

Clemson University
College of Engineering and Science
Department of Mechanical Engineering

RESUME

Joshua D. Summers

CONTACT DATA

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BIOGRAPHY

Joshua D. Summers, Professor in Mechanical Engineering at Clemson University, co-directs the CEDAR Group (Clemson Engineering Design Applications and Research). Dr. Summers earned his Ph.D. in Mechanical Engineering from Arizona State University researching design automation. Dr. Summers received his BSME and MSME from the University of Missouri-Columbia working on VR-based submarine design. Dr. Summers has worked at the Naval Research Laboratory (VR Lab and Naval Center for Applied Research in Artificial Intelligence) and served on the Foreign Relations/Armed Services staff of Senator John D. Ashcroft. Dr. Summers' research has been funded (>\$7.5M) by government (NASA, NSF, US Army TACOM), large industry (BMW, Michelin, General Motors), and small-medium sized enterprises (Wright Metal Products, Hartness International, and others). Dr. Summers' areas of interest include collaborative design, knowledge management, and design enabler development with the overall objective of improving design through collaboration and computation. The work has resulted in well over 270 peer reviewed publications. Dr. Summers teaching interests has resulted in introduction of four new courses in engineering design, revamping of the senior design program, and the introduction of an international study abroad experience for senior engineers. This research and teaching has been recognized with awards from SAE (Ralph Teetor Award and Arch T. Colwell Merit Award), TMCE (Outstanding Researcher Award), Innovision (Innovations in Education), the South Carolina Governor's Award for Scientific Awareness, and with election to Fellow status in ASME (2012). Most significantly, Dr. Summers has been the advisor of record for four post-doctoral students, eleven completed PHD dissertations, forty-two MS theses, eight MS projects, two honor's undergraduate thesis, and currently supervises over twenty graduate and undergraduate students. All four of his former post-doctoral advisees and three PHD students are currently in academic positions at Clemson University, Texas State University, St. Louis University, North Texas University, Florida Tech, and Carnegie Mellon.

SHORT BIO

Joshua D. Summers, Professor in Mechanical Engineering at Clemson University, co-directs the CEDAR Group (Clemson Engineering Design Applications and Research). Dr. Summers earned his Ph.D. in Mechanical Engineering from ASU (design automation) and his MS (submarine design) and BS (fluidized bed design) from University of Missouri. He has worked at the Naval Research Laboratory (VR Lab and NCARAI). Dr. Summers' research has been funded by government, large industry, and small-medium sized enterprises. His areas of interest include collaborative design, knowledge management, and design enabler development with the overall objective of improving design through collaboration and computation.

EDUCATION

Ph.D., Arizona State University, 2004, Mechanical Engineering
Development of a Domain and Solver Independent Method for Mechanical Engineering Embodiment Design
Advisor: Jami J. Shah

M.S., University of Missouri-Columbia, 1998, Mechanical Engineering
Feature Based Design in a Virtual Environment for Early Stage Submarine Design
Advisor: Alley Butler (currently Professor at University of Texas-Pan American)
B.S., University of Missouri-Columbia, 1996, Mechanical Engineering

PROFESSIONAL REGISTRATION

Engineer in Training, Missouri, Fall 1995 (No. 042821)

PROFESSIONAL EXPERIENCE

Clemson University, 2016-present, Special Assistant to the Dean for Minority and Academic Initiatives
Clemson University, 2014-present, Director of Graduate Studies in Mechanical Engineering
Clemson University, 2012-present, Professor of Mechanical Engineering
Grenoble Institute of Technology, 2012-2013, Visiting Professor
Clemson University, 2011-2012 and 2013-2014, Clemson University Service Alliance Faculty Fellow
West Virginia University, 2011-2013, Adjunct Professor of Mechanical and Aerospace Engineering (in support of Collaborative Mexico Senior Design Program)
Clemson University, 2010-2013, IDEaS Professorship (Named Professor) of College of Engineering and Science
Clemson University, 2008-2012, Associate Professor of Mechanical Engineering
Clemson University, 2002-2008, Assistant Professor of Mechanical Engineering
Naval Research Laboratory, 2003, ONR/ASEE Summer Faculty Fellow, Advanced Decision Aids Group, Naval Center for Applied Research in Artificial Intelligence
Arizona State University, 1999-2002, Research Assistant
Arizona State University, 1999 and 2001, Teaching Assistant
Arizona State University, 1998-1999, MESA (Mathematics, Engineering, and Science Achievement) Liaison
Arizona State University, 1998-1999, Minority Engineering Program Mentor and Tutor
Naval Research Laboratory, 1997 and 1998, Intern for VR Laboratory
Senator John D. Ashcroft's Washington, DC Office, 1998, Intern for Foreign Relations and Armed Forces
Louisiana Tech, 1997-1998, Research Associate
Shell and Associates, 1997, Environmental CAD Engineer
University of Missouri-Columbia, 1996-1997, Teaching Assistant
Kansas City Power and Light, 1992 and 1993, Intern

EMPLOYMENT (COMPLETE)

1986-1991 Western Missouri Soccer League, *Kansas City, MO*, USSF certified soccer official.
1988-1990 Stitt's Industries, *Liberty, MO*, Electronics Assembly.
1989-1991 Private Tutor (five children, ages 8-12; topics: science, math, social studies)
1990-1991 Mid-Continent Public Library, *Liberty, MO*, Library Page.
1991-1992 Missouri Future Problem Solving, *Columbia, MO*, Statewide Newsletter Editor and coordinator for high school competition judging.
1992 Memorial Union Café, *Columbia, MO*, Janitor
1992-1993 University of Missouri, *Columbia, MO*, Intramural sports official (Soccer)
1992-1995 Mid-Missouri Soccer, *Columbia, MO*, USSF certified soccer official, Missouri State High School Athletic Associate certified soccer official.
1992 Alpha Epsilon Phi Sorority, *Columbia, MO*, Kitchen Staff
1992-1996 Montgomery Wards, *Columbia, MO*, sales associate (house wares, electronics, automotive)
1992-1993 Kansas City Power and Light, *Kansas City, MO*, summer engineering internship
1993-1995 Montgomery Wards, *Kansas City, MO*, sales associate (paint, window treatment, automotive)
1992-1993 Liberty Public Schools, *Liberty, MO*, Substitute Teacher (grades 5-12)
1993 Liberty Public Schools – Latchkey, *Liberty MO*, Summer Professor (French, Japanese, Aerodynamics)
1995 JC Penney's, *Columbia, MO*, Sales Associate (window treatment)
1995-1997 Stevenson's Inc., *Columbia, MO*, purchasing agent (food and baby formula)

- 1997 Shell Engineering and Associates, *Columbia, MO*, CAD engineer and environmental auditor
- 1997 Square-D, *Columbia, MO*, assembly line worker for manual fabrication of circuit breakers
- 1996-1997 University of Missouri, *Columbia, MO*, Teaching Assistant (AutoCAD)
- 1997 University of Missouri, *Columbia, MO*, Research Assistant (Feature Based Design)
- 1997-1998 Louisiana Technological University, *Ruston, LA*, Research Assistant (Feature Based Design)
- 1997 JC Penney's, *Alexandria, VA*, Sales Associate, (house wares)
- 1997-1998 Naval Research Laboratory, *Washington, DC*, VR Lab Intern
- 1998 Arizona State University, *Tempe, AZ*, Math, Engineering, and Science Achievement Program Liaison to High Schools and Junior High Schools
- 1998 Arizona State University, *Tempe, AZ*, Minority Engineering Program tutor for math, physics
- 1998-2002 Private tutoring (1 student; electrical engineering undergraduate)
- 1999 Arizona State University, *Tempe, AZ*, Technical Assistant, system administrator for UNIX and Windows research and teaching computing labs
- 1999-2000 Arizona State University, *Tempe, AZ*, Teaching Assistant, junior machine design, senior advanced machine design, graduate design automation
- 1999-2002 Arizona State University, *Tempe, AZ*, Research Associate (Design Exemplar)
- 2002-2008 Clemson University, *Clemson, SC*, Assistant Professor in Mechanical Engineering
- 2003 Naval Research Laboratory, *Washington, DC*, ASEE Summer Faculty Fellow in Artificial Intelligence Lab
- 2006-2008 Soccer Officiating, *Clemson, SC*, FIFA, USSF, Collegiate, High School
- 2006- Engineering Consulting, *Clemson, SC*, (Rockwell Automation, Swimdock, EAI, Hoowaki, Georgia Tech)
- 2008-2012 Clemson University, *Clemson, SC*, Associate Professor in Mechanical Engineering
- 2012- Clemson University, *Clemson, SC*, Professor in Mechanical Engineering
- 2012-2013 Grenoble Institute of Technology, *Grenoble, France*, Visiting Professor

CONSULTING EXPERIENCE

- JSV Group, Seneca, SC, (2006), provided kinematic mechanism design for floating dock stairs (\$3k for student support)
- Rockwell Automation, Greenville, SC, (2007) provided design for manufacturing and assembly analysis on competitor benchmark motors (\$2k for Summers' support)
- Environmental America Incorporator, Greenwood, SC, (2007-2008) provided engineering advise on the design and prototyping of an integrated trash and recycling truck (\$16k for student support)
- Hoowaki, Anderson, SC (2010) provided design automation development for pillar sizing (\$1k for Summers)
- Georgia Tech, Atlanta, GA (2012) provided proposal writing and workshop organization support on the NSF funded project (co-PI – all funding through Georgia Tech)
- Hoowaki, Anderson, SC (2013) provided simulation and optimization evaluation of proposed structures (\$4k for Summers and Fazelpour)
- Workbench, Bangalore, India (2014-present), external advisor to startup company that provides "maker space" for entrepreneurs and college students. Review proposals, business plan, provide feedback (volunteer)

MEMBERSHIPS

- Member, American Society of Mechanical Engineers, ASME, (1992 – present)
Elected Fellow in 2012
- Member, The Design Society (2003-present)
- Program Evaluator (PEV), ABET (Accreditation Board for Engineering and Technology), (2015-present)
2015 (Observer Visit completed)
- Member, International Council on Systems Engineering, INCOSE (2013-2014)
- Member, American Society of Engineering Educators, ASEE, (2001 – 2010)
- Member, Society of Automotive Engineers, SAE, (2006-2012)
- Member, Association for Computing Machinery, ACM, (1997 – 2008)
- Member, Institute of Electrical and Electronics Engineers, IEEE, (2000 – 2005)

PROFESSIONAL ACTIVITIES

- ASME, Journal of Computing and Information Science in Engineering, Associate Editor (2013-2016); topical area of Computer Aided Design
- American Society of Mechanical Engineers, Computers and Information in Engineering Division, Executive Committee member (2009-present)
- Positions:
 - 2015-2016, Past Chair and Awards Chair
 - 2014-2015, Division Chair
 - 2013-2014, Conference Chair
 - 2012-2013, Program Chair
 - 2011-2012, Secretary
 - 2010-2011, Member-at-Large
 - 2009-2010, Incoming Member
 - organized a PhD student and Faculty mentoring session at the 2009 DETC/CIE conference in San Diego, CA and for the 2010 DETC/CIE conference in Montreal, Canada
 - organized an ASME fellow nomination package for several past CIE executive committee members
- American Society of Mechanical Engineers, Computers and Information in Engineering Division, Computer Aided Product Development Technical Committee, Chair, (2007-2008); Vice-Chair, (2006-2007)
- American Society of Mechanical Engineers, Design Engineering Division, Design Theory and Methodology Technical Committee, Vice Chair (2011-2013)
- American Society of Mechanical Engineers, Computers and Information in Engineering Division, organized a special poster session for graduate students to present current pre-proposal work at the 2007 DETC/CIE in Las Vegas, NV and at the 2008 DETC/CIE in Brooklyn, NY. This activity has now been formalized as a NIST/CAPPD sponsored activity and has been replicated in 2009, 2010, 2011, 2012, 2013, 2014, and 2015 (NSF proposal is being developed for future support).
- National Science Foundation, Review Panelist, (PREMISE-2002; DMII-2003; CDI-2008; TUES-2012; 2015x2)
- Founding Member of Special Interest Group on Collaborative Engineering Innovation for the Design Society (2003)
- American Society of Mechanical Engineers, Session Chair, Computers in Engineering, Design Automation Committee (2002-2007)
- American Society of Mechanical Engineers, Review Coordinator, Computers and Information in Engineering, Design Automation Committee, Design Theory and Methodology (2003-2009)
- American Society of Mechanical Engineers, Special Topic Session organizer, Computers and Information in Engineering, (2009)
- Reviewer for (journals): Journal of Mechanical Design (2001-present); IEEE Journal of Systems, Man, and Cybernetics (2001); Journal of Computing and Information Science in Engineering (2002-present); Artificial Intelligence in Design, Engineering, Analysis, and Manufacturing (2003-present); Advanced Engineering Informatics (2004); Knowledge Engineering Systems (2004); Journal of Engineering Design (2005-present); Omega (2005); Computers in Industry (2005); International Journal of Electronic Business Management (2006); Journal of Robotics and Computer Integrated Manufacturing (2006); Computer Aided Design and Applications (2007-present); International Journal of Product Development (2007); Journal of Computer-Aided Design (2008-present); Research in Engineering Design (2009-present); Journal of Terramechanics (2009); Virtual Reality Journal (2009); Advanced Engineering Informatics (2010-present); Journal of Engineering Manufacture (2010-present); International Journal of Engineering Education (2011-present); Journal of Mechanical Engineering Science (2011-present)
- Reviewer for (conferences): ASME DETC/CIE conference (2001-present); Tools and Methods of Competitive Engineering (2003-present); ASME IMECE (2005-present); Virtual Concept (2005-present); NSF ASME Design Essay (2005-present); Computer-Aided Design Conference (2007-present); International Conference of Engineering Design (2007-present); Design Creativity and

Cognition Conference (2008-present); ASME WINVR (2010); Manufacturing Science and Engineering Conference (2008-present); Design Structured Matrix Conference (2007-present)
 Book Reviewer for: The Mechanical Design Process, D. Ullman (2007); Metal Forming: Mechanics and Metallurgy, 3rd Ed., Hosford and Caddell (2006); Mechanical Engineering Design, 7th Ed., Shigley, et al., (2004); Engineering Problem Solving, Milton C. Shaw, (2001)
 Proposal Reviewer: Hong Kong Initiation Grant (2010); NASA (2008)
 Organizing Committee: Design-Croatia (2010); International Conference on Manufacturing Automation (2010); Design Structure Matrix Conference (2009); ASME Asia Pacific Engineering Education Conference (2009)

PUBLICATIONS

Total Refereed Publications: 302

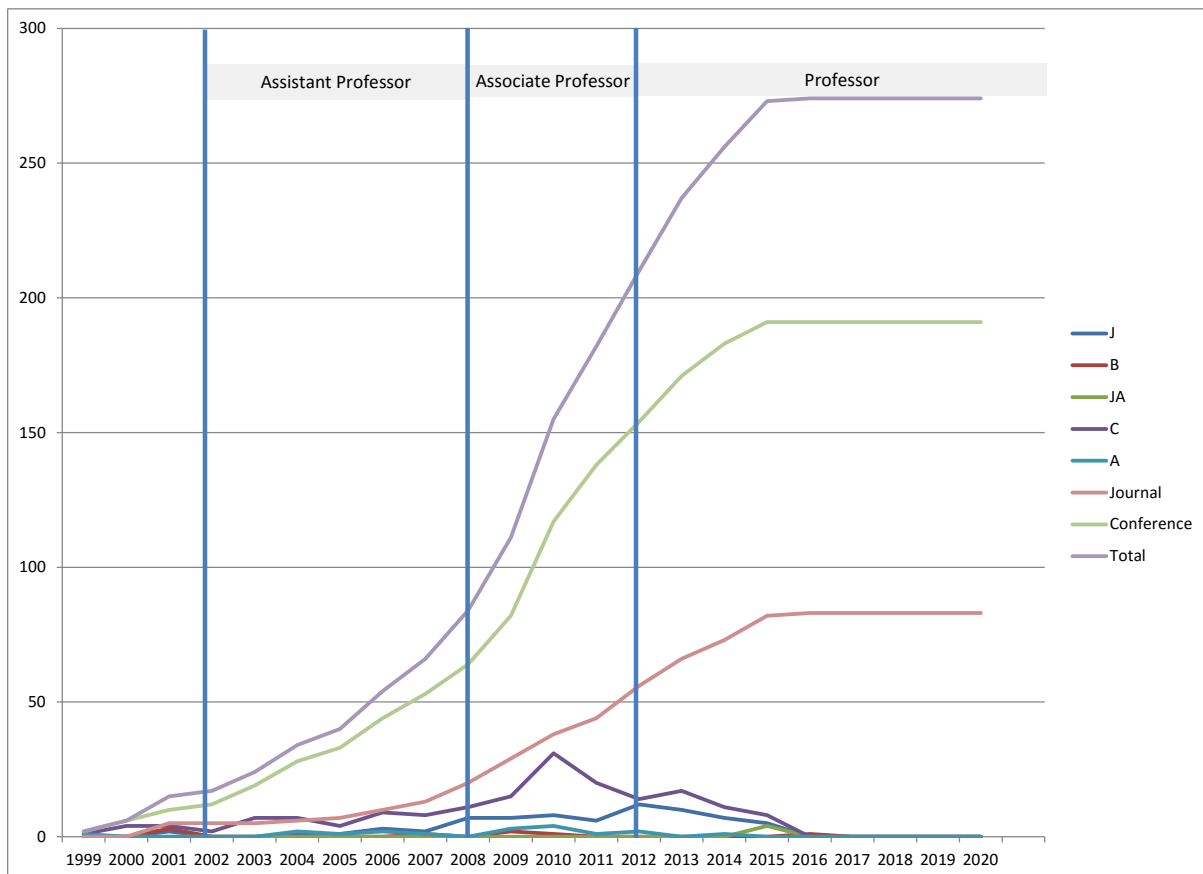
Summary Journal/Chapters: Journal = 76, Accepted/In-Press = 8, Book Chapters = 9; Total = 93

Summary Conference: Full Paper Review = 190; Abstract Reviewed = 20; Total = 210

Citation Information (Google Scholar, December 30, 2015)

Citations = 2452; cites/year = 153.3; cites/paper = 8.9; h-index = 23; i10-index = 70

The figure illustrates the publication trends (Refereed Journals and Books are taken together and Full and Abstract Refereed Conferences are taken together). The stages of my professional life are delineated for clarity (Figures generated December 2015).



