Krishnan Suresh
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University of Wisconsin, Madison
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Summary of Research Interests

My primary research interests are topology optimization, additive manufacturing, computational mechanics, and high-performance computing.

Education

Cornell University	Mechanical Engineering	PhD, 1998
Cornell University	Mechanical Engineering	MS, 1995
University of California, Los Angeles	Manufacturing Engineering	MS, 1992
Indian Institute of Technology, Madras	Mechanical Engineering	B. Tech, 1990

Professional Appointments

Jan 16 – Present:	Professor, Department of Mechanical Engineering, University of Wisconsin - Madison, USA. Co-Director of the Wisconsin Applied Computing Center.
Jul 09 – Dec 15:	Associate Professor, Department of Mechanical Engineering, University of Wisconsin - Madison, USA.
Jan 03 – Jun 09:	Assistant Professor, Department of Mechanical Engineering, University of Wisconsin - Madison, USA.
Mar 02 – Dec 02:	Engineering Manager, Mechatronics Group, Kulicke and Soffa Industries, Inc., Philadelphia, USA.
May 98 – Feb 02:	Senior Mechanical Engineer, Microelectronics Group, Kulicke and Soffa Industries, Inc., Philadelphia, USA.

Visiting Positions

Sep 13 – Dec 13:	Visiting Scientist, Air Force Research Lab, Dayton, OH
Jun 11 – Aug 11:	Visiting Scientist, Office of Naval Research, Washington, DC
Sep 09 – May 10:	Visiting Professor, Department of Mechanical Engineering, Indian Institute of Science, Bangalore, India.

Book Chapters

1. Suresh K., "Large Scale Topology Optimization on High-Performance Computers", Invited Book Chapter, ASME ACIER Publications, 2014.

Journal Publications

1. Deng, S., Suresh, K., "Stress Constrained Thermo-elastic Topology Optimization with Varying Temperature Fields via Augmented Topological Sensitivity based Level-Set". *Structural and Multidisciplinary Optimization*, accepted, 2017.
2. Taheri, A. H., Suresh, K., "An isogeometric approach to topology optimization of multi-material and functionally graded structures," International Journal of Numerical Methods in Engineering, accepted, Volume 109, Issue 5,pp: 668–696, 2017.
3. Deng, S., Suresh, K., "Topology optimization under thermo-elastic buckling", Structural and Multidisciplinary Optimization, Volume 55, Issue 5, pp 1759–1772, 2017.
4. Mirzendehdel, A. M., Suresh, K., "Support structure constrained topology optimization for additive manufacturing," Computer-Aided Design, Volume 81, Pages 1–13, December 2016.
5. Verma, C. S., Suresh, K., "A Robust Combinatorial Approach to Reduce Singularities in Quadrilateral Meshes", Computer-Aided Design, Volume 124, Pages 252-264, December 2015.
6. Mirzendehdel, A. M., Suresh, K., "A Pareto-Optimal Approach to Multi-material Topology optimization," Journal of Mechanical Design, 137(10) doi: 10.1115/1.4031088, 2015.

