007)
- Chair, APT Committee (Fall 2005 to Spring 2006)
- Chair, Strategic Planning Committee for Product Realization and Manufacturing Systems Group (Fall 2003 to Spring 2004)
- Member, Education Committee (July 2003 to June 2004)
- Member, Adhoc Committee for Public Relations (September 2002 to June 2004)
- Member, Space and Facilities Committee (July 2001 to June 2003)
- Member, Education Committee (July 1999 to June 2001)
- Institute for Systems Research Representative, Space Planning Committee for Virtual Reality Laboratory in the New Engineering Laboratory Building (Fall 1999)
- Member, 2nd Strategic Planning Workshop (Spring 1999)