Refereed Journal Publications

Accepted

- Ja8. Mochida, S., Righter, J., **Summers, J.**, (2016), "A Study of Project Cost Management Based on the Requirements Analysis", *International Journal of Biomedical Soft Computing and Human Sciences*, accepted August 2016 (Mochida is corresponding author).
- Ja7. Phelan, K., Pearce, B., **Summers, J.**, Kurz, M., (2016), "Supporting Vehicle Option Change Management through a Graph Based Visualization Tool", *Journal of Computing and*

- Information Science in Engineering*, in press, JCISE-15-1320, (Summers is corresponding author).
- Ja6. Mathieson, J., Summers, J., (2015), "Modeling and Tracking Engineering Design Process through Structural Complexity Metrics and Artificial Neural Network Training", *CERA Journal*, revision submitted May 2016, CERA-15-0065. (Summers is corresponding author).
- Ja5. Phelan, K., Wilson, C., Pearce, B., Summers, J., Kurz, M., (2015), "Configuration and Options Management Processes and Tools: An Automotive OEM Case Study", *Journal of Manufacturing Technology Management*, revision submitted May 2016, JMTM-09-2015-0079, (Summers is corresponding author)
- Ja4. Namouz, E., Summers, J., (2015), "Predicting Manual Assembly Times Using Low Fidelity Assembly Solid Models: Structural Complexity Metric Trained Neural Networks", *AI EDAM*, revision submitted December 2015, AIE-2015-073, (Summers is corresponding author).
- Ja3. Thimmaiah, S., Phelan, K., Summers, J., (2016), "An Experimental Study on the Influence that Failure Number, Specialization, and Control have on Confidence in Predicting System Failures", *Journal of Mechanical Design*, in press, JMD-15-1426, (Summers is corresponding author).
- Ja2. Shankar, P., Phelan, K., Summers, J., (2016), "A Verification and Validation Planning Method to Address Change Propagation Effects in Engineering Design and Manufacturing", *CERA Journal*, in press, CERA-15-0099. (Summers is corresponding author).
- Ja1. Ju, J., Seera, N., Thompson, L., Summers, J., (2011), "Vibration and Damping of Hexagonal Honeycomb Sandwich Plates", *Journal of Sandwich Structures and Materials*, accepted July 2011 (in revision, Thompson is corresponding author).

Published

Citation Count: **1075** (December 30, 2015; Google Scholar)

Impact Factor: <http://www.scimagojr.com> June 6, 2013

- J76. Gill, A., Visotsky, D., Mears, L., Summers, J., (2016), "Cost Estimation Model for PAN Based Carbon Fiber Manufacturing Process", *ASME Journal of Manufacturing Science and Engineering*, on-line September 2016, doi:10.1115/1.4034713.
- J75. Salmi, A., David, P., Blanco, E., Summers, J., (2016), "A Review of Cost Estimation Models for Assembly Automation Level", *Computers & Industrial Engineering*, **98 (August)**, pp. 246-59, doi: 10.106/j.cie/2016.06.007.
- J74. Sridhar, S., Fazelpour, M., Gill, A., Summers, J., (2016), "Precision Analysis of the Graph Complexity Connectivity Method: Assembly and Function Model", *Procedia CIRP*, **44**, pp., 163-8, doi:10.1016/j.procir.2016.02.029.
- J73. Pearce, B., Phelan, K., Kurz, M., Summers, J., Schulte, J., Dieminger, W., Funk, K., (2016), "Configuration Management through Constraint Programming", *Procedia CIRP*, **44**, pp. 204-9, doi:10.1016/j.procir.2016.02.127.
- J72. Renu, R., Vitosky, D., Knackstedt, S., Mocko, G., Summers, J. (2016), "A Knowledge Based FMEA to Support Identification and Management of Vehicle Flexible Parts Issues", *Procedia CIRP*, **44**, pp. 157-62, doi:10.1016/j.procir.2016.02.112.
- J71. Fazelpour, M., Shankar, P., Summers, J., (2015), "Comparative Study of Optimization Techniques in Sizing Meso-Structures for Use in Non-Pneumatic Tires", *Journal of Computing and Information Science in Engineering*, **15 (4)**, doi:10.1115/1.4031828.
- Citation Count: **0**
- J70. Joshi, S., Summers, J., (2015), "Requirements Change: Understanding the type of changes in the requirements document of novice designers", *International Journal of Mechanical Engineering Education*, **43 (4)**, pp. 286-304, DOI:10.1177/0306419015612348.
- Citation Count: **0**
- J69. Berglind, L., Ju, J., Summers, J., (2015), "Shape Control of a Beam Consisting of Triangular Meso-Structure Segments with Multiple V-shaped Flexure Springs", *International Journal of Mechanisms and Robotic Systems*, **2 (2)**, 144-68, DOI: 10.1504/IJMRS.2015.069030.
- Citation Count: **0**
- J68. Griese, D., Summers, J., Thompson, L., (2015), "The Effect of Honeycomb Core Geometry on the Sound Transmission Performance of Sandwich Panels", *ASME Journal of Vibrations and Acoustics*, **137 (2)**, doi:10.1115/1.4029043.

- Citation Count: **0**
- J67. Worinkeng, E., Joshi, S., Summers, J., (2015), "An experimental study: analyzing requirement type influence on novelty and variety of generated solutions", *International Journal of Design Creativity and Innovation*, **3 (2)**, pp. 61-77, doi: 10.1080/21650349.2014.909294.
- Citation Count: **1**
- J66. Salmi, A., David, P., Summers, J., Blanco, E., (2014), "A Modeling Language for Assembly Sequences Representation, Scheduling, and Analyses" *International Journal of Production Research*, **52 (13)**, pp. 3986-4006.
- Citation Count: **3**
- J65. Veeramurthy, M., Ju, J., Thompson, L., Summers, J., (2014), "Optimization of Geometry and Material Properties of a Non-Pneumatic Tire for Reducing Rolling Resistance", *International Journal of Vehicle Design*, **66 (2)** pp. 193-216.
- Citation Count: **1**
- J64. Morkos, B., Mathieson, J., Summers, J., (2014), "Comparative Analysis of Requirements Change Prediction Models: Manual, Linguistic, and Neural Network", *Research in Engineering Design*, **25 (2)**, pp 139-56, doi: 10.1007/s00163-014-0170-z.
- Citation Count: **4**
- J63. Namouz, E., Summers, J., (2014), "Comparison of Graph Generation Methods for Structural Complexity Based Assembly Time Estimation", *Journal of Computing and Information Science in Engineering*, **14 (2)**, pp. 021003-021003-9, doi: 10.1115/1.4026293.
- Citation Count: **1**
- J62. Morkos, B., Summers, J., Thoe, S., (2014), "A Comparative Survey of Domestic and International Experiences in Capstone Design", *International Journal of Engineering Education*, **30 (1)**, pp. 79-90.
- Citation Count: **2**
- J61. Miller, M., Summers, J., Mathieson, J., Mocko, G., (2014), "Manufacturing Assembly Time Estimation Using Structural Complexity Metric Trained Artificial Neural Networks", *ASME Journal of Computing and Information Science in Engineering*, **14 (1)**, pp. 011005-011005-10, doi:10.1115/1.4025808.
- C136
 - Citation Count: **0**
- J60. Owensby, J., Summers, J., (2014), "Assembly Time Estimation: Assembly Mate Based Structural Complexity Metric Predictive Modeling", *ASME Journal of Computing and Information Science in Engineering*, **14 (1)**, pp. 011004-011004-12, doi:10.1115/1.4025808.
- Citation Count: **4**
- J59. Srirangam, M., Anandan, S., Summers, J., (2014), "Development of a Geometric Model Retrieval System: A Comparative Case Study", *International Journal of Computer Aided Engineering Technology*, **6 (2)**, pp. 113-38. DOI: 10.1504/IJCAET.2014.060295.
- Citation Count: **1**
- J58. Miller, W., Summers, J., (2013), "Investigating the use of design methods by capstone design students at Clemson University", *International Journal of Technology and Design Education*, **23 (4)**, pp. 1079-91, DOI: 10.1007/s10798-012-9227-3.
- Citation Count: **2**
- J57. Caldwell, B., Richardson, J., Sen, C., Namouz, E., Rotenburg, T., Mocko, G., Summers, J., Obieglo, A., (2013), "Automotive Lightweight Engineering: A Method for Identifying Lazy Parts", *International Journal of Vehicle Design*, **63 (4)**, pp. 364-86.
- Citation Count: **9**
- J56. Ju, J., Veeramurthy, M., Summers, J., Thompson, L., (2013), "Rolling Resistance of a Nonpneumatic Tire Having a Porous Elastomer Composite Shear Band", *Tire Science and Technology Journal*, **41 (3)** pp. 154-73.
- Citation Count: **13**

- J55. Sen, C., Summers, J., (2013), "Identifying requirements for physics-based reasoning on function structure graphs", *Artificial Intelligence in Engineering Design Analysis and Manufacturing*, **27 (3)** pp. 291-9. Doi:10.1017/S0890060413000292.
- Citation Count: **3**
- J54. Summers, J., (2013), "Researching Engineering Design: Successful Integration of Education, Practice, and Study in the CEDAR Group", *Journal of the South Carolina Academy of Sciences*, **11 (1)** article #3, ISSN: 1553-5975.
- Citation Count: **2**
 - Impact Factor (2012):
- J53. Maier, J., Mears, M., Summers, J., (2013), "Design of an Apparatus to Detect Small Changes in Mass of Rotational Machine Components", *International Journal of Modern Engineering*, **13 (2)**, pp. 5-16, ISSN: 2157-8052.
- Citation Count: **2**
 - Impact Factor (2012): 1.63
- J52. Shanthakumar, A., Summers, J., (2013), "Design Enabler to Recognize Duplicate Geometries in CAD Assemblies", *Computer-Aided Design and Applications Journal*, **10 (6)**, pp. pp 889-904, doi: 10.3722/cadaps.2013.889-904.
- Citation Count: **5**
 - Impact Factor (2011): 0.300
- J51. Sen, C., Summers, J., Mocko, G., (2013), "A Formal Representation of Function Structure Graphs for Computer-Directed Modeling and Conservation-Based Reasoning", *Journal of Computing and Information Science in Engineering*, **13 (2)**, doi: . 10.1115/1.4023167.
- Citation Count: **6**
 - Impact Factor (2011): 0.456
- J50. Cairco, L., Ulinksi, A., McClendon, J., Bloodworth, T., Mathieson, J., Hodges, L., Summers, J., (2013), "Evaluation of System-Directed Multimodal Systems for Vehicle Inspection", *Journal of Computing and Information Science in Engineering*, **13 (1)**, doi: 10.1115/1.4023004.
- Citation Count: **0**
 - Impact Factor (2011): 0.456
- J49. Sen, C., Summers, J., Mocko, G., (2013), "Physics-Based Reasoning in Conceptual Design using a Formal Representation of Function Structure Graphs", *Journal of Computing and Information Science in Engineering*, **13 (1)**, doi:10.1115/1.4023488.
- Citation Count: **1**
 - Impact Factor (2011): 0.456
- J48. Schultz, J., Ju, J., Griese, D., Shankar, P., Summers, J., Thompson, L., (2012), "Design of Honeycomb Meso-Structures for Crushing Energy Absorption", *Journal of Mechanical Design*, **134 (7)**, DOI: 10.1115/1.4006739.
- Citation Count: **17**
 - Impact Factor (2011): 0.592
- J47. Morkos, B., Summers, J., (2013), "A Study of Designer Familiarity with Product and User During Requirement Elicitation", *International Journal of Computer Aided Engineering and Technology*, **5 (2/3)**, pp. 139-158. Doi: 10.1504/IJCAET.2013.052934.
- Citation Count: **2**
 - Impact Factor (2011): NA
- J46. Veisz, D., Namouz, E., Joshi, S., Summers, J., (2013), "Computer-Aided Design versus Sketching: An Exploratory Case Study", *Artificial Intelligence in Engineering Design Analysis and Manufacturing*, **26 (3)**, pp. 317-335, DOI: 10.1017/S0890060412000170.
- Citation Count: **10**
 - Impact Factor (2011): 0.503
- J45. Berglind, L., Ju, J., Summers, J., (2012), "Aluminum Taper Bristle-Shaped Shear Band for a Nonpneumatic Tire", *Tire Science and Technology*, **40 (3)**, pp. 152-170.
- Citation Count: **5**
 - Impact Factor (2011): 0.192

- J44. Mathieson, J., Wallace, B., Summers, J., (2013), "Assembly Time Modelling through Connective Complexity Metrics", *International Journal of Computer Integrated Manufacturing*, **26 (10)**, pp. 955-967, DOI: 10.1080/0951192X.2012.684706.
- Citation Count: **21**
 - Impact Factor (2011): 0.637
- J43. Ameri, F., Kayyar, M., Summers, J., Biggers, S., (2012), "A Case Study of the Development of a Design Enabler Tool to Support Frame Analysis for Wright Metal Products, a US SME", *International Journal of Computer Aided Engineering and Technology*, **4 (4)**, pp. 321-339, ISSN (Online): 1757-2665 and ISSN (Print): 1757-2657.
- Citation Count: **2**
 - Impact Factor (2011): NA
- J42. Caldwell, B., Thomas, J., Sen, C., Mocko, G., Summers, J., (2012), "The Effects of Language and Pruning on Function Structure Interpretability", *ASME Journal of Mechanical Design*, **134 (6)**, DOI: 10.1115/1.4006442.
- Citation Count: **8**
 - Impact Factor (2011): 0.592
- J41. Smith, G., Richardson, J., Summers, J., Mocko, G., (2012), "Concept Exploration Through Morphological Charts: An Experimental Study", *Journal of Mechanical Design*, **134 (5)**, DOI: 10.1115/1.4006261.
- Citation Count: **17**
 - Impact Factor (2011): 0.592
- J40. Shankar, P., Morkos, B., Summers, J. (2012), "Reasons for Change Propagation: A Case Study in an Automotive OEM", *Research in Engineering Design*, **23 (4)**, pp. 291-303 (DOI: 10.1007/s00163-012-0132-2).
- Citation Count: **17**
 - Impact Factor (2011): 0.744
- J39. Morkos, B., Summers, J., Mears, M., Rilka, T., Taiber, J., Fadel, G., (2012), "Mobile Devices within Manufacturing Environments: A BMW Applicability Study", *International Journal on Interactive Design and Manufacturing (IJIDeM)*, **6 (2)**, pp. 101-111. DOI: 10.1007/s12008-012-0148-x.
- Citation Count: **9**
 - Impact Factor (2011): 0.279
- J38. Morkos, B., Shankar, P., Summers, J., (2012), "Predicting Requirement Change Propagation Using Higher Order Design Structure Matrices: An Industry Case Study", *Journal of Engineering Design*, **23 (12)** pp. 905-26. DOI:10.1080/09544828.2012.662273.
- Citation Count: **25**
 - Impact Factor (2011): 0.498
- J37. Ju, J., Summers, J., Ziegert, J., Fadel, G., (2012), "Design of Honeycombs for Modulus and Yield Strain in Shear", *ASME Transactions; Journal of Engineering Materials and Technology*, **134 (1)**, (15 pages). DOI:10.1115/1.4004488.
- Citation Count: **27**
 - Impact Factor (2011): 0.564
- J36. Hannah, R., Joshi, S., Summers, J., (2011), "A User Study of Interpretability of Engineering Design Representations", *Journal of Engineering Design*, **23 (6)**, pp. 443-68. DOI: 10.1080/09544828.2011.615302.
- Citation Count: **28**
 - Impact Factor (2011): 0.498
- J35. Sen, C., Summers, J., Mocko, G., (2011), "A Protocol to Formalise Function Verbs to Support Conservation-Based Model Checking", *Journal of Engineering Design*, **22 (11/12)**, pp. 765-788. DOI: 10.1080/09544828.2011.603295.
- Citation Count: **10**
 - Impact Factor (2011): 0.498