7. Mirzendehdel, A. M., Suresh, K., "A Deflated Assembly Free Approach to Large-Scale Implicit Structural Dynamics," *J. Comput. Nonlinear Dynam.*, 10(6), doi: 10.1115/1.4029110, 2015.
8. Krishnakumar, A., Suresh, K., "Hinge-Free compliant mechanism design via the Topological Level-Set," Journal of Mechanical Design, 137(3), Mar, 2015.
9. Yadav, P., Suresh, K., "Large Scale Finite Element Analysis via Assembly Free Deflated Conjugate Gradient," Journal of Computing and Information Science in Engineering, Volume 14, Number 4, December 2014.
10. Deng, S., Suresh, K., "Multi-Constrained Topology Optimization via the Topological Sensitivity," Structural and Multidisciplinary Optimization, DOI 10.1007/s00158-014-1188-6, November, 2014.
11. Suresh, K., "Efficient Generation of Large-Scale Pareto-Optimal Topologies," Structural and Multidisciplinary Optimization, vol. 47, no 1, pp. 49 -61, 2013.
12. Danczyk, J., Suresh, K., Finite element analysis over tangled simplicial meshes: Theory and implementation", Finite Elements in Analysis and Design, Vol. 70-71, Pages 57–67, 2013.
13. Suresh, K., Takalloozadeh, M., "Stress-constrained topology optimization: a topological level-set approach", Structural and Multidisciplinary Optimization, Vol. 48, Issue 2, pp. 295-309, 2013.
14. Yadav, P., Suresh, K., "Assembly-free Large-Scale Modal Analysis on the GPU", Journal of Computing and Information Science in Engineering, Vol. 13, Issue 1, January 2013.
15. Mishra, V., Suresh, K., "A dual-representation strategy for the virtual assembly of thin deformable objects," Virtual Reality, Vol. 16, Issue 1, 2012.
16. Jorabchi, K., Suresh, K., "A Robust Continuation Method to Pass Limit-Point Instability," Finite Element in Analysis and Design, Vol. 47, Issue 11, 2011.
17. Turevsky, I., Suresh, K., "Efficient Generation of Pareto-Optimal Topologies for Compliance Optimization," International Journal of Numerical Methods in Engineering, Volume 87, Issue 12, pages 1207–1228, 2011.
18. Mishra, V., Suresh, K., "Fast Iterative Solvers for Thin Structures," Finite Element in Analysis and Design, Vol. 47, Issue 11, 2011.
19. Samad, W., Suresh, K., "CAD-Integrated Analysis of 3-D Beams: A Surface-Integration Approach," Engineering with Computers, vol. 27, no. 3, 201-210, 2011.
20. Suresh, K., "199-line Matlab code for Pareto-Optimal Tracing in Topology Optimization," Structural and Multidisciplinary Optimization, Volume 42, Issue 5, pp 665-679 2010.
21. Jorabchi, K., Danczyk, J., Suresh, K., "Algebraic Reduction for CAD Integrated Analysis," Computer Aided Design, Volume 42 Issue 9, pp. 808-816, 2010.
22. Vemulapally, R., Suresh, K., "An Analysis Strategy for Swept Solids", Engineering with Computers, vol. 25 (2), pp. 155-164, 2009.
23. Jorabchi, K., Mishra, V., Suresh, K., "Efficient and Automated Analysis of Potentially Slender Structures", Journal of Computing and Information Science in Engineering, vol. 9 (4), 2009.
24. Jorabchi, K., Suresh, K., "Nonlinear Algebraic Reduction for Snap-Fit Simulation", Journal of Mechanical Design, vol. 131 (6), 2009.
25. Turevsky, I., Gopalakrishnan, S. H., Suresh, K., "An Efficient Numerical Method for Computing the Topological Sensitivity of Arbitrary Shaped Features in Plate Bending," International Journal of Numerical Methods in Engineering, vol. 79 (13), pp. 1683-1702, 2009
26. Gopalakrishnan, S. H., Suresh, K., "Feature Sensitivity: A Generalization of Topological Sensitivity," Finite Elements in Analysis and Design; vol. 44 (11), pp. 696-704, 2008
27. Turevsky, I., Gopalakrishnan, S. H., Suresh, K., "Defeaturing: A Posteriori Error Analysis via Feature Sensitivity," International Journal of Numerical Methods in Engineering; vol. 76, 9, pp. 1379-1401, 2008.
28. Gopalakrishnan, S. H., Suresh, K. "A Formal Theory for Estimating Defeaturing-Induced Engineering Analysis Errors", Computer Aided Design, Vol. 39 (1), January, 2007.
29. Chen, J., Shapiro, V., Suresh, K., Tsukanov, I. "Parametric and Topological Control in Shape Optimization" International Journal of Numerical Methods in Engineering, Volume 71, No 3, 2007, pages 313-346.

30. Suresh, K. Sirpotdar, A., “Automated Symmetry Exploitation in Engineering Analysis”, Engineering with Computers; 21 (4), 304-311, 2006.
31. Suresh, K. “Skeletal Reduction of Eigenvalue Problems over Thin Solids,” Chapter in Computational Methods, Eds: Liu, G.R, Tan, V.B.C. and Han, X., Springer-Netherlands, 2006.
32. Suresh, K., Sinha, M., “A 2-D Model that Accounts for 3-D Fringing in MEMS Devices”, Journal of Engineering Analysis with Boundary Elements, Vol. 30, Issue 11, pp. 963-970, 2006.
33. Suresh, K. “Skeletal Reduction of Boundary Value Problems”, International Journal of Numerical Methods in Engineering, Accepted in November 2005.
34. Suresh, K. “Generalization of the Mid-Element Dimensional Reduction,” Journal of Computing and Information Science in Engineering, Vol 3 (4), 308-314, 2003.
35. Hartquist, E. E., Menon, J. P, Suresh, K., Voelcker, H. B., Zagajac, J., “A Computing Strategy for Applications Involving Offsets, Sweeps, and Minkowski Operations,” Computer Aided Design, pp. 175-183, 31, 1999.
36. Suresh, K. and Voelcker, H. B., “New Challenges in Dimensional Metrology: A Case Study Based on Size,” Manufacturing Review, pp. 291-303, Vol. 7, No. 5, December 1994.
37. Suresh, K. and Yang, D. C. H., “Constant Scallop Height Machining of Free-Form Surfaces,” Journal of Engineering for Industry, pp. 253-259, Vol. 116, No. 2, May 1994.”

Peer-Reviewed Conference Publications

1. Deng, S., Suresh, K., “Topology optimization under thermo-elastic buckling”, DETC2016-59408, ASME-IDETC Conference, Charlotte, NC, August 2016.
2. Verma, C.S., Suresh, K, “αMST: A Robust Unified Algorithm for Quadrilateral Mesh Adaptation”, 25th International Meshing Roundtable Conference, Washington DC, 2016.
3. Verma, C. S., Suresh, K., “A Robust Combinatorial Approach to Reduce Singularities in Quadrilateral Meshes,”, 24th International Meshing Roundtable, Austin, TX, 2015.
4. Mirzendehdel, A. M., Suresh, K., “Multi-material Topology Optimization for Additive Manufacturing", DETC2015-46268**,** ASME-IDETC Conference, Boston, MA, August 2015.
5. Krishnakumar, A., Chandrasekar A., Suresh, K., “Towards Assembly-Free Methods for Additive Manufacturing Simulation", DETC2015-46356**,** ASME-IDETC Conference, Boston, MA, August 2015.
6. Suresh, K., “Topology Optimization on the Cloud: A Confluence of Technologies", DETC2015-46137, ASME-IDETC Conference, Boston, MA, August 2015.
7. Bian, X., Yadav, P., Suresh, K., “Assembly-Free Buckling Analysis for Topology Optimization", DETC2015-46351**,** ASME-IDETC Conference, Boston, MA, August 2015.
8. Deng, S., Suresh, K., “Predicting the Benefits of Topology Optimization", DETC2015-46349, ASME-IDETC Conference, Boston, MA, August 2015.
9. Yadav, P., Suresh, K., “Limited-Memory Deflated Conjugate Gradient for Solid Mechanics", DETC2014-34393**,** ASME-IDETC Conference, Buffalo, NY, August 2014
10. Suresh, K., "Efficient Microstructural Design for Additive Manufacturing", DETC2014-34383**,** ASME-IDETC Conferences, Buffalo, NY, August 2014
11. Mirzendehdel, A. M., Suresh, K., “A Fast Time-Stepping Strategy for the Newmark Beta Method", DETC2014-34387**,** ASME-IDETC Conference, Buffalo, NY, August 2014
12. Deng, S., Suresh, K., Joo, J., “Stress Constrained Thermo-Elastic Topology Optimization: A Topological Sensitivity Approach", DETC2014-34385**,** ASME-IDETC Conference, Buffalo, NY, August 2014
13. Verma, C. S., Suresh, K., “Towards FEA over Tangled Quads", 23rd International Meshing Roundtable (IMR), London, United Kingdom, October, 2014
14. K. Suresh, “Efficient Microstructural Design for Additive Manufacturing,” in ASME 2014 IDETC/CIE Conference, Buffalo, NY, USA, 2014.
15. Takalloozadeh, M., Suresh, K., “Displacement and Stress Constrained Topology Optimization", DETC2013-13521, ASME-IDETC Conferences, Portland, August 2013.