- J34. Kauffman, G., Blouin, V., Triana, D., Cole, C., **Summers, J.**, Joseph, P., (2011), "Design of Lunar Wheel Treads Made of Textile Fabrics", *AATCC Review*, **11 (3)** (May/June), pp. 44-52 (ISSN 1532-8813).
- Citation Count: **2**
 - Impact Factor (2011): NA
- J33. Caldwell, B., Sen, C., Mocko, G., **Summers, J.**, (2011), "An Empirical Study of the Expressiveness of the Functional Basis", *Artificial Intelligence in Engineering Design Analysis and Manufacturing*, **25 (3)**, pp. 273-87. DOI: 10.1017/S0890060410000442.
- Citation Count: **21**
 - Impact Factor (2011): 0.503
- J32. Ju, J., **Summers, J.**, (2011), "Compliant Hexagonal Periodic Lattice Structures Having Both High Shear Strength and High Shear Strain", *Materials and Design*, **32 (2)**, pp. 512-524, dx.doi.org/10.1016/j.matdes.2010.08.029.
- Citation Count: **49**
 - Impact Factor (2011): 0.1278
- J31. Ju, J., **Summers, J.**, (2011), "Hyperelastic Constitutive Modeling of Hexagonal Honeycombs Subjected to In-Plane Shear Loading", *ASME Journal of Engineering Materials and Technology*, **133 (1)**, DOI: 10.1115/1.4002650.
- Citation Count: **20**
 - Impact Factor (2011): 0.564
- J30. Maier, J., Troy, T., Johnston, P., Bobba, V., **Summers, J.**, (2010), "Case Study Research Using Senior Design Projects: An Example Application", *Journal of Mechanical Design*, **132 (11)**, DOI: 10.1115/1.4002291
- Citation Count: **11**
 - Impact Factor (2011): 0.592
- J29. Sen, C., Ameri, F., **Summers, J.**, (2010), "An Entropic Method for Sequencing Discrete Design Decisions", *ASME Transactions; Journal of Mechanical Design*, **132 (10)**, DOI: 10.1115/1.4002387.
- Citation Count: **7**
 - Impact Factor (2011): 0.592
- J28. Sen, C., **Summers, J.**, Mocko, G., (2010), "Topological Information Content and Expressiveness of Function Models in Mechanical Design", *Journal of Computing and Information Science in Engineering*, **10 (3)**, DOI: 10.1115/1.3462918.
- **NOTE:** was in the Top 10 Downloads list for JCISE for September and October 2010.
 - Citation Count: **18**
 - Impact Factor (2011): 0.456
- J27. Berglind, L., Ju, J., **Summers, J.**, (2010), "Method to Design Honeycombs for a Shear Flexible Structure", *SAE International Journal of Passenger Cars – Mechanical Systems*, **3 (1)**, pp. 588-97.
- Citation Count: **28**
 - Impact Factor (2011): 0.221
- J26. Ju, J., Ananthasayanam, B., **Summers, J.**, Joseph, P., (2010), "Design of Cellular Shear Bands of a Non-Pneumatic Tire – Investigation of Contact Pressure", *SAE Journal of Passenger Cars – Mechanical Systems*, **3 (1)**, pp. 598-606.
- Citation Count: **37**
 - Impact Factor (2011): 0.221
- J25. Sen, C., Caldwell, B., **Summers, J.**, Mocko, G., (2010), "Evaluation of the Functional Basis using an Information Theoretic Approach", *Artificial Intelligence in Engineering Design Analysis and Manufacturing*, **24 (1)**, pp. 87-105 (doi:10.1017/S0890060409990187).
- Citation Count: **30**
 - Impact Factor (2011): 0.503
- J24. **Summers, J.**, Shah, J., (2010), "Mechanical Engineering Design Complexity Metrics: Size, Coupling, and Solvability", *Journal of Mechanical Design*, **132 (2)**, (doi:10.1115/1.4000759).

- **NOTE:** was in the Top 10 Downloads list for JMD for January, February, and March 2010.
 - Citation Count: **75**
 - Impact Factor (2011): 0.592
- J23. Wetmore, W., Summers, J., Greenstein, J., (2010), "Experimental Study of Influence of Group Familiarity and Information Sharing on Design Review Effectiveness", *Journal of Engineering Design*, **21 (1)**, pp. 111-26, (DOI: 10.1080/09544820802238217).
- Citation Count: **12**
 - Impact Factor (2011): 0.498
- J22. Ma, J., Summers, J., (2009), "Tire-Sand Interaction Research for Lunar Applications", *Tyre Technology International Review*, **2009**, pp. 70-5.
- Citation Count: **0**
 - Impact Factor (2011): NA
- J21. Morkos, B., Shankar, P., Teegavarapu, S., Michaelraj, A., Summers, J., (2009), "Conceptual Development of Automotive Forward Lighting System Using White Light Emitting Diodes", *SAE International Journal of Passenger Cars – Electronic and Electrical Systems*, **2 (1)**, pp. 201-11.
- **NOTE:** was selected as a best paper at the 2009 SAE Congress with the Arch T. Colwell Merit Award
 - Citation Count: **13**
 - Impact Factor (2011): 0.125
- J20. Pehlivan, S., Summers, J., Ameri, F., (2009), "An Agent-Based System Approach to Fixture Design", *International Journal of Computer Applications in Technology*, **36 (3/4)**, pp. 284-96 (DOI: 10.1504/IJCAT.2009.028050). (IF 2008: 0.291)
- Citation Count: **5**
 - Impact Factor (2011): 0.255
- J19. Summers, J., Bayanker, S., Gramophadye, A., (2009), "Experimental Comparison of CAD Input Devices in Synthesis, Analysis, and Interrogation Tasks", *Computer-Aided Design and Applications*, **6 (5)**, pp. 595-612. (DOI: 10.3722/cadaps.2009.595-612).
- Citation Count: **2**
 - Impact Factor (2011): 0.300
- J18. Powers, L., Summers, J., (2009), "Integrating Graduate Design Coaches in Undergraduate Design Project Teams", *International Journal of Mechanical Engineering Education*, **37 (1)**, pp. 3-20 (ISSN 0306-4190)
- Citation Count: **11**
 - Impact Factor (2011): 0.103
- J17. Tiwari, S., Teegavarapu, S., Summers, J., Fadel, G., (2009), "Automating Morphological Chart Exploration: A Multi-Objective Genetic Algorithm to Address Compatibility and Uncertainty", *International Journal of Product Development*, **9 (1-3)**, pp. 111-39 (DOI: 10.1504/IJPD.2009.026176)
- Citation Count: **8**
 - Impact Factor (2011): 0.219
- J16. Ostergaard, K., Summers, J., (2009), "Development of a Systematic Classification and Taxonomy of Collaborative Design Activities", *Journal of Engineering Design*, **20 (1)**, pp. 57-81. (DOI: 10.1080/09544820701499654).
- **NOTE:** was in the Top 10 Downloads list for JED for volume 20
 - Citation Count: **23**
 - Impact Factor (2011): 0.498
- J15. Chavali, S., Sen, C., Mocko, G., Summers, J., (2008), "Using Rule Based Design in Engineer to Order Industry: An SME Case Study", *Journal of Computer-Aided Design and Applications*, **5 (1-4)**, pp. 178-93. ISSN 1686-4360. (IF 2008: 0.284)
- Citation Count: **8**
 - Impact Factor (2011): 0.300
- J14. Ameri, F., Summers, J., (2008), "An Ontology for Representation of Fixture Design Knowledge", *Journal of Computer-Aided Design and Applications*, **5 (5)**, pp. 601-11. ISSN 1686-4360.

- Citation Count: **22**
 - Impact Factor (2011): 0.300
- J13. Ameri, F., Summers, J., Mocko, G., Porter, M., (2008), "Engineering Design Complexity: An Investigation of Methods and Measures", *Research in Engineering Design*, **19 (2-3)**, pp. 161-79. (DOI: 10.1007/x00163-008-0053-2). (IF 2008: 1.200)
- Citation Count: **64**
 - Impact Factor (2011): 0.744
- J12. Snider, M., Summers, J., Teegavarapu, S., Mocko, G., (2008), "Database Support for Reverse Engineering, Product Teardown, and Redesign as Integrated into a Mechanical Engineering Course", *ASEE Computers in Education Journal*, **18 (4)**, pp. 9-21.
- Citation Count: **4**
 - Impact Factor (2011): 0.219
- J11. Baladi, M., Vitali, H., Fadel, G., **Summers, J.**, Duchowski, A., (2008), "A Taxonomy for the Design and Evaluation of Networked Virtual Environments: Its Application to Collaborative Design", *International Journal on Interactive Design and Manufacturing*, **2 (1)**, pp. 17-32. (DOI: 10.1007/s12008-007-0032-2).
- Citation Count: **13**
 - Impact Factor (2011): 0.279
- J10. Pehlivan, S., Summers, J., (2008), "A Review of Computer-Aided Fixture Design with Respect to Information Support Requirements", *International Journal of Production Research*, **46 (4)**, pp 929-47. (DOI: 10.1080/00207540600865386).
- Citation Count: **51**
 - Impact Factor (2011): 1.165
- J9. Teegavarapu, S., Snider, M., Summers, J., Thompson, L., Grujicic, M., (2007), "A Driver for Selection of Functionally Inequivalent Concepts at Varying Levels of Abstraction", *Journal of Design Research*, **6 (1-2)**, pp. 218-38. (DOI: 10.1504/JDR.2007.015571).
- Citation Count: **9**
 - Impact Factor (2011): 0.000
- J8. Ostergaard, K., Summers, J., (2007), "Resistance Based Modeling of Collaborative Design", *Concurrent Engineering Research and Applications*, **15 (1)**, pp. 21-32 (DOI: 10.1177/1063293X07076273). (IF 2008: 0.870)
- Citation Count: **14**
 - Impact Factor (2011): 0.349
- J7. Anandan, S., Summers, J., (2006), "Similarity Metrics Applied to Graph Based Design Model Authoring", *Computer-Aided Design and Applications*, **3 (1-4)**, pp. 297-306, (DOI:10.3722/cadaps.2006.297-306). (IF 2008: 0.284)
- Citation Count: **5**
 - Impact Factor (2011): 0.300
- J6. **Summers, J., Divekar, A., Anandan, S.,** (2006), "Towards Establishing the Design Exemplar as a CAD Query Language", *Computer-Aided Design and Applications*, **3 (1-4)**, pp. 523-532. (IF 2008: 0.284)
- Citation Count: **9**
- J5. Ohland, M., **Summers, J.,** (2006), "Teaching Design Using Multiple Hierarchical Engineering Education Models", *International Journal of Engineering Education*, **22 (3)**, pp. 577-83.
- Citation Count: **3**
 - Impact Factor (2011): 0.465
- J4. Ostergaard, K., Wetmore, W., Divekar, A., Vitali, H., **Summers, J.,** (2005), "An Experimental Methodology for Investigating Communication in Collaborative Design Review Meetings", *CoDesign*, **1 (3)**, pp. 169-85. (DOI: 10.1080/15710880500298520).
- Citation Count: **20**
- J3. **Summers, J., Bettig, B., Shah, J.,** (2004), "The Design Exemplar: A New Data Structure for Embodiment Design Automation", *Journal of Mechanical Design*, **126 (5)**, pp. 775-87. (DOI:10.1115/1.1767179).

- Citation Count: **37**
 - Impact Factor (2011): 0.592
- J2. **Summers, J.**, Maxwell, D., Camp, C., Butler, A., (2001), “Features as an Abstraction for Designer Convenience in the Design of Ships”, *ASNE – The Naval Engineers Journal*, **113 (4)**, pp. 53-67. (IF 2008: NA)
- Citation Count: **1**
 - Impact Factor (2011): 0.136
- J1. Shah, J., Vargas-Hernandez, N., **Summers, J.**, Kulkarni, S., (2001), “Collaborative Sketching (C-Sketch): An Idea Generation Technique for Engineering Design”, *Journal of Creative Behavior*, **35 (3)**, pp. 168-98. (ISSN: 0022-0175). (IF 2008: 0.385)
- Citation Count: **185**
 - Impact Factor (2011): 0.639

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- Js3. Fazelpour, M., Shankar, P., Yoder, M., **Summers, J.**, (2016), “A Unit Cell Design Guideline Development Method for Meso-Scaled Periodic Cellular Material Structures Under Shear Loading”, *Journal of Mechanical Design*, in review September 2016, (Summers is corresponding author).
- Js2. Salmi, A., David, P., Blanco, E., **Summers, J.**, Briant, O., (2016), “An Optimization Model to Support Assembly Level of Automation Decision”, *European Journal of Operations Research*, in review July 2016 (Salmi is corresponding author).
- Js1. Patel, A., Andrews, P., **Summers, J.**, Harrison, E., Schulte, J., Mears, M., (2016), “Evaluating the Use of Artificial Neural Networks and Graph Complexity to Predict Automotive Assembly Quality Defects”, *Journal of Computing and Information Science in Engineering*, in review September 2016, JCISE-16-2069, (Summers is corresponding author).

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- Jprep. Joshi, S., **Summers, J.**, Morkos, B., (2015), “Mapping Level of Detail of Design Problem to Final Solution: A Document Analysis of Capstone Design Projects”, *tbd*, (Joshi is corresponding author).