16. Suresh, K., “Hinge-Free Compliant Mechanism Design via the Topological Level-Set", DETC2013-12433, ASME-IDETC Conferences, Portland, August 2013.
17. Danczyk, J., Suresh, K., “Finite Element Analysis of Tangled Meshes,” ASME I-DETC/CIE Conference, Chicago, 2012.
18. Suresh, K., Yadav, P., “Large-Scale Modal Analysis on Multi-Core Architectures,” ASME I-DETC/CIE Conference, Chicago, 2012.
19. Suresh, K., Ramani, A., Kaushik, A., “An Adaptive Weighting Strategy for Multi-Load Topology Optimization,” ASME I-DETC/CIE Conference, Chicago, 2012.
20. Turevsky, I., Suresh, K., “Tracing the Envelope of the Objective-Space in Multi-Objective Topology Optimization,” ASME I-DETC/CIE Conference, Washington, D.C, August 2011.
21. Danczyk, J., Suresh, K., “Improving the Condition Number of Finite Element Stiffness Matrices via Inverted Elements,” ASME I-DETC/CIE Conference, Washington, D.C, August 2011.
22. Mishra, V., Suresh, K., “GPU-friendly Preconditioners for Efficient 3-D Finite Element Analysis of Thin Structures,” ASME I-DETC/CIE Conference, Washington, D.C, August 2011.
23. Danczyk, J., Suresh, K., “Coupling Non-Conforming Discrete Models with Lower-Dimensional Entities,” 19th Meshing Roundtable Conference, Chattanooga, Tennessee, 2010.
24. Suresh, K., “Tracing Pareto-Optimal Frontiers in Topology Optimization,” ASME I-DETC/CIE Conference, Montreal, Canada, August 2010.
25. Mishra, V., Suresh, K., “Efficient Analysis of 3-D Plates via Algebraic Reduction”, ASME IDETC/CIE Conference, San Diego, California, 2009; Best Paper Award.
26. Danczyk, J., I., Suresh, K., “An Efficient CAD-Integrated Multidimensional Model for Microfluidic Simulations,” ASME IDETC/CIE Conference, Las Vegas, September 2007.
27. Turevsky, I., Gopalakrishnan, S. H., Suresh, K., “Generalization of Topological Sensitivity and its Application to Defeaturing,” ASME IDETC/CIE Conference, Las Vegas, September 2007.
28. Gopalakrishnan, S. H., Suresh, K., “Estimating the Impact of Large Design Changes in Field Problems,” ACM Symposium on Solid and Physical Modeling, Beijing, China, June 2007.
29. Qin, I., Colosimo, T., Olida, R., Vemulapally, R., Suresh, K., “Wire Bond Loop Formation Study through FEA Modeling of Large Elasto-Plastic Deformation,” SEMICON, China, March 2007.
30. Titz, B., Jorabchi, K., Suresh, K., Jeraj, R., “A Simple Continuum Mechanics Approach Towards Multiscale Tumor Modeling,” 9th US National Congress on Computational Mechanics, San Francisco, California, 2007.
31. Gopalakrishnan, S. H., Suresh, K., “Exploiting Shape Similarity in Engineering Analysis,” ASME IDETC/CIE Conference, Philadelphia, September 2006.
32. Chen, J., Shapiro, V., Suresh, K., Tsukanov, I. “Parametric and Topological Control in Shape Optimization,” ASME IDETC/CIE Conference, Philadelphia, September 2006; Best Paper Award.
33. Suresh, K. “Skeletal Reduction of Boundary Value Problems”, International Journal of Numerical Methods in Engineering, Accepted in November 2005.
34. Sinha, M, Suresh, K. “Simplified Engineering Analysis via Medial Mesh Reduction,” ACM Symposium on Solid and Physical Modeling, MIT, Boston, June 2005.
35. Suresh K., “Automating the CAD/CAE Dimensional Reduction Process,” 8th ACM Solid Modeling Conference, Seattle, June 2003.
36. Suresh, K., “Monte Carlo Analysis Techniques Revisited,” ASME IDETC/CIE Conference; Sacramento, CA, September 1997.
37. Suresh, K. and Zagajac J., “Fast Monte Carlo Domain Sampling for Discrete Field Value Estimation,” Proc. Fourth ACM Symposium on Solid Modeling and Applications, Ed. C. Hoffmann and W. Bronsvort, pp. 354-363; Atlanta, GA, May 1997.
38. Suresh K., “Fast Point-Solution Techniques in Engineering Analysis,” Intl. Conf. on Advances in Mechanical Engineering, Bangalore, India; Mruthyunjaya, T. S., Ed., pp. 385-400, December 1995.

Current Students

PhD (5) Amir M. Mirzendehdel, Alireza Taheri, Chaman S. Verma (with Prof. Vadim Shapiro as co-advisor), Tej Kumar, Buzz Rankouhi
MS (2) Gabriel Elkind, Aaditya Chandrasekhar
UG (3) Alex Buehler (ME Research Fellowship), James Herman, Victor Malkus
Other (1) Xiang Bian (visiting scholar from China)

Graduated Students

PhD

2016 Praveen Yadav, Shiguang Deng
2012 Josh Danczyk
2011 Vikalp Mishra, Inna Turevsky, Kavous Jorabchi

MS

2016 Anirudh Krishnakumar, Cameron Gilanshah
2015 Anirban Niyogi, Victor Cavalcanti
2010 Vaibhav Deshpande
2009 Wa'el Abdel Samad
2008 Sahil Kulakarni
2007 Sankara Hari Gopalakrishnan
2006 Himanshu Tiwari, Rakesh Vemulapally, Murari Sinha
2005 Ameya Sirpotdar

Extramural Grants

2017 NVidia, In-kind grant of NVidia Quadro GP100 (commercial value of $8000).
2017 DOE, "Additive Manufacturing for Advanced Commercial Air-Side Heat Exchangers", UW Madison and Oak Ridge National Labs, PI: Natalie Rudolph (UW Madison), total: $2,102,780, Suresh: $136,232
2016 NSF, Using Topology Optimization to Reduce Support Structures in Additive Manufacturing, 05/2016-04/2019, $326,679.
2015 Sandia National Labs, "Extending the Pareto Topology Optimization Method within Sandia National Lab's Sierra Computational Mechanics Code Base", October 2015, $85,066
2015 DOE, "Optimized 3-D Air-Side Heat Transfer Surfaces with 500% Heat Transfer Enhancement", UW Madison and Oak Ridge National Labs, PI: Natalie Rudolph (UW Madison), total: $1,162,054, Suresh: $105,300
2015 NSF, "Design Optimization on the Cloud", with Co-PI: Jon Eckhart, Grainger School of Business, April 2015, total: $197,508, Suresh: $110,053
2015 Sandia National Labs, "Developing Efficient Topology Optimization Methods for Sandia National Lab's Sierra Computational Mechanics Code Base", March 2015, $74,910
2014 Autodesk, "Unrestricted grant towards research on high-performance finite element analysis", December, $75,000
2013 Air Force Research Lab, "A topological sensitivity approach to constrained multi-objective optimization of aircraft lifting surfaces", Subject Matter Expert Grant, May, $30,000
2012 NSF, "GOALI: A novel strategy for large-scale industrial topology optimization", $242,606
2012 NSF, "Collaborative Research: Computational Foundations for Learning, Verifying and Applying Model Simplification Rules", $244,700
2008 NSF, "CAREER: Next-Generation Shape Optimization of Geometrically Complex Artifacts", $412,000
2007 NSF, "Collaborative Research: Automatic Generation of Context-Dependent Simplified Models to Support Interactive Virtual Assembly", $228,000
2007 NSF, "Collaborative Research: Cyber-Infrastructure for Engineering Informatics Education", $80,000
2006 NSF, "Exploiting Cyber-Infrastructure for Creation and Use of Multi-Disciplinary Engineering Models", $20,000
2005 Kulicke and Soffa, "Unrestricted grant for research on wire-bonding simulation", $60,000
2003 NSF, "Skeletal Reduction of Thin Mechanical Components", $317,530 (includes REU supplements)