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- Citation Count: **19** (December 30, 2015; Google Scholar)
- B9. Shah, J., Dinar, M., Park, P., **Summers, J.**, (2016), “Evaluation of Empirical Design Studies and Metrics”, *Experimental Design Research: Approaches, Perspectives, and Applications*, eds. P. Cash, T. Stankovic, M. Storga, Springer, Dusseldorf, Germany, ISBN: 978-3-319-33779-1.
- B8. Fadel, G., Mocko, G., **Summers, J.**, (2016), “Clemson Engineering Design – Applications and Research (CEDAR) Group – Clemson University, Clemson, SC, USA”, *Impact of Design Research on Industrial Practice: Tools, Technology, and Training*, eds. A. Chakrabarti and U. Lindemann, Springer, Dusseldorf, Germany, ISBN: 978-3-319-19448-6, pp. 151-168.
- Citation Count: **0**
- B7. Miller, W., **Summers, J.**, (2010), “Tool and Information Centric Design Process Modeling: Three Case Studies”, *Handbook of Research on Trends in Product Design and Development*, eds. A. Silva and R. Simoes, IGI Publishing, Hershey, PA, ISBN: 1-61520-617-5.
- Citation Count: **2**
- B6. Ameri, F., **Summers, J.**, (2009), “Multi-Agent Systems in Engineering Design of Fixture Systems”, *Handbook of Research on Artificial Intelligence in Industrial Information Systems*, ed. W. Zha, IGI Publishing, Hershey, PA, ISBN: 1-60566-778-1.
- Citation Count: **1**
- B5. **Summers, J.**, Teegavarapu, S., Anandan, S., (2009), “Introduction of Design Enabling Tools – Development, Validation, and Lessons Learned”, *Tools for Innovation*, ed. A. Markman and K. Wood, Oxford Press, Cambridge, MA, (ISBN 10: 0195381637).
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- B4. Baladi, M., Vitali, H., Fadel, G., **Summers, J.**, Duchowski, A., (2007), "A Taxonomy for the Design and Evaluation of Networked Virtual Environments – Its Application to Collaborative Design", *Research in Interactive Design - Vol. 2*, eds. X. Fischer and D. Coutellier, Springer Verlag, (ISBN-10: 2287483632).
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- Citation Count: **9**
- B2. **Summers, J.**, Shah, J., (2001), "Leadership Style Selection Rules for Agent Architecture in Engineering Design", *From Knowledge Intensive CAD to Knowledge Intensive Engineering*, Cugini and Wozny (eds.), Kluwer Academic Press, Netherlands, pp. 13-26.
- Citation Count: **3**
- B1. Lacroix, Z., **Summers, J.**, Shah, J., (2002), "Principes et Modèles pour la Gestion des Points de Vue en CAO", *Genie Industriel*, F. Darses (ed.), University Press of Grenoble (in French). published by INRIA (ISBN 2-7261-1186-6), pp 129-151
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Citation Count: **1069** (December 30, 2015; Google Scholar)

- C190. Gill, A., Patel, A., **Summers, J.**, Shuffler-Porter, M., Kramer, W., (2016), "Graph Complexity Analysis of Function Models Expanded from Partially Completed Models", *The Fourth International Conference on Design Creativity (4th ICDC)*, Atlanta, GA, Nov. 2-4.
- C189. Patel, A., Kramer, W., **Summers, J.**, Shuffler-Porter, M., (2016), "Function Modeling: A Study of Model Sequential Completion Based on Count and Chaining of Functions", *International Design Engineering Conferences and Computers in Engineering Conference (ASME IDETC/CIE)*, Charlotte, NC, Aug. 21-24, DETC2016-59860.
- C188. Patel, A., Andrews, P., **Summers, J.**, Harrison, E., (2016), "Evaluating the Use of Artificial Neural Networks to Predict Assembly Defects", *International Design Engineering Conferences and Computers in Engineering Conference (ASME IDETC/CIE)*, Charlotte, NC, Aug. 21-24, DETC2016-59664.
- C187. Gill, A., **Summers, J.**, (2016), "Impact of Level of Detail and Information Content on Accuracy of Function Structure-Based Market Price Prediction Models", *International Design Engineering Conferences and Computers in Engineering Conference (ASME IDETC/CIE)*, Charlotte, NC, Aug. 21-24, DETC2016-59662.
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- C185. Fazelpour, M., Shankar, P., **Summers, J.**, (2016), "Developing Design Guidelines for Meso-Scaled Periodic Cellular Material Structures Under Shear Loading", *International Design Engineering Conferences and Computers in Engineering Conference (ASME IDETC/CIE)*, Charlotte, NC, Aug. 21-24, DETC2016-59082.
- C184. Fazelpour, M., **Summers, J.**, Blouin, V., (2016), "A Taxonomy for Representing Prismatic Cellular Materials", *International Design Engineering Conferences and Computers in Engineering Conference (ASME IDETC/CIE)*, Charlotte, NC, Aug. 21-24, DETC2016-59081.
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- C182. Thiagarajan, A., Patel, A., O'Shields, S., **Summers, J.**, (2016), "Functional Thinking: A Protocol Study to Map Modeling Behavior of Designers", *Design Cognition and Computing (DCC16)*, Evanston, IL, June 2016, No. 73.

- C181. Mohinder, S., Gill, A., Summers, J., (2016), "Using Graph Complexity Connectivity Method to Predict Information from Design Representations", *Design Cognition and Computing (DCC16)*, Evanston, IL, June 2016, No. 71.
- C180. Pearce, B., Phelan, K., Kurz, M., **Summers, J.**, (2016), "Configuration Management through Constraint Programming", *CIRP CATS 2016*, Chalmers, Sweden, May 2016, No. 0109.
- C179. Renu, R., Vitosky, D., Knackstedt, S., Mocko, G., **Summers, J.** (2016), "A Knowledge Based FMEA to Support Identification and Management of Vehicle Flexible Parts Issues", *CIRP CATS 2016*, Chalmers, Sweden, May 2016, No. 01092.
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- C177. Gill, A., Vitosky, D., Mears, M., **Summers, J.**, (2016), "Cost Estimation Model for Pan Based Carbon Fiber Manufacturing Process", *ASME 2016 International Manufacturing Science and Engineering Conference*, Blacksburg, VA, June 2016, MSEC2016-8724.
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- C171. Phelan, K., Wilson, C., **Summers, J.**, Kurz, M., (2015), "Graph Visualization Styles for Use in Configuration Management: A User Study", *International Design Engineering Conferences and Computers in Engineering Conference (ASME IDETC/CIE)*, Boston, MA, Aug. 1-5, DETC2015-46288.
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- C170. Yoder, M., Satterfield, Z., Fazelpour, M., Summers, J., Fadel, G., Thompson, L., (2015), "Numerical Methods for Design of Meso-Structures: A Comparative Review", *International Design Engineering Conferences and Computers in Engineering Conference (ASME IDETC/CIE)*, Boston, MA, Aug. 105, DETC2015-46289.
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- Citation Count: 0
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- Citation Count: 4
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- Citation Count: **0**
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- Citation Count: **0**
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- Citation Count: **4**
- C132. Owensby, E., Namouz, E., Shanthakumar, A., Summers, J., (2012), "Representation: Extracting Mate Complexity from Assembly Models to Automatically Predict Assembly Times", *ASME International Design Engineering Technical Conferences and Computers and Information in Engineering Conference*, Chicago, IL, DETC2012-70995.
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- Citation Count: **2**
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- Citation Count: **1**
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 - Citation Count: **9**
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 - Citation Count: **2**
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 - Citation Count: **13**
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- Citation Count: **15**
- C91. Shankar, P., Ju, J., Summers, J., (2010), "Design of Sinusoidal Auxetic Structures for High Shear Flexure", *ASME International Design Engineering Technical Conferences*, CIE-AMS, Montreal, Canada, August, 2010, DETC2010-28545.
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- Citation Count: **10**
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- Citation Count: **8**
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- Citation Count: **7**
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- **NOTE:** was selected as a best paper at the 2009 SAE Congress with the Arch T. Colwell Merit Award
 - Citation Count: **3**

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- P1. **Summers, J.**, Fadel, G., Ju, J., Ziegert, J., (2013), "Shear Compliant Hexagonal Meso-Structures Having High Shear Strength and High Shear Strain", US Patent No. 8,609,220, Issued December 17, 2013 (Michelin is assignee).

- P2. Shankar, P., Michaelraj, A., Ju, J., Summers, J., Ziegert, J., Fadel, G., (2014), “Honeycomb Structures for High Shear Flexure”, US Patent No. 8,651,156, Issued February 18, 2014 (Michelin is assignee).
- P3. Ju, J., Berglind, L., Summers, J., (2014), “Method to Design Shear Flexible Structures”, US Patent No. 8,688,421, Filed October 6, 2011, Issued April 1, 2014 (Michelin is assignee).
- P4. **Summers, J., Kolla, A., Ju, J., Ziegert, J.,** (2015), “Chiral Honeycomb Meso-Structures for Shear Flexure”, US Patent No. 8,999,480, Issued April 7, 2015 (Michelin is assignee).

Applications

- Pa1. Curran, T., Summers, J., (2014), “Heated Drinking Mug Using Wireless Power Transfer”, Provision Patent Filed, March 10, 2014 (Clemson is assignee).

Invention Disclosures

- ID1. Matthews, J., Summers, J., Stowe, D., Thompson, B., Liebersbach, R., (2007), “Helical Isolator Tweel: A Low-Temperature, Long-Life, Compliant Wheel for the Lunar Surface and Beyond”, New Technology Report #45601, submitted to JPL in September 2007.
- ID2. Johnston, P., Smith, E., Summers, J., (2007), “Mobile Baling System for Recyclables”, Invention Disclosure, submitted to Clemson University in November 2007.
- ID3. Duddukuri, S., Hodges, J., Maier, J., Mears, L., Miller, S., Summers, J., Yaski, S., (2007), “An Apparatus to Simulate the Effects of High-G Deceleration on Mechanical Models to Study Viscous-Solid Interfaces”, Invention Disclosure, submitted to Clemson University in November 2007.
- ID4. Duddukuri, S., Hodges, J., Maier, J., Mears, L., Miller, S., Summers, J., Yaski, S., (2007), “An Apparatus to Pack Soil into Testing Samples”, Invention Disclosure, submitted to Clemson University in November 2007.
- ID5. Duddukuri, S., Hodges, J., Maier, J., Mears, L., Miller, S., Summers, J., Yaski, S., (2008), “An Apparatus to Detect Small Changes in Mass at High G’s”, Invention Disclosure, submitted to Clemson University in November 2007.
- ID6. Teegavarapu, S., Shankar, P., Michealraj, A., Morkos, B., Kanda, A., Summers, J., (2008), “Method for Integrating Thermal Cooling and Structural Support through Metal Foams”, Invention Disclosure, presented to Clemson University in October 2008.
- ID7. Berglind, L., Ju, J., Summers, J., (2009), “Method to Design Honeycomb Structures for Shear Stiffness and Shear Compliance”, Invention Disclosure presented to Clemson University in August 2009.
- ID8. Berglind, L., Ziegert, J., Summers, J., Joshi, S., (2009), “Piecewise Honeycomb Structure Design”, Invention Disclosure presented to Clemson University in August 2009.
- ID9. Joseph, P., Ananthasayanam, B., Summers, J., Blouin, V., Thompson, B., (2009), “A Method to Influence Traction Through Varying Contact Pressure in Discrete Shearbands for Tweel”, Invention Disclosure presented to Clemson University in August 2009.
- ID10. Berglind, L., Ju, J., Summers, J., (2009), “Honeycomb Embedded Airfoil for Morphing Shape”, Invention Disclosure presented to Clemson University in August 2009.
- ID11. Berglind, L., Summers, J., (2010), “Method for the Design of 2D Shape Morphing Skin Structures”, Invention Disclosure submitted to Clemson University, June 2010.
- ID12. **Summers, J., Hancock, T., Julian, M., Kolla, A., Blouin, V., Joseph, P.,** (2010), “Concave Lateral Tread Profile for Improved Traction”, Invention Disclosure submitted to Clemson University, June 2010.
- ID13. Ju, J., Summers, J., (2011), “Porous, Composite Reinforced PU for Shear Band”, Invention Disclosure submitted to Clemson University, May 2011.
- ID14. **Summers, J., Griese, D.,** (2011), “Design of Cellular Meta-Materials for Targeted Acoustic Properties”, Invention Disclosure submitted to Clemson University, June 2011.
- ID15. Shankar, P., Summers, J., (2011), “Invention of ‘O’-Type Meso-structure for High Shear Flexure”, Invention Disclosure submitted to Clemson University, November 2011.
- ID16. Curran, T., Summers, J., (2013), “Wireless Powered Portable Personal Beverage Heater”, Invention Disclosure submitted to Clemson University, November 2013.
- ID17. **Summers, J., Choi, H., Jaradat, M.,** (2014), “

PRESENTATION

Invited

- Summers, J.**, (2016), "Product Test and Validation", CTO Forum, Half Moon Bay, CA, August 12, 2016 (invited by Basheer Janjua, CTO Forum President).
- Summers, J.**, (2015), "Design: Meso-Structures", Goodyear, Akron, OH, September 2, 2015 (invited by Surendra Chawla, Innovation Lead).
- Summers, J.**, (2015), "Complexity in Engineering Manufacturing and Design: What is it, how can we measure it, and how can we use these measures to guide design?", Engineering Product Design Pillar, Singapore University of Technology and Design, Singapore, April 14, 2015 (invited by Kris Wood, Pillar Head).
- Summers, J.**, (2014), "Complexity in Engineering Manufacturing and Design: What is it, how can we measure it, and how can we use these measures to guide design?", Department of Mechanical Engineering, University of Louisville, Louisville, KY, October 27, 2014 (invited by Kevin Murphy, Department Chair).
- Summers, J.**, (2013), "Engineering Graphs to Complexity Metric Vectors to Surrogate Model Predictors: Discovering Implicit Knowledge", *26th European Conference on Operations Research*, Rome, Italy, July 2013.
- Summers, J.**, (2013), "Engineering Fiction: What if We Can Do Physics Reasoning on Product Functionality?", Department of Philosophy, TU-Delft, Delft, The Netherlands, April 22, 2013. (invited by Dr. Pieter Vermaas)
- Summers, J.**, (2013), "Complexity in Engineering Design", The Design Group, The Open University, Milton Keynes, UK, March 6, 2013. (invited by Prof. Claudia Eckert)
- Summers, J.** (2013), "Design Research", Institute of Product Engineering, Karlsruhe Institute of Technology, Karlsruhe, Germany, February 15, 2013. (invited by Prof. Albert Albers)
- Summers, J.** (2013), "Design Research", G-SCOP Laboratory, INP-Grenoble, Grenoble, France, September 18, 2012. (invited by Prof. Jean-Francois Boujut)
- Summers, J.**, (2007), "Design Enabling Tool Research", Creative Design Institute, Sungkyunkwan University, November 22, 2007. (invited by Prof. Yong-Se Kim)
- Summers, J.**, (2006), "Introduction of Design Enabling Tools - Development, Validation, and Lessons Learned", Interdisciplinary Workshop on Innovation, Creativity and Design, University of Texas-Austin, December 8, 2006.
- Summers, J.**, (2006), "Design Enabler Synthesis (DESYN): A Foundation and the Future", Mechanical Engineering Colloquium, WPI, March 24, 2006. (invited by Prof. Bob Norton)
- Summers, J.**, (2002), "Case-Based Design Facilitated by the Design Exemplar: Retrieval, Archival, and Representation for Mechanical Engineering Knowledge", Mechanical Engineering-Engineering Mechanics Graduate Seminar, Michigan Technological University, October 31, 2002. (invited by Assistant Professor Bernie Bettig)
- Summers, J.**, (2001), "The Design Exemplar: A Query Mechanism for Characteristic Interrogation", School of Mechanical Engineering, Georgia Institute of Technology, Atlanta, GA (June 2001)
- Summers, J.**, (2001), "Bits and Bytes, Numbers and Arrays", Guest Lecture CEE4803C, School of Mechanical Engineering, Georgia Institute of Technology, Atlanta, GA (June 2001)
- Summers, J.**, (2001), "Development of Domain and Solver Independent Method for Mechanical Engineering Embodiment Design",
- Department of Mechanical Engineering, Iowa State University, Ames, IA (March 2001)
 - Department of Mechanical Engineering, University of Kansas, Lawrence, KS (April 2001)
 - Department of Mechanical Engineering, University of Missouri-Rolla, Rolla, MO (May 2001)
 - Department of Mechanical Engineering, Clemson University, Clemson, SC (May 2001)

Workshops

- Summers, J.**, Eckert, C., (2015), "Benchmarking Functional Models", *International Conference on Engineering Design 2015*, Workshop, Milan, Italy, July, 2015. (two days; 12 participants)
- Summers, J.**, Eckert, C., (2014), "Benchmarking Functional Models", *ASME 204 International Design Engineering Technical Conference and Computers and Information in Engineering Conference*, Workshop, Buffalo, NY, Aug. 16, 2014. (4 hours; 25 participants)

- Eckert, C., **Summers, J.**, (2014), "Benchmarking Functional Models", *Design Cognition and Computing Conference*, London, UK, (4 hours; 12 participants)
- Summers, J.**, Eckert, C., (2013), "Design Research Methods: Interviewing", *ASME 2013 International Design Engineering Technical Conference and Computers and Information in Engineering Conference*, Workshop #1, Portland, OR, Aug. 4, 2013. (4 hours; ~50 participants)

HONORS AND AWARDS

International/National

- Elected Fellow to ASME, 2012. Elected Fellow to the largest and oldest professional association of mechanical engineers. This election is done by a panel of senior Fellow members within the Society and is based on significant contributions in research, education, and service. Of the 110,000 members, only about 3,000 are elected to the Fellow status, less than 3%.
- JPL ICB Patent Award, 2012, This Award is presented for significant efforts that have resulted in patentable materials as they relate to work supported by NASA and JPL. The award is given by the Innovative Technology Assets Management Office of JPL. This award was for NPO 45601: Elastic Shear Band with Helical Coils (\$500 honorarium).
- Arch T. Colwell Merit Award, 2011, This Award was established by Arch T. Colwell to recognize authors of outstanding papers presented at SAE meetings. Papers are judged for their value as contributions to existing knowledge of mobility engineering, and primarily with respect to their value as an original contribution to the subject matter. This award was for a 2009 SAE World Congress and Exposition paper submitted and presented (C61 and J21)
- TMCE Outstanding Contribution Award, 2010, International award given to outstanding research contribution to the field of design presented annually to one conference participant. This award is given in lieu of a best paper award at the international conference (approximately 270 attendees with an acceptance rate at the conference below 50%).
- SAE Ralph Teetor Award, 2009, International award for undergraduate teaching as presented to eight junior faculty every year
- Appreciation Award, 2007 Changwon International Capstone Design Fair, advised senior design project that was selected as one of seven from the US to be presented at an international fair in South Korea (2007).
- Appreciation Award, 2006 Taegu International Capstone Design Fair, advised senior design project that was selected as one of six from the US to be presented at an international fair in South Korea (2006).