Intramural Grants

2017 UW 2020(co-PI), Metal Powder Bed 3D Printing, $500,000; (PI: Dan Thoma, Director of Grainger Institute for Engineering).
2017 EIC, Rethinking Design in Mechanical Engineering, $32,000.
2012 WARF, Accelerator Grant "Early Simulation through Dual Representation" $68,000
2012 College of Engineering, UW Madison, EBB2 Grant "PyWorks: Unleashing SolidWorks through Python" $23,350
2010 WARF TIF Draper Award, "Dual-Representation Analysis of Thin Beam-Structures", $11,363
2006 UW Graduate School, "Generalized Skeletal Hele-Shaw Model for Injection Mold Filling Simulation", $7,000
2006 UW Graduate School, "A Novel Method for Integrating Design and Testing", $12,400
2004 UW Graduate School, "Exploiting Repeated Spatial Patterns in Engineering Analysis", $25,667
2004 UW College of Engineering, Capital Equipment Grant, $110,000 (total with 11 faculty)
2004 UW Graduate School, "Automated Simplification of Complex Mechanical Systems", $11,000
2003 UW College of Engineering, Capital Equipment Grant, $15,000 ($30,000 total)
2003 UW College of Engineering, Assistant Professor Startup Package, $42,000

Patents

1. Suresh, K., Taheri, A., "Systems for generalizing rational non-uniform b-splines and applications of systems", US Patent filed through WARF, 2016.
2. Suresh, K., Verma, C. S., "Singularity reduction in quadrilaterial meshes", US Patent filed through WARF, 2016.
3. Suresh, K., Mirzendehdel, A. M., "Support structure constrained topology optimization for additive manufacturing", US Patent filed through WARF, 2016.
4. Suresh, K, Danczyk, J., "Method to carry out accurate finite element analysis over a tangled mesh", US Patent filed through WARF, 2013.
5. Suresh, K, Jorabchi, K., Danczyk, J., "Method and system for analysis and shape optimization of physical structures using a computerized algebraic dual representation implicit dimensional reduction", US Patent (filed through WARF), 8355893, 2013.
6. Suresh, K., Gopalakrishnan, S. H., "Method and apparatus for determining design modification effects on a computerized engineering model", US Patent 8346584, B2, 2013.
7. Razon, K. Dury, K. Suresh, R. Kowtko, V. Svendsen; "Solder Ball Delivery and Reflow Method", US Patent (filed through Kulicke and Soffa), 6,634,545, October 21, 2003.
8. E. Razon, K. Dury, K. Suresh, R. Kowtko, V. Svendsen; "Solder Ball Delivery and Reflow Apparatus and Method of Using the Same", US Patent (filed through Kulcike and Soffa) 6,227,437 B1, May 8 2001.