State/Regional

- SC Commission on Higher Education Service-Learning Award, 2014, Nominated by President of Clemson University for the award based on outreach and service learning as integrated in the ME 4010 class, specifically focused on the elementary school outreach design program for manufacturing equipment (Fall 2013).
- SC Governor's Award for Science Awareness, 2012, Received Award April 2012; Nominated by the Vice President of Research of Clemson University for the award based on outreach, service learning, and industry integration in the undergraduate and graduate education programs. The award was specifically focused on the elementary school outreach program in designing and building wind tunnels as part of the ME 401 class (Spring 2011 and Fall 2011).
- Innovision 2011, Received Award December 2011; Industry selected finalist for the Innovation in Education Award based on the Service Learning program with ME 401 (wind tunnels in elementary schools) (2011)
- Innovision 2006, Received Award December 2006; Industry selected recipient of the Innovation in Education Award based on the Maymester Product Innovation class (2006)

University

- College of Engineering and Science: McQueen Quattlebaum Achievement Award, 2015, (nominated by department), For exemplary achievement in scholarship for 2012-2014 period.
- College of Engineering and Science: Collaboration Award, 2015, (nominated by department), For sustained collaborative research and teaching efforts between Industrial Engineering and Mechanical Engineering (Dr. Mary E. Kurz is a co-nominee)

College of Engineering and Science: Esin Gulari Leadership Award, 2015, Awarded for service to the College and University

Clemson University Board of Trustees Award for Faculty Excellence, 2012, For exceptional achievement in teaching, researcher, service, or advising that has earned official recognition from students, peers, and colleagues.

Frank A. Burtner Award for Excellence in Advising, 2012, Received Award May 2012; Nominated by E. Namouz and other CEDAR students for outstanding efforts in advising both graduate and undergraduate students at Clemson University

Clemson University Board of Trustees Award for Faculty Excellence, 2011, For exceptional achievement in teaching, researcher, service, or advising that has earned official recognition from students, peers, and colleagues.

College of Engineering and Science *Innovation and Discovery in Engineering and Science Professorship* – IDEaS Professor, 2010-2013. Awarded the inaugural named professor in the college for recognition of exemplary collaboration and innovation in research and educational activities. The professorship carries with it an unrestricted account of \$20,000 annually.

Clemson University Board of Trustees Award for Faculty Excellence, 2009, For exceptional achievement in teaching, researcher, service, or advising that has earned official recognition from students, peers, and colleagues.

Pre-Professional Awards

NSF Design Essay Competition Award – Graduate Division, DTM Committee, ASME (2000)

Preparing Future Faculty Fellowship, Arizona State University (2001-2002)

Regent’s Scholar, Arizona State University (1999-2001)

Curators Scholar, University of Missouri (1991-1992)

Bright Flight Scholar, University of Missouri (1991-1996)

Undergraduate Engineering Award, Missouri Society of Professional Engineers (1991)

Undergraduate Engineering Award, College of Engineering – University of Missouri (1991-1993)

Undergraduate Physics Award, University of Missouri (1992)

D. Wollersheim Mechanical Engineering Scholar, University of Missouri (1992)

Thompson Physics Scholar, University of Missouri (1992)

Student Advisee Awards

2014 Student Travel Grant for International Capstone Design Conference (Columbus, OH): MS Student **Steven O’Shields** (\$500).

2014 ASME CIE Division Best Dissertation Award: PHD Student **Beshoy Morkos**. US Recipient. Award given based on review of dissertation by CIE Executive Committee and by contributions to CIE as evidenced through publication in CIE Conference and other venues (\$500).

2014 DFMLC Scholar: PHD Student **Keith Phelan**. Inaugural recipient of Design for Manufacturing and Life Cycle Technical Committee Award to promote mentorship and professional growth (\$1000).

2014 ASME-NSF Design Essay Awardee: PHD Student **Mohammad Fazelpour** and **Rohan Desai**. One of ten students internationally to receive the award and the accompanying travel fellowship to Buffalo, NY conference (\$1250).

2014 ASME-NSF Design Essay Awardee: MS Student **Tyler Curran**. One of ten students internationally to receive the award and the accompanying travel fellowship to Buffalo, NY conference (\$1250).

2013 ASME CIE Division Best Dissertation Award: PHD Student **Chiradeep Sen**. Inaugural recipient. Award given based on review of dissertation by CIE Executive Committee and by contributions to CIE as evidenced through publication in CIE Conference and other venues (\$500).

2013 NIST CIE DETC Graduate Poster Awardee: PHD Student **Mohammad Fazelpour**. One of eight students internationally to receive the award and the accompanying travel fellowship to Portland, OR conference (\$1000).

2012 Student Travel Grant for International Capstone Design Conference (Champaign-Urbana, IL): MS Student **Shraddha Joshi** (\$500).

2012 ME Graduate Student Research: MS Student **David Griese**. Inaugural recipient of Eastman Graduate Research Award based on poster and presentation review by faculty within ME Department (\$2000).

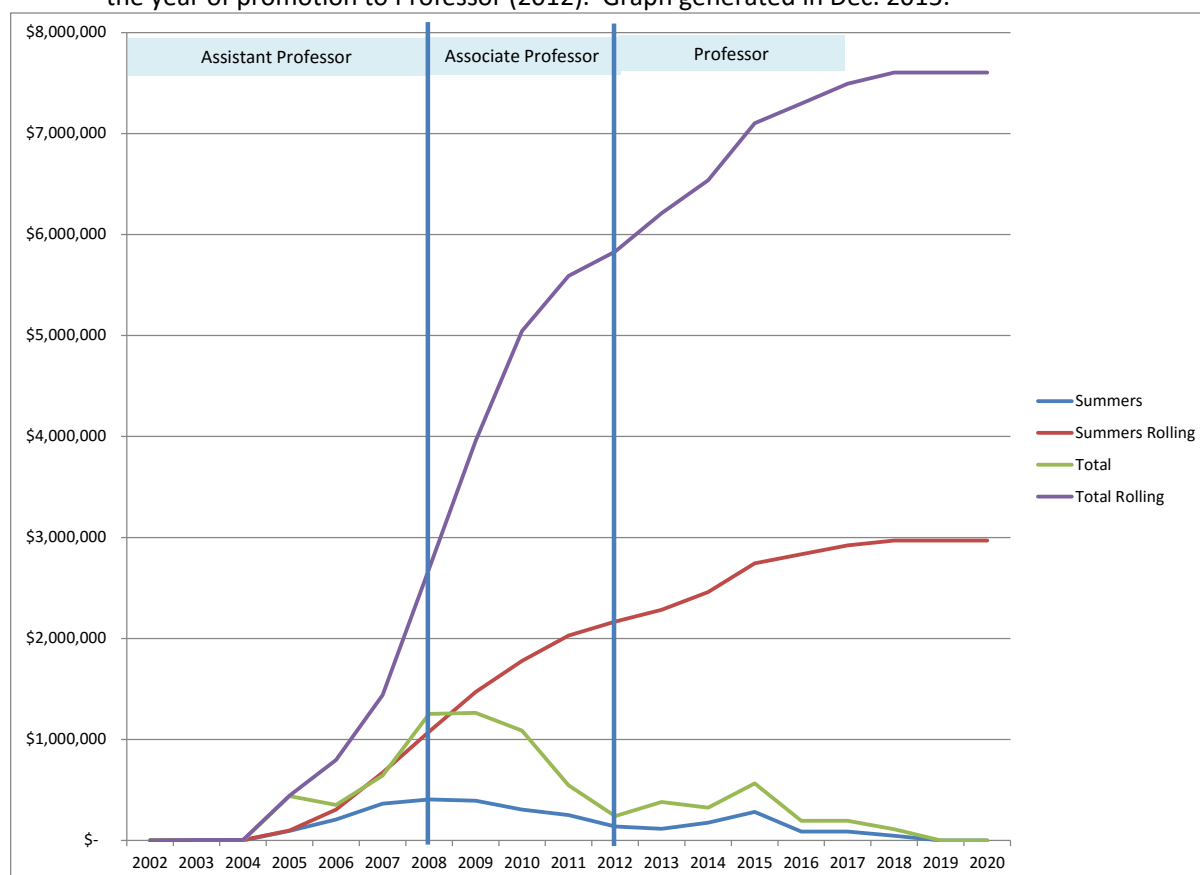
- 2011 NIST CIE DETC Graduate Poster Awardee: MS Student **J. Eric Owensby**. One of six students internationally to receive the award and the accompanying travel fellowship to Washington, DC conference (\$1000).
- 2011 Leadership in Academia Workshop Travel Grant: PHD Student **Shraddha Joshi**. One of twenty grantees to travel to Washington DC for this NSF support workshop (\$1250).
- 2011 Student Travel Fellowship for Mudd Design Workshop VIII: PHD Student **Shraddha Joshi**. One of ten international graduate fellows (\$1000).
- 2010 SC Space Grant Consortium Graduate Fellowship: MS Student **James Mathieson**. One of six statewide graduate fellows (\$14000).
- 2010 Student Travel Grant for International Capstone Design Conference (Boulder, CO): MS Student **Shraddha Joshi** (\$500).
- 2010 ME Teaching Fellowship: PHD Student **Chiradeep Sen**. One of three teaching fellows selected annually in the ME Department to shadow faculty and then teach undergraduate courses.
- 2009 ASME-CAPPD Graduate Poster Awardee: PHD Student **Chiradeep Sen**. One of three graduate students selected to present their poster at the ASME CIE Conference. Includes a travel grant.
- 2009 ASME-NSF Design Essay Awardee: MS Students **Jay Richardson** and **Essam Namouz**. One of eight teams of students to win the award and the accompanying travel grant.
- 2009 ASME-NSF Design Essay Awardee: MS Student **James Mathieson** and PHD Student **Beshoy Morkos**. One of eight teams of students to win the award and the accompanying travel grant.
- 2009 NIST CIE DETC Graduate Poster Awardee: PHD Student **Beshoy Morkos**. One of three students awarded the travel grant.
- 2009 ASME Teaching Fellowship Awardee: PHD Student **Beshoy Morkos**. One of two students nationally to receive the Teaching Fellowship (renewable for two years).
- 2008 ASME-NSF Design Essay Awardee: PHD Student **Prabhu Shankar**. One of nine graduate students internationally to receive the award and the accompanying travel stipend to the ASME DETC Conference in Brooklyn, NY.
- 2007 ASME-NSF Design Essay Awardee: PHD Student **Chiradeep Sen**. One of eight graduate students internationally to receive the award and the accompanying travel stipend to the ASME DETC Conference in Las Vegas, NV.
- 2007 ASME-NSF Design Essay Awardee: PHD Student **Beshoy Morkos**. One of eight graduate students internationally to receive the award and the accompanying travel stipend to the ASME DETC Conference in Las Vegas, NV.
- 2007 SC Space Grant Consortium Graduate Fellowship: MS Student **David Stowe**. One of three statewide graduate fellows.
- 2007 SC Space Grant Consortium Undergraduate Scholarship: UG Student **Kyle Conger**. One of five statewide undergraduate scholarship recipients.
- 2006 NSF Design Conference Essay Awardee: PHD Student **Srinivasan Anandan**. One of twelve graduate students nationally to receive the award and the accompanying travel stipend to the NSF Grantee's Conference in St. Louis, MO.
- 2006 ASME-NSF Design Essay Awardee: PHD Student **Sudhakar Teegavarapu**. One of eight graduate students internationally to receive the award and the accompanying travel stipend to the ASME DETC Conference in Philadelphia, PA.
- 2006 Taegu International Capstone Design Fair: **Beshoy Morkos, David Stowe, Madhu Kayyar**. Student design team members on Lunar Tweel Project that was presented at the fair, one of eight from the US, Taegu, South Korea. (Project team was supervised by **Joshua D. Summers**).
- 2005 ASME-NSF Design Essay Awardee: MS Student **Shashidhar Putti**. One of eight graduate students internationally to receive the award and the accompanying travel stipend to the ASME DETC Conference in Salt Lake City, UT.
- 2005 ASME-NSF Design Essay Awardee: PHD Student **Sudhakar Teegavarapu**. One of eight graduate students internationally to receive the award and the accompanying travel stipend to the ASME DETC Conference in Salt Lake City, UT.

SPONSORED RESEARCH

Total Cumulative Funding: \$8,103,177 (Summers' Portion: \$3,174,419)

Summers' initial start-up (cash) = \$21,500. Assuming a typical 30% effective overhead on the total project with 20% of that is returned to Department, the total return to the department on the start-up investment is greater than 8.5X in 14 years.

The figure illustrates the funding trends with project totals distributed as expenditures. The first vertical line indicates the year that tenure was granted (2008) and the second vertical line indicates the year of promotion to Professor (2012). Graph generated in Dec. 2015.



Current

Active Funding: \$1,214,200 (Summers' Portion: \$550,591)

1. Mears, L., **Summers, J.**, Mason, S., McGregor, J., McClendon, J., (2016-2017), "Demonstration: Augmented Reality Based Vehicle Inspection", Department of Commerce, South Carolina, \$75,000, (10%). (September 2016-February 2017). *Pending contract approval.*
2. **Summers, J.**, Wagner, J., (2016-2017), "TTi: Oil Pulse Driver Modeling", TTi, \$82,000, (50%). (September 2016-August 2017).
3. **Summers, J.**, Turner, C., Wagner, J., (2016), "SC Space Grant: Freight Farms/NASA STTR 2016: Thermal/Energy Controls Design and Optimization", SC Space Grant, \$10,000, (33%). (July 2016-Apr. 2017).
4. **Summers, J.**, Turner, C., Wagner, J., (2016-2017), "Freight Farms/NASA STTR 2016: Thermal/Energy Controls Design and Optimization", Freight Farms sub-contract from NASA, \$80,065, (33%), 2 PHD. (Aug. 2016-Aug. 2017).
5. Blouin, V., **Summers, J.**, (2016), "IFAI 2015: Meta-Modeling of Non-Certified Tents by Design of Experiments", Industrial Fabrics Association International, \$62,354, (50%) (May 2016-Dec. 2016), 2 MS.
6. Mears, M., **Summers, J.**, (2016-2017), "Honda: Joining Advisory System", Honda, \$206,143, (50%) (Aug. 2016-Dec. 2017), 2 PHD.
7. **Summers, J.**, Shuffler, M., (2015-2017), "NSF EAGER: Function Modeling, Reasoning, and Thinking – Mapping Behaviors to Cognitive Explanations", National Science Foundation, \$248,703 (50%) (Aug. 2015-Aug. 2017).

8. **Summers, J.**, (2015-2018), "Collaborative Research: Exploring Requirement Transiency: Measuring volatility through network models", National Science Foundation, \$190,000 (100%) (Aug. 2015-Aug. 2018). NOTE: collaborative project with B. Morkos (Florida Tech) for additional \$260,000 (non-Clemson funding)

Completed

Completed Funding: \$6,888,977 (Summers' Portion: \$2,623,828)

1. Mocko, G., **Summers, J.**, (2015), "BMW 2015: Investigation of potential collisions of flexible car parts", BMW, \$106,000, (50%) (Jan. 2015 – Aug. 2015)
2. **Summers, J.**, Mears, L., (2014), "BMW 2015: Quality Prediction from Line Information and Assembly Graphs", BMW, \$151,000, (80%) (Sept. 2014 – Dec. 2015)
3. Mears, L., **Summers, J.**, (2014), "BMW 2015: SPC Quality Prediction from Line Information", BMW, \$132,000, (20%) (Sept. 2014 – Dec. 2015)
4. Kurz, M., **Summers, J.**, (2014), "BMW 2015: Configuration Management and Planning (Year 2)", BMW, \$115,000, (50%) (Aug. 2014 – Aug. 2015)
5. **Summers, J.**, (2015), "ProNova: Gantry Measurement System Design", ProNova, \$15,000 (100%).
6. **Summers, J.**, Wagner, J., (2014), "Design of Compressors for Noise Reduction", TTI, \$65,000, (50%) (Aug 2014-Aug 2015)
7. Thompson, L., **Summers, J.**, (2014), "Design and Characterization of Periodic Cellular Meta-Materials with Targeted Mechanical, Acoustic, and Effective Material Properties", SC Space Grant Consortium, \$18,741, (50%) (June 2014-June 2015)
8. Thompson, L., **Summers, J.**, (2014), "Design and Characterization of Periodic Cellular Meta-Materials with Targeted Mechanical and Effective Material Properties", ME Department SGER, \$15,000, (50%) (Jan 2014-Dec 2015).
9. **Summers, J.**, (2014), "Travel Scholarships for Graduate Students to attend PublishED 2014; Grenoble, France; February 2014", NSF, \$21,100, (100%) (Jan 2014-Dec 2014)
10. **Summers, J.**, Kurz, M., (2013), "BMW 2013: Configuration Management and Analysis", BMW, \$110,000, (50%) (Jul 2013-Jun 2014) 2 PHD
11. Mocko, G., Kurz, M., **Summers, J.**, Mears, L., (2013), "BMW 2013: Information in Manufacturing", BMW, \$291,052 (20%) (Jan. 2013-Dec. 2013) 5 PHD.
12. **Summers, J.**, Fadel, G., (2012-2013), "Computational Support to Develop a Verification and Validation Plan to Reduce Engineering Change Propagation in Vehicle Configuration Design", ARC, \$69,121 (90%) (Aug. 2012-July 2013) 1 PHD, 1 Post-Doc.
13. Mocko, G., **Summers, J.**, (2012), "BMW 2012: Formalization of the TVG Information and Manufacturing System", BMW, \$118,252 (50%) (Jan. 2012 – Jan. 2013) 3 PHD.
14. Rosen, D., **Summers, J.**, (2011), "Workshop on Mechanical Engineering Design Knowledge Modeling", NSF, \$47,314 (50%) (Aug. 2011).
15. Mocko, G., **Summers, J.**, (2011), "BMW 2011: Formalization of the TVG Information and Manufacturing System", BMW, \$110,000 (50%) (Jan. 2011 – Dec. 2011) 3 PHD.
16. Mocko, G., **Summers, J.**, (2011-2012), "JCI 2011: Design of Car Seat Mechanisms", JCI, \$86,000 (50%) (Jun 2011 – Jun 2012) 2 PHD (accepted by Sponsor, continuation of previous contract).
17. **Summers, J.**, (2011-2012), "Fellowship for James Mathieson – Dynamic Tracking of Design Project Complexity for Project Performance Prediction", SC Space Consortium, \$10,000, (100%) (Aug 2011 – Jul 2012) 1 PHD.
18. **Summers, J.**, (2012), "IFAI 2012: Continued Testing and Webtool Interface for Ballasting Studies", IFAI, \$5,000 (75%) (May 2012-Aug. 2012) 1 PHD, 1 MS.
19. **Summers, J.**, Blouin, V., (2011), "IFAI 2011: Testing and Performance Analysis of Tent Ballasts", IFAI, \$60,000 (50%) (May 2011 – Aug. 2011) 2 PHD.
20. **Summers, J.**, Joseph, P., Blouin, V., 2007, "SC NASA EPSCoR 2007: Development of a Lunar Capable Rover Tweel for a Modular Manned Rover System: Analytical and Experimental Research", NASA, \$1,470,000 (40%) (Oct. 2007 – Sep. 2011). 3 PHD; 1 Post-Doc. (No cost extension granted through Sept. 2011).
21. Ziegert, J., Mocko, G., **Summers, J.**, (2010), "Generation 2 Power Adjuster Concept Definition", Johnson Controls, \$68,670, (30%) (Apr. 2010-Oct. 2010). (No cost extension granted through June 2011)

22. **Summers, J.**, (2010-2011), "Fellowship for James Mathieson – Dynamic Tracking of Design Project Complexity for Project Performance Prediction", SC Space Consortium, \$10,000, (100%) (Aug 2010 – Jul 2011) 1 PHD.
23. Kurfess, T., **Summers, J.**, Ziegert, J., Fadel, G., Mears, L., Joseph, P., 2007, "Michelin 2007: Advanced Tweel Development: Meta-Materials Design, Analysis, and Manufacturing", Michelin (through NIST ATP), \$1,908,993 (19%) (Jan. 2008-Dec. 2010). 3 MS, 4 PHD, 2 Post-Doc.
24. **Summers, J.**, Mocko, G., (2009-2010), "BMW 2009: Phase 1: Lazy Part Demonstration", \$168,000 (50%) (Aug. 2009-Dec. 2010). 3 PHD.
25. **Summers, J.**, Hodges, L., (2009), "BMW 2009: Demonstration of Augmented Reality in Inspection", BMW, \$54,000 (50%) (Aug. 2009 – May 2010). 1 MS, 1 Post.
26. Mocko, G., **Summers, J.**, Ziegert, J., (2009), "BMW 2009: E70 Headliner Grab Handle Analysis", \$99,500 (30%) (Aug. 2009 – July 2010). 2 MS.
27. **Summers, J.**, Biggers, S., Joseph, P., 2008, "ARC 2008: Sand/Tire Traction Interaction Modeling", US TACOM, \$100,000 (35%) (May 2008-Dec. 2009). 2 PHD.
28. **Summers, J.**, Mocko, G., 2008-2009, "BMW 2008: Phase 0 Manufacturing Lightweight Engineering Program", BMW, \$159,000 (50%) (May 2008 – May 2009). 2 PHD, 1 Post-Doc.
29. **Summers, J.**, 2008-2009, "BMW 2008: Use of Mobile Devices in Manufacturing", BMW, \$34,000 (100%) (Oct. 2008 – Jul 2009). 1 PHD.
30. **Summers, J.**, 2008, "JPL 2008: IPP Thermal Chamber Test System Development", JPL, \$25,000 (100%) (Feb. 2008-Nov. 2008).
31. **Summers, J.**, Joseph, P., "SC Space Grant 2007: Design of a Lunar Tweel for JPL", South Carolina Space Grant Consortium, \$30,000, (50%) (May 2007 – Apr. 2008). 1 PHD.
32. **Summers, J.**, Joseph, P., 2007, "JPL 2007: Lunar Tweel Design for ATHLETE", Jet Propulsion Laboratory through Michelin, \$30,000 (50%) (May – Aug. 2007). 1 RA.
33. **Summers, J.**, Stowe, D., 2007, "Proposal for Exploratory Research and Development of a Non-pneumatic Wheel for Lunar Application on NASA's ATHLETE and LSAM Projects", SC Space Grant Consortium, \$10,000, (100%) (Aug. 2007 – July 2008). 1 MS.
34. **Summers, J.**, Mears, L., 2007, "Michelin 2007: Mud Fling Measurement System", Michelin, \$98,000, (50%) (May 2007 – Apr. 2008). 2 MS; 1 Post-Doc.
35. **Summers, J.**, Mears, L., 2008, "Michelin 2008: Mud Fling Measurement System – Continuation", Michelin, \$25,000, (50%) (May 2008 – June 2008).
36. **Summers, J.**, Mocko, G., 2006-2008, "Investigation in Rule-Based Design", Hartness International, \$82,925 (50%) (Aug. 2006 – Feb. 2008). 1 MS; 1 PHD
37. **Summers, J.**, 2007, "LED Headlight Integration Design Project", BMW Forschung und Technik GmbH, \$79,755 (100%), (Jan. 2007 – Dec. 2007). 2 PHD; 1 Post-Doc
38. **Summers, J.**, 2006-2007, "Exterior Lighting Integration Design Project", BMW Forschung und Technik GmbH, \$79,755 (100%), (Nov. 2006 – Nov. 2007). 2 PHD
39. **Summers, J.**, Blouin, V., 2006-2007, "Conceptual Development for Lunar Tweel Shear Band", Michelin, \$18,771 (15%) (August 2006 – July 2007).
40. **Summers, J.**, 2006, "Tweel Material Analysis", Michelin, \$6,000 (100%) (July 2006).
41. **Summers, J.**, 2006, "Computational Support for Semantic Information Modeling in Design", National Science Foundation, SGER DMII Engineering Design, \$49,999 (100%) (Aug. 2006 – Aug 2007). NOTE: collaborative proposal with B. Bettig (Michigan Tech) for additional \$50,000 (non Clemson).
42. **Summers, J.**, Biggers, S., 2006, "Technology Enhanced Design", Wright Metal Products, \$39,019 (50%) (Jan. 2006 – Dec. 2006).
43. Fadel, G., **Summers, J.**, Mocko, G., 2006, "Requirements Cascade Modeling", BMW Forschung und Technik GmbH, \$107,302 (40%), (Jan. 2006 – Dec. 2006).
44. **Summers, J.**, 2005-2007, "Lamelle Query System", Michelin Americas, \$67,296 (100%), Graduate Student: Srinivasan Anandan (MS Funded), (Aug. 2005 – Aug 2007).
45. **Summers, J.**, 2005-2006, "EAI 2005: Design Project: On-Truck Recycling System", Environmental America, Inc., \$8,000 (100%), Graduate Students: Eddie Smith (MS Funded), Tim Troy (MS), (Aug. 2005 – Aug. 2006).

46. **Summers, J.**, 2005-2006, "EAI 2005: Design Project: On-Truck Recycling System", Sustainable Universities Initiative – Alan Elzerman, \$8,000 (100%), Graduate Students: Eddie Smith (MS Funded), Tim Troy (MS), (Aug. 2005 – Aug. 2006).
47. **Summers, J.**, Blouin, V., Fadel, G., 2005, "Software for Automated Luggage Packing", General Motors, \$35,000 (25%), (Aug. 2005 – Dec. 2005).
48. **Summers, J.**, Grujicic, M., Thompson, L., 2005, "Lightweight Engineering: Headlight Optimization", BMW Forschung und Technik GmbH, \$55,622 (60%), Graduate Students: Mark Snider (MS Funded), Sudhakar Teegavarapu (MS Funded); Undergraduate Students: Shawn Pauley, Matthew Austin, Casey Manning, (Jan. 2005 – Dec. 2005).
49. Fadel, G., Blouin, V., Wiecek, M., **Summers, J.**, 2005, "Packaging Optimization with Evolving Shapes", US Army Tank-Automotive and Armaments Command, \$275,000 (5%), Graduate Students: Ming Wang (Ph.D. Funded), (May 2005 – Dec. 2005).
50. Thompson, L., Grujicic, M., **Summers, J.**, 2005-2006, "Lightweight Engineering: Seat Concept Optimization", BMW Forschung und Technik GmbH, \$85,790 (20%), (Jan. 2005 – July 2006).
51. **Summers, J.**, 2003, "Modeling Resistance to Data Flow in Collaborative Design: Industrial Case Study Exploration", University Research Grant, \$5,000 (100%), Graduate Students: Henry Vitali (MS Funded), (Jan. 2003 – Dec. 2003).

OTHER SPONSORED ACTIVITY

CEDAR or AID Lab Design Project:

Total Funding: \$75,300 (Summers' portion \$65,300)

TTi (One World Technology): Concept Feasibility Lab. (Jan. 2015-present). \$30,000 donation to support Creative Inquiry team and lab. (100%). (Agreement signed Feb. 2015)

Hoowaki Shape Optimization. (Dec. 2013-Feb. 2014). \$4,000 (100%). 1 student worked on project.

Rotary; Project: Test Equipment Design for Lawnmower Blade Testing. (Aug. 2010-Dec. 2010). \$7,500 (50%). Two students worked on project.

TopTennis; Project: Redesign of Tennis Ball Throwing System. (Aug. 2010-Dec. 2010). \$12,500 (50%). Two students worked on project.

EAI; Project: redesign a combined trash/recycling truck for production. (Aug. 2006 – Aug. 2007). ~\$42,000 (partially billed – direct pay to students). Three students working on project.

JSV; Project: design an adjusting height swim platform for boat docks. (Feb. – May 2006). \$3,300 (100%). One student worked on project.

Course Design Projects:

Total Funding: \$300,000

Senior Design Capstone Course (ME 402).

- A total of 25 funded industry sponsored projects.
- Total funding for this course is \$300,000 from Fall 2004 to Spring 2010.
- Sponsoring companies include: Michelin, BMW, Clemson Environmental Technical Labs, Corning Cable Systems, Wright Metal Products, NASA Jet Propulsion Laboratory, TTI, Eaton, Rockwell Automation, Raytheon.
- NOTE: additional projects (Jacob's Chuck, NASA, Clemson Horticulture Department, Alexander Head Rest) were done pro-bono and one project was done where the funding was never collected: FujiFilm.

Product Innovation Maymester Course (ME 493/693/893; CES 490).

- A total of 3 funded industry sponsored projects.
- Total funding for this course is \$17,500 since May of 2006.
- Sponsoring companies include: Michelin, SkyBed

Advanced Design Methods Course (ME 870)

- A total of 2 funded industry sponsored projects.
- Total funding for this course is \$10,000 since Spring of 2005.
- Sponsoring companies include: BMW.

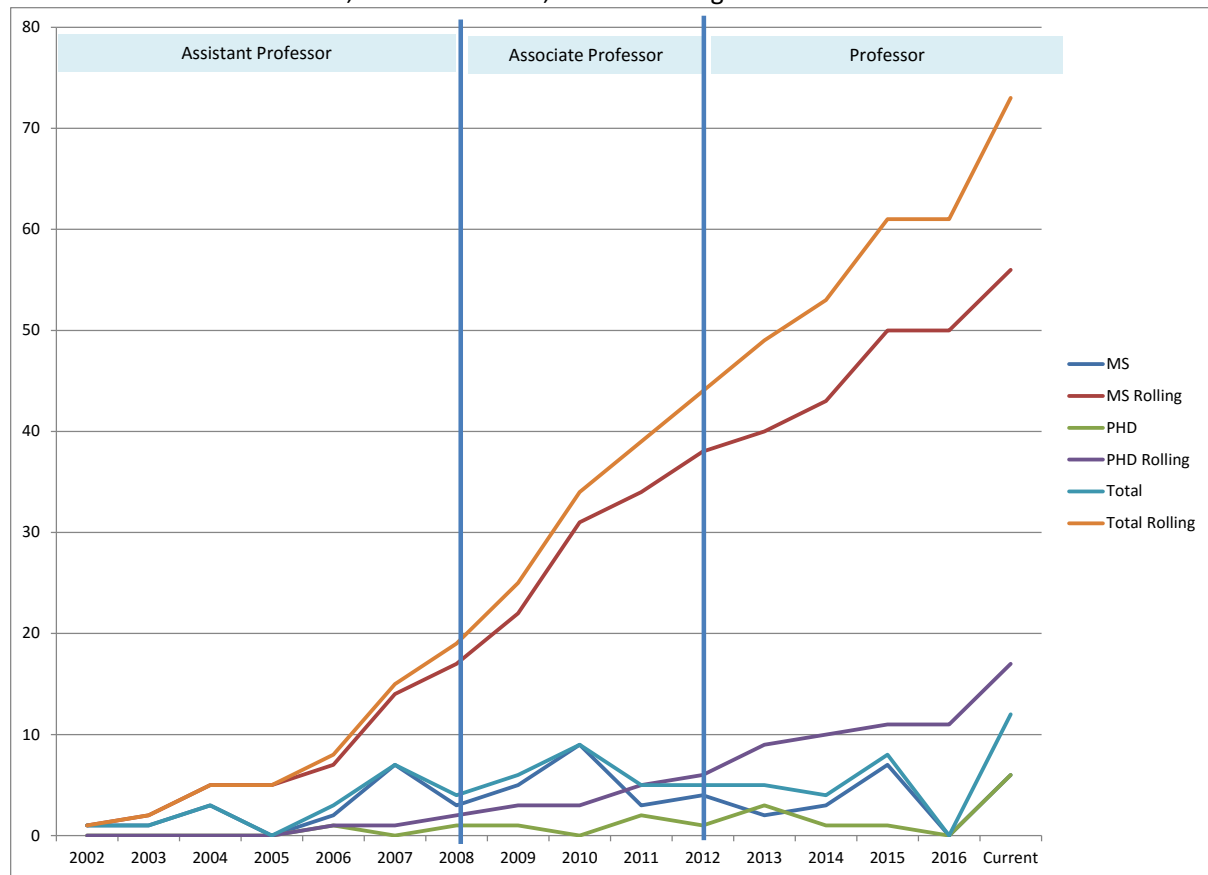
Miscellaneous:

- Visiting Professorship, Laboratoire G-SCOP and INP-Grenoble, \$11,500 (January-April 2013)
- Visiting Professorship, Centre National de la Recherche Scientifique, \$15,000 (September-December, 2012).
- Summer Faculty Fellowship, Office of Naval Research and American Society of Engineering Educators, (Intelligent Decision Aids Group), \$14,000 (June-August 2003).
- Negotiated three graduate internships with local companies (Reliable Sprinklers; BMW) for a total of 17 man-months (~\$50,000) (January 2006-May 2006; July 2006 – August 2006; January 2007 – October 2007)

GRADUATE STUDENT ADVISING

This figure illustrates the advising trends for graduate students. The red vertical line indicates the year that tenure was granted.