Industrial Experience

1. Little-Rapids, WI (12-13): Technical consultant on finite element analysis of embossing rolls. Optimization and sensitivity analysis.
2. Luvata-Appleton, WI (06-13): Technical consultant on large deformation rolling operations. Finite element analysis. Die-design, optimization and sensitivity analysis.
3. Placon Corporation, Madison (04-05): Technical consultant on failure analysis of injection molding machines.
4. Kulicke and Soffa Industries, PA (98-02): Engineering manager/ senior mechanical engineer. Responsible for new product development, specifically material handling systems for wire bonding machines. Manage a multi-disciplinary team of 25+ engineers, report to the Chief Technical Officer. Technical expertise: design (CAD), finite element analysis, structural mechanics, high-speed linear motor designs, voice coil motor designs, design of laser delivery systems, real-time (embedded) software development.
5. Video-optics, Philadelphia (01-02): Technical consultant on real-time (embedded) software development.
6. Ford Motor Company, Dearborn *(1996):* Summer fellow at the power-train division.

Honorary Awards

2015 LEED Scholar Engineering Professor (Teaching Award)

2014 ASME Innovative Design & Simulation Challenge Award (Faculty advisor), ASME IDETC/CIE
2013 Subject Matter Expert Award, Wright Patterson Air Force
2012 University Housing Honorary Lecturer Award
2012 Pi-Tau-Sigma Teaching Excellence Award Runner-up
2009 Best paper award, ASME IDETC/CIE Conference
2008 NSF CAREER Award
2006 Best paper award, ASME IDETC/CIE Conference
2000 Kulicke and Soffa "On-the-spot Award for Technical Achievement"
1999 Kulicke and Soffa "On-the-spot Award for Technical Achievement"
1998 Special recognition to lead PhD commencement, Cornell University
1992 Ralph Bolgiano Best Teaching Assistant award, Cornell University

Editor Service
2014- Associate Editor, Journal of Computer Aided Design
2011- Associate Editor, Journal of Computing and Information Science in Engineering

Professional Service
2015 Conference Chair, ASME I-DETC/ CIE Conference, Boston, MA
2014 Member of the Additive Manufacturing +3D Printing (AM3D) Executive Committee
2014 Program Chair, ASME I-DETC/ CIE Conference, Buffalo, NY
2014 Faculty Advisor, ASME UW Madison Chapter
2013 Executive Committee Member, CIE Division
2009 Chair, Advanced Modeling and Simulation Committee, ASME CIE Division
2008 Review coordinator for "Geometric Modeling and Algorithms"; ASME I-DETC Conference
2008 Program Committee Member, 9th ACM Solid and Physical Modeling, Stony Brook, NY
2007 Review coordinator for "Geometric Modeling and Algorithms"; ASME I-DETC Conference
2007 Program Committee Member, 8th ACM Solid and Physical Modeling, Beijing, China
2006 Organized workshop on "Shape and Topology Optimization"; ASME I-DETC Conference
2006 Organized mini-symposium on "Shape and Topology Optimization"

Outreach Service
2014- Promoting a “printable programming” course that focuses on geometric reasoning, CAD programming and 3D printing to middle and high school students in and around Madison (www.printableprogramming.org)
2014- Created a free cloud based topology optimization service (www.cloudtopopt.com); currently supports 400+ users, with 50 new users per month
2013- Created “ParetoWorks”, a topology optimization add-in to SolidWorks; ParetoWorks is deployed at 30+ Universities around the world

Current Department Service
2014- Faculty advisor to the UW Madison chapter of ASME student organization
2010- PhD Qualifying Exam Committee
2010- Undergraduate Committee

Courses Taught at the University of Wisconsin
ME 331: Geometric Modeling and Applications (undergraduate)
ME 306: Mechanics of Materials (undergraduate)
ME 342: Design of Machine Elements (undergraduate)
ME 448: Mechanical Systems Analysis (graduate/undergraduate elective)
ME 601: Design and Analysis of Snake Robots (graduate/undergraduate elective)
ME 748: Optimization of Mechanical Systems (graduate)
ME 964: Nonlinear Computational Mechanics and Applications (graduate)