As an Associate Professor, from 2008-2012, I advised and graduated 12% of all ME Graduate Students.



Graduated Students

Total Graduate Students supervised: 62 (11 PHD, 43 MS Thesis, 8 MS non-Thesis)

NOTE: the ME department has graduated 72 PHDs (2006-2013). Summers accounts for 11% (8/72) of all departmental PHD degree's granted (2006-2013).

NOTE: the ME department has graduated 343 MS students (2006-2013). Summers accounts for 10% (35/343) of all departmental MS degree's granted (2006-2013)

NOTE: Summers has graduated 1 PHD and 1 MS student in Industrial Engineering as the sole research advisor and was a co-advisor for an Educational Leadership Doctorate.

NOTE: 36% of Summers graduated advisees have been recruited from the ME Capstone/Creative Inquiry programs

PhD Graduates

11. Phelan, K., 2012-2015, Ph.D., "Configuration Management in Manufacturing and Assembly: Case Study and Enabler Development", **Graduated**. (sole advisor). Supported by Automotive Research Center/BMW.

- **Cooper Library:** http://tigerprints.clemson.edu/all_dissertations/1591/
 - **NOTE:** student received 2014 ASME DFMLC Fellow Award to attend IDETC and CIE Conference
 - **Publications:**
 - **CURRENTLY WITH:** Electrolux (Senior Research Engineer)
10. Welsh, N., 2012-2014, E.D., "A Computational Model of Memetic Evolution: Optimizing Collective Intelligence", **Graduated.** (co-advisor w/ R. Marion).
 - **Cooper Library:** http://tigerprints.clemson.edu/all_dissertations/1383/
 - **CURRENTLY WITH:** UNCC as Post-Doctoral Researcher with John Gero
 9. Joshi, S., 2011-2013, Ph.D., "Understanding the Role of Requirements in Design by Novice Engineers", **Graduated,** (sole advisor). Supported by CU/NIST.
 - 1/8: Eight ME PHD's awarded in 2013
 - **Cooper Library:** http://tigerprints.clemson.edu/all_dissertations/1254/
 - **NOTE:** student received 2010 Travel Grant to attend Capstone Design Conference
 - **NOTE:** student received 2011 Travel Grant to attend Mudd Design Conference
 - **Publications:** J47, J37, C137, C130, C126, C121, C120, C89, C83, A15, A11
 - **CURRENTLY WITH:** Carnegie Mellon University (Teaching Assistant Professor)
 8. Mehta, P., 2010-2013, Ph.D., "Automated Control of Manufacturing Systems", **Graduated.** (co-advisor w/ Dr. Mears). Supported by NSF/CU.
 - 1/8: Eight ME PHD's awarded in 2013
 - **Cooper Library:** http://tigerprints.clemson.edu/all_dissertations/1181/
 - **CURRENTLY WITH:** Alcoa (Special Projects Engineer)
 7. Namouz, E., 2011-2013, Ph.D., "Design for Assembly: Automation of Time Estimation", **Graduated.** (sole research advisor). Supported by Johnson Controls/CU.
 - 1/8: Eight ME PHD's awarded in 2013
 - **Cooper Library:** http://tigerprints.clemson.edu/all_dissertations/1165/
 - **CURRENTLY WITH:** TTI (Special Projects Engineer)
 - **Publications:** Ja4, J47, C135, C132, C119, C113, C105, C102
 6. Morkos, B., 2007-2012, Ph.D., "Computational Representation and Reasoning Support for Requirements Change Management in Complex Systems Design", **Graduated.** May 2012. (sole advisor). Supported by BMW/NASA/ASME Teaching Fellow.
 - 1/8: Eight Departmental PHD's awarded in 2012
 - **Cooper Library:** <http://etd.lib.clemson.edu/documents/1340720583/>
 - **NOTE:** student received 2007 ASME-NSF Design Essay Award (one of eight).
 - **NOTE:** student interned at BMW ITRC Summer 2008.
 - **NOTE:** student received 2009 ASME Teaching Fellowship (one of two)
 - **NOTE:** student received 2009 NIST CIE DETC Graduate Poster travel grant (one of three)
 - **NOTE:** student received 2010 Travel grant to attend Capstone Design Conference
 - **NOTE:** student received 2011 Travel Grant to attend Mudd Design Conference
 - **CURRENTLY WITH:** Florida Institute of Technology (Assistant Professor)
 - **Publications:** J48, J41, J40, J39, J22, C137, C126, C124, C120, C101, C100, C97, C96, C92, C88, C82, C80, C68, C62, C61, A15, A12
 5. Shankar, P., 2007-2011, Ph.D., "Development of a Design Method to Reduce Change Propagation Effects", **Graduated.** December 2011. (sole advisor). Supported by BMW/Michelin.
 - 1/20: Twenty Departmental PHD's awarded in 2011
 - **Cooper Library:** <http://etd.lib.clemson.edu/documents/1327691655/>
 - **CURRENTLY WITH:** Oshkosh Corporation (Senior Product Engineering Team Leader)
 - **NOTE:** student received 2008 ASME-NSF Design Essay Award (one of nine)
 - **NOTE:** student interned at International Truck Summer 2009
 - **CURRENTLY WITH:** Oshkosh Trucks (Project Leader)
 - **Publications:** J41, J39, J22, C127, C126, C117, C113, C96, C91, C61, P1

4. Sen, Chiradeep., 2007-2011, Ph.D., "A Formal Representation of Mechanical Functions to Support Physics-Based Computational Reasoning in Early Mechanical Design", **Graduated**. August 2011. (sole advisor). Supported by Hartness/BMW/CU.
 - 1/20: Twenty Departmental PHD's awarded in 2011
 - **Cooper Library:** <http://etd.lib.clemson.edu/documents/1327690764/>
 - **NOTE:** student received 2013 ASME CIE Division Best Dissertation Award (inaugural recipient)
 - **NOTE:** student received 2007 ASME-NSF Design Essay Award (one of eight).
 - **NOTE:** student received 2008 ASME-NSF Design Essay Award (one of nine)
 - **NOTE:** student received 2009 CAPPD DETC Graduate Poster travel grant (one of three)
 - **NOTE:** student received 2010 Department of Mechanical Engineering Teaching Fellowship
 - **CURRENTLY WITH:** Florida Institute of Technology (Assistant Professor)
 - **Publications:** J43, J36, J34, J30, J29, J26, J16, Ja11, Ja10, Ja6, Ja4, C129, C128, C115, C110, C95, C81, C71, C67, C66, C65, C52, C51
3. Teegavarapu, S., 2005-2009, Ph.D., "Foundations of Design Method Development", **Graduated**. May 2009. (sole advisory). Supported by BMW/CU/Michelin.
 - 1/6: Six Departmental PHD's awarded in 2009
 - **Cooper Library:** <http://etd.lib.clemson.edu/documents/1246559346/>
 - **NOTE:** student received 2005 ASME-NSF Design Essay Award (one of eight).
 - **NOTE:** student received 2006 ASME-NSF Design Essay Award (one of eight).
 - **CURRENTLY WITH:** Siemens (Senior Engineer)
 - **Publications:** J22, J18, J13, J9, B5, C62, C61, C59, C55, C54, C49, C48, C43, C35, C34
2. Anandan, S., 2004-2008, Ph.D., "Similarity metrics applied to graph based design model authoring", **Graduated**. August 2008. (sole advisor). Supported by Michelin/NSF/JPL.
 - 1/7: Seven Departmental PHD's awarded in 2018
 - **Cooper Library:** <http://etd.lib.clemson.edu/documents/1219855195/>
 - **NOTE:** student interned at Reliable Sprinklers Spring and Summer 2007.
 - **CURRENTLY WITH:** SolidWorks (API Lead Engineer)
 - **Publications:** Ja7, J7, J6, B5, C57, C41, C40, C34, C33
1. Pehlivan, S., 2002-2006, Ph.D., "Representation for Integration of Computer Aided Fixture Design Systems", **Graduated**. December 2006. (sole advisor). Supported by CU.
 - 1/7: Seven Departmental PHD's awarded in 2006
 - **Cooper Library:** TJ153 .P445 2006; <http://libcat.clemson.edu/record=b1913612~S15>
 - **CURRENTLY WITH:** Everest Production Corporation (Vice President)
 - **Publications:** J21, J11, C30, C26

Masters Graduates (thesis)

43. Vitosky, D., 2015-2016, MS, "Requirements LCA XXX", **Graduated** Aug. 2016. Supported by CU, Argentine Fellowship.
 - **Cooper Library:** http://tigerprints.clemson.edu/all_theses/2244/
 - **CURRENTLY WITH:** TTi (Product Engineer)
 - **Publications:**
42. Moylan, J., 2014-2015, MS, "Sound Reduction of Air Compressors Using a Systematic Approach", **Graduated** Dec. 2015. Supported by TTi.
 - **Cooper Library:** http://tigerprints.clemson.edu/all_theses/2244/
 - **CURRENTLY WITH:** TTi (Product Engineer)
 - **Publications:**
41. Rawal, V., 2014-2015, MS, "A Retrospective Study of the Motivations and Perceptions of Industry Sponsors and Academia Regarding Mechanical Engineering Capstone Design Program", **Graduated** Dec. 2015. Supported by CU/BMW.
 - **CURRENTLY WITH:**
 - **Publications:**

40. Ravikumar, N., 2014-2015, MS, "Development and Validation of an Optically-Based Strain Measuring Orthopaedic Screw for Fracture Fixation Implants", **Graduated** August 2015. Supported by CU (BioEngineering). (co-advisor with J. DesJardins)
- **Cooper Library:** http://tigerprints.clemson.edu/all_theses/2206/
 - **CURRENTLY WITH:** Clemson University (ME PhD Student)
 - **Publications:**
39. Dhulia, J., 2014-2015, MS, "A Systems Level Approach for Selection Between Manual and Automated Work Zones within Assembly Lines", **Graduated** August 2015. Supported by CU.
- **CURRENTLY WITH:**
 - **Publications:**
38. Sridhar, S., 2014-2015, MS, "Sensitivity and Precision Analysis of the Graph Complexity Connectivity Method", **Graduated** August 2015. Supported by CU.
- **Cooper Library:** http://tigerprints.clemson.edu/all_theses/2209/
 - **CURRENTLY WITH:**
 - **Publications:**
37. Thiagarajan, A., 2014-2015, MS, "Functional Thinking: A Protocol Study", **Graduated** August 2015. Supported by CU/BMW.
- **Cooper Library:** http://tigerprints.clemson.edu/all_theses/2195/
 - **CURRENTLY WITH:**
 - **Publications:**
36. Vasala, S., 2013-2014, MS, "A Comparative Study: Structural Complexity Metrics Applied Against Function and Assembly Product Graphs to Predict Market Price and Assembly Time", **Graduated** May 2014. Supported by CU.
- **Cooper Library:** http://tigerprints.clemson.edu/all_theses/1843/
 - **CURRENTLY WITH:** Schaffler
 - **Publications:**
35. Worinkeng, E., 2011-2013, MS, "Analyzing Requirement Type Influence on Generated Solutions", **Graduated** Dec. 2013. Supported by CU/BMW.
- **Cooper Library:** http://tigerprints.clemson.edu/all_theses/1815/
 - **CURRENTLY WITH:** Boeing
 - **Publications:**
34. Thimmaiah, S., 2012-2013, MS, "An Experimental Study on the Influence that Failure Number, Specialization, and Domain have on Confidence in Predicting System Failures", **Graduated** May 2013. Supported by CU/IFAI.
- **Cooper Library:** http://tigerprints.clemson.edu/all_theses/1654/
 - **CURRENTLY WITH:** MuSigma as Analyst
 - **Publications:**
33. Shanthakumar, A., 2010-2012, MS, "Development of Feature Recognition Algorithm for Automated Identification of Duplicate Geometries in CAD Models", **Graduated** Dec. 2012. Supported by NASA/Rotary/ARC/IFAI/CU.
- **Cooper Library:** http://tigerprints.clemson.edu/all_theses/1513/
 - **CURRENTLY WITH:** Part Maker as Software Engineer
 - **Publications:** C132, C119, C115
32. Hess, T., 2011-2012, MS, "Investigation of Prototype Roles in Conceptual Design Using Case Study and Protocol Study Methods", **Graduated** Aug. 2012. Supported by CU/IFAI.
- **Cooper Library:** <http://etd.lib.clemson.edu/documents/1349104126/>
 - **CURRENTLY WITH:** Polaris as Design Engineer
 - **Publications:** C124
31. Owensby, J., 2010-2012, MS, "Automated Assembly Time Prediction Tool Using Predefined Mates from CAD Assemblies", **Graduated** May 2012. Supported by CU.
- **Cooper Library:** <http://etd.lib.clemson.edu/documents/1340723825/>
 - **CURRENTLY WITH:** AEC as Product Engineer
 - **Publications:** C132, C119

30. Griese, D., 2010-2012, MS, "Finite Element Modeling and Design of Honeycomb Sandwich Panels for Acoustic Performance", **Graduated** May 2012. Supported by NASA/Rotary/BMW.
- **Cooper Library:** <http://etd.lib.clemson.edu/documents/1340720928/>
 - **CURRENTLY WITH:** Michelin as Tire Designer
 - **Publications:** Ja5, C133, C117, C113
29. Rayate, V., 2010-2012, MS, "A Tool for Selection of Design for Manufacturing and Assembly Rules During Product Design Stage While Considering End-of-Life Conditions", **Graduated** May 2012. Supported by CU/NASA/IFAI.
- **Cooper Library:** <http://etd.lib.clemson.edu/documents/1340720678/>
 - **CURRENTLY WITH:** KSPG
 - **Publications:** C134, C119
28. Miller, M., 2010-2011, MS, "Product and Process Based Assembly Time Estimation in Engineering Design" **Graduated** Dec 2011. (sole advisor). Supported by CU/BMW.
- **Cooper Library:** <http://etd.lib.clemson.edu/documents/1327697963/>
 - **CURRENTLY WITH:** KTM Consulting
 - **Publications:** C136, C133, C111
27. Schultz, J., 2009-2011, MS, "Modeling and Finite Element Analysis Methods for the Dynamic Crushing of Honeycomb Cellular Meso-Structures", **Graduated** May 2011. (co-advisor with L. Thompson). Supported by Michelin/NASA.
- **Cooper Library:** <http://etd.lib.clemson.edu/documents/1306872973/>
 - **CURRENTLY WITH:** ForceProtection
 - **Publications:** Ja5, C117, C95
26. Mathieson, J., 2009-2011, MS, "Connective Complexity Methods for Analysis and Prediction in Engineering Design", **Graduated** May 2011. (sole advisor). Supported by NASA/BMW/SC Space Grant.
- **Cooper Library:** <http://etd.lib.clemson.edu/documents/1306872320/>
 - **CURRENTLY WITH:** Clemson University, ME Department (PHD student)
 - **Publications:** Ja9, J45, C136, C127, C115, C114, C111, C103, C95, C94, C85, C80, C65, A10
25. Berglind, L., 2009-2010, MS, "Design Tool Development for Cellular Structure Synthesis to Achieve Desired Properties", **Graduated** December 2010. (sole advisor). Supported by Michelin/Johnson Controls.
- **Cooper Library:** <http://etd.lib.clemson.edu/documents/1306858953/>
 - **CURRENTLY WITH:** University of North Carolina – Charlotte, ME Department (PHD student)
 - **Publications:** J46, J28, C99, C89, C77, A13, P2
24. Richardson, J., 2009-2010, MS, "Incorporating Function Structures into Morphological Charts: A User Study", **Graduated** December 2010. (co-advisor with G. Mocko). Supported by BMW.
- **Cooper Library:** <http://etd.lib.clemson.edu/documents/1306858485/>
 - **CURRENTLY WITH:** EZ Go
 - **Publications:** Ja4, J42, C107
23. Namouz, E., 2009-2010, MS, "Mass and Assembly Time Reduction for Future Generation Automotive Vehicles Based on Existing Vehicle Model", **Graduated** December 2010. (co-advisor with G. Mocko). Supported by BMW/Johnson Controls.
- **Cooper Library:** <http://etd.lib.clemson.edu/documents/1306858732/>
 - **CURRENTLY WITH:** Clemson University ME Department (PHD Student)
 - **Publications:** Ja4, J47, C135, C132, C119, C113, C105, C102
22. Joshi, S., 2008-2010, MS, "Mapping Problem and Requirements to Solution: Document Analysis of Senior Design Projects", **Graduated** December 2010. (sole advisor). Supported by CU/Michelin/NASA.
- **Cooper Library:** <http://etd.lib.clemson.edu/documents/1306858033/>
 - **CURRENTLY WITH:** Clemson University ME Department (PHD Student)
 - **Publications:** J47, J37, C137, C130, C126, C121, C120, C89, C83, A15, A11
21. Kolla, A., 2008-2010, MS, "Design Method Development for the Design of Traction Systems", **Graduated** December 2010, (sole advisor). Supported by CU/ARC/Michelin/NASA.

- **Cooper Library:** <http://etd.lib.clemson.edu/documents/1285788510/>
 - **CURRENTLY WITH:** Superior Engineering
 - **Publications:** C87, C75, C64, P4
20. Palmer, G., 2008-2010, MS “The Characterization of Leadership within Undergraduate Engineering Design Teams through Case Study Analysis”, **Graduated** August 2010, (sole advisor). Supported by NASA/BMW/CU.
- **Cooper Library:** <http://etd.lib.clemson.edu/documents/1285786662/>
 - **CURRENTLY WITH:** Clemson University IE Department (PHD student)
 - **Publications:** C108, C88, C82
19. Smith, E., 2005-2010, MS, “Re-Engineering a Trash/Recycling Collection Vehicle”, **Graduated** May 2010, (sole advisor). Supported by EAI/CU/Fluor Daniel.
- **Cooper Library:** <http://etd.lib.clemson.edu/documents/1285614445/>
 - **CURRENTLY WITH:** Fluor Daniel
 - **Publications:** C45
18. Hannah, R., 2007-2009, MS, “User Study of Information Extracted from Engineering Representations”, **Graduated** Aug. 2009, (sole advisor). Supported by CU.
- **Cooper Library:** <http://etd.lib.clemson.edu/documents/1256570790/>
 - **CURRENTLY WITH:** Boeing
 - **Publications:** J37, C83, C56
17. Osborn, J., 2005-2009, MS, “Survey of Concurrent Engineering Environments and the Application of Best Practices towards the Development of Multiple Industry, Multiple Domain Environment”, **Graduated** Aug. 2009. (sole advisor). Supported by SCRA.
- **Cooper Library:** <http://etd.lib.clemson.edu/documents/1252424858/>
 - **CURRENTLY WITH:** SCRA
 - **Publications:** C109, C36
16. Sen, C., 2007-2009, MS, “A Study in the Information Content, Consistency, and Expressive Power of Function Structures in Mechanical Design”, **Graduated** May 2009. (co-advisor with Mocko). Supported by Hartness/BMW/CU.
- **Cooper Library:** <http://etd.lib.clemson.edu/documents/1249065928/>
 - **CURRENTLY WITH:** Oregon State University (Post-Doc)
 - **Publications:** J33, J29, J28, J25, J16, Ja15, Ja6, C115, C110, C95, C81, C71, C67, C66, C65, C52, C51
15. Stowe, D., 2007-2009, MS, “Investigating the Role of Prototyping in Mechanical Design Using Case Study Validation”, **Graduated** May 2009. (sole advisor). Supported by NASA/SC Space Grant.
- **Cooper Library:** <http://etd.lib.clemson.edu/documents/1246558333/>
 - **NOTE:** student received 2007 SC Space Grant Fellowship
 - **CURRENTLY WITH:** Corvid Technologies
 - **Publications:** C104, C58
14. Michaelraj, A., 2007-2009, MS, “Taxonomy of Physical Prototypes: Structure and Validation”, **Graduated** May 2009. (sole advisor). Supported by Michelin/CU.
- **Cooper Library:** <http://etd.lib.clemson.edu/documents/1246565761/>
 - **CURRENTLY WITH:** Trane
 - **Publications:** J22, C62, C61, C56, P1
13. Miller, W., 2006-2008, MS, “Three Design Tool Focused Case Studies of Mechanical Engineering Design Projects”, **Graduated** Aug. 2008. (sole advisor) Supported by EAI/Michelin.
- **Cooper Library:** <http://etd.lib.clemson.edu/documents/1220473549/>
 - **NOTE:** student interned at Ryobi Summer 2008.
 - **CURRENTLY WITH:** TTI
 - **Publications:** Ja8, B7, C59, C55
12. Kanda, A., 2006-2008, MS, “An Investigative Study of Patent Information and Representation from a Mechanical Engineering Design Perspective”, **Graduated** Aug. 2008. (sole advisor) Supported by BMW.
- **Cooper Library:** <http://etd.lib.clemson.edu/documents/1219953747/>

- **CURRENTLY WITH:**
 - **Publications:** C62, C61, C49
11. Johnston, P., 2006-2007, MS, "The Role of Computer Aided Engineering in Developing a Combined Trash and Recycling Truck: A Case Study", **Graduated** Dec. 2007. (sole advisor) Supported by EAI.
 - **Cooper Library:** <http://etd.lib.clemson.edu/documents/1202500607/>
 - **CURRENTLY WITH:** Corning Cable Systems
 - **Publications:** J31, C45, A6
 10. Smith, G., 2003-2007, MS, "Morphological Charts: A Systematic Exploration of Qualitative Design Space", **Graduated** Dec. 2007. (sole advisor). Supported by Michelin.
 - **Cooper Library:** <http://etd.lib.clemson.edu/documents/1202500458/>
 - **CURRENTLY WITH:** Michelin
 - **Publications:** J42, C37, C36
 9. Kayyar, M., 2006-2007, MS, "Development of a Design Enabler Tool for Frame Analysis for a Small Enterprise: A Case Study", **Graduated** Dec. 2007. (co-advisor with S. Biggers). Supported by WMP.
 - **Cooper Library:** <http://etd.lib.clemson.edu/documents/1202499546/>
 - **CURRENTLY WITH:** Gulfstream
 - **Publications:** J44, C46
 8. Srirangam, N., 2006-2007, MS, "A Case Study on Design Exemplar as a Search and Retrieval Tool", **Graduated** Dec. 2007. (sole advisor). Supported by CU/Michelin.
 - **Cooper Library:** <http://etd.lib.clemson.edu/documents/1202418227/>
 - **CURRENTLY WITH:**
 - **Publications:** Ja7, C57
 7. Chavali, S., 2005-2007, MS, "Case Study Investigating Rule Based Design in an Industrial Setting", **Graduated** Dec. 2007. (co-advisor with G. Mocko). Supported by Hartness International.
 - **Cooper Library:** <http://etd.lib.clemson.edu/documents/1202418163/>
 - **NOTE:** student interned at Reliable Sprinklers Fall 2006.
 - **CURRENTLY WITH:** Schneider Electric
 - **Publications:** J16, C52
 6. Putti, S., 2004-2007, MS, "Design Exemplar: Dynamic Networks", **Graduated** May 2007. (sole advisor). Supported by CU.
 - **Cooper Library:** <http://etd.lib.clemson.edu/documents/1181250672/>
 - **NOTE:** student received 2005 ASME-NSF Design Essay Award (one of eight).
 - **CURRENTLY WITH:**
 - **Publications:** C38
 5. Snider, M., 2004-2006, MS, "Extended Toolset for Reverse Engineering to Support Lightweight Engineering", **Graduated**. August 2006. (sole advisor). Supported by BMW.
 - **Cooper Library:** TJ153 .S64 2006; <http://libcat.clemson.edu/record=b1913623~S1>
 - **NOTE:** student interned at BMW Spartanburg Spring 2006.
 - **CURRENTLY WITH:** Force Protection
 - **Publications:** J13, J9, C35, C32
 4. Wetmore, W., 2004, MS, "PRSM: Proper Review Selection Matrix", **Graduated**, December 2004. (sole advisor). Supported by Bosch.
 - **Cooper Library:** TJ153 .W48 2004; <http://libcat.clemson.edu/record=b1828560~S1>
 - **CURRENTLY WITH:** SCANA
 - **Publications:** J23, J4, C23, C19, C18
 3. Bayanker, S., 2004, MS, "A Comparative Study of CAD Input Devices", **Graduated**, December 2004, (research advisor; co-advisor with Anand Gramopadhye). Supported by CU-Industrial Engineering.
 - **Cooper Library:** T56.24 .B439 2004; <http://libcat.clemson.edu/record=b1828852~S1>
 - **CURRENTLY WITH:**
 - **Publications:** J20, C39
 2. Divekar, A., 2004, MS, "The Design Exemplar: Foundation for a CAD Query Language", **Graduated**, August 2004. (sole advisor). Supported by CU.
 - **Cooper Library:** TJ153 .D59 2004; <http://libcat.clemson.edu/record=b1883838~S1>

- **CURRENTLY WITH:** 3D PLM Software
 - **Publications:** J6, J4, C25, C16, C14
1. Ostergaard, K., 2002, MS, "Investigation of Resistance to Information Flow in the Collaborative Design Process", **Graduated**, December 2002. (sole advisor). Supported by Michelin.
 - **Cooper Library:** TJ153 .O835 2002; <http://libcat.clemson.edu/record=b1771133~S1>
 - **CURRENTLY WITH:** Urban Home Revival (President)
 - **Publications:** J17, J8, J4, C22, C18, C17, C13

Masters Graduates (non-thesis)

8. Jaradat, M., 2013-2015, MS (en route), "Model Construction for Spinal Cord Damage Analysis", **Graduated** (MS en route) December 2015. (department advisor). Supported by CU.
7. Phelan, K., 2012-2014, MS (en route), "Software Support for Verification, Validation, and Testing Planning", **Graduated** (MS en route) May 2014. (sole advisor). Supported by US Army/BMW.
6. Thoe, S., 2011-2014, MS (non-thesis), "Complexity Metric Prediction of Problem Effort", **Graduated** May 2014. (sole advisor). Supported by CU
 - **CURRENTLY WITH:** ZF
 - **Publications:** C104, C63, A16,
5. Veisz, D., 2009-2010, MS (non-thesis), "Comparison of Academic and Industry Perceptions of Role of CAD in Engineering Design", **Graduated** May 2010. (sole advisor). Supported by Reliable Sprinklers.
 - **CURRENTLY WITH:** Reliable Sprinklers
 - **Publications:** J47
4. Morkos, B., 2007-2008, MS (en route), "Thermal Management Design for LED Headlights", **Graduated** (MS en route) May 2008. (sole advisor) Supported by BMW.
 - **Publications:** J22, Ja11, Ja8, Ja7, C124, C120, C101, C100, C97, C96, C92, C88, C82, C80, C68, C62, C61, A15, A12
3. Nowlay, A., 2006-2007, MS (non-thesis), "Design of Tail Light Assembly Fixture for X5", **Graduated** Aug. 2007. (sole advisor). Supported by CU.
 - **CURRENTLY WITH:** Siemens
2. Troy, T., 2005-2006, MS (non-thesis), "Technology Innovation vs. Incentives for Influencing Public Policy", **Graduated**, May 2006. (sole advisor). Supported by CU.
 - **CURRENTLY WITH:** Chicago Bridge and Iron
 - **Publications:** J31, C37, C36, A6
1. Gunturi, S., 2002-2003, MS (non-thesis), "Development of a Collaborative CAD System to Support Distributed Querying Using PDA Hardware", **Graduated**, December 2003. (co-advisor with Georges Fadel). Supported by CU.
 - **CURRENTLY WITH:**

Current Graduate Advising

MS Students

9. Addis, R., 2016-present, MS, *Meso-Structure Design Guidelines*, current. Supported by CU.
8. Chickarello, D., 2016-present, MS, *TBD*,
7. Gendreau, E., 2016-present, MS, *TBD*,
6. Delspina, B., 2015-present, MS, *Requirements Evolution*, current. Supported by ProNova/NSF.
5. Knackstedt, S., 2015-present, MS, *Part Change Management*, current. Supported by BMW/NSF/CU.
4. Andrews, P., 2015-present, MS, *ANN Architecture Performance*, current. Supported by BMW/NSF/CU. (switched to non-thesis Summer 2016 to focus on 6th year of eligibility for Clemson baseball team)
3. Patel, A., 2015-present, MS, *Function Thinking*, current. Supported by BMW/NSF.
1. O'Shields, S., 2014-present, MS, *Collaborative Engineering in Industry*, current. Supported by CU. (anticipated May 2016 graduation/transition to PHD program)

Ph.D. Students

6. Righter, J., 2015-present, PhD., *Teamwork in Design*, current. Supported by CU.

5. Gill, A., 2014-present, Ph.D., *Graph Complexity to Predict Design Information*, current. (sole advisor). Supported by CU/BMW.
4. Yoder, M., 2014-present, Ph.D., *Meso-Structures*, current. (co-advisor w/L. Thompson).
3. Salmi, A., 2013-present, Ph.D., *Level of Automation Selection*, current. (co-advisor w/E. Blanco and P. David at INP-Grenoble).
2. Jaradat, M., 2013-present, Ph.D., *Modeling of Spinal Cord Injuries*, current. (co-advisor w/ Choi).
1. Fazelpour, M., 2012-present, Ph.D., *Meta-Material Design*, current. (sole advisor). Supported by CU. (anticipated May 2016 graduation)

Undergraduate (Completed)

37. Curran, T., 2013-2014, Undergraduate Research, "Wireless Heated Mug", **completed**, May 2014.
36. Noranzyk, A., 2011-2012, Undergraduate Research, "Honeycomb Acoustic Testing", **completed**, May 2012
35. Fenton, T., 2012, Undergraduate Research, "Manufacturing Analysis", **completed**, May 2012.
34. Thoe, S., 2007-2011, Undergraduate Research, "Lunar Tweel Design", **completed**, May 2011.
33. Hancock, T., 2009, Summer Intern, "Traction Concept Design/Testing", **completed**, Aug. 2009.
32. Julian, M., 2009, ME Research, "Traction Concept Design/Testing", **completed**, Aug. 2009.
31. Edge, M., 2009, Summer Intern, "Traction Concept Design/Testing", **completed**, Aug. 2009.
30. Edge, K., 2009, Summer Intern, "Traction Concept Design/Testing", **completed**, Aug. 2009.
29. Satterfield, H., 2009, ME Research, "Sand Modeling and Testing", **completed**, Aug. 2009.
28. Elmore, B., 2009, EUREKA, "Sand Modeling and Testing", **completed**, Aug. 2009.
27. Tanner, J., 2009, EUREKA, "Sand Modeling and Testing", **completed**, Aug. 2009.
26. Wallace, C., 2009, EUREKA, "Traction Testing for Lunar Wheel", **completed**, Aug. 2009.
25. Mendes, M., 2009, EUREKA, "Traction Testing for Lunar Wheel", **completed**, Aug. 2009.
24. Torok, M., 2009, Undergraduate SC Space Grant Research, "Balloon Tests", **completed**, May 2009.
23. Mathieson, J., 2008-2009, Undergraduate Honors Research, "Information Generation", **completed**, May 2009.
22. Namouz, E., 2008, Undergraduate Research, "Lazy Part Redesign", **completed**, Dec. 2009.
21. Torok, M., 2008, Summer Research, "Design of Lunar Testing", **completed**, Aug. 2008.
20. O'Dell, A., 2008, Summer Research, "Design of Lunar Testing", **completed**, Aug. 2008.
19. Switzer, S., 2008, EUREKA, "Traction Testing for Lunar Wheel", **completed**, Aug. 2008.
18. King, K., 2008, EUREKA, "Adhesion Testing for Lunar Tread", **completed**, Aug. 2008.
17. Roc, G., 2008, EUREKA, "Wear Testing for Lunar Tread", **completed**, Aug. 2008.
16. Thoe, S., 2008, "Creative Inquiry, "Mini-Go-Round Design", **completed**, May 2008.
15. Merrino, J., 2008, "Creative Inquiry, "Mini-Go-Round Design", **completed**, May 2008.
14. Northup, K., 2008, "Creative Inquiry, "Mini-Go-Round Design", **completed**, May 2008.
13. Wallis, K., 2008, Creative Inquiry, "Mini-Go-Round Design", **completed**, May 2008.
12. Conger, K., 2007, Undergraduate Honors, "Lunar Tweel Design", **completed**, Dec. 2007.
11. Terry, C., 2007, Undergraduate Research, "Lunar Tweel Design", **completed**, Dec. 2007.
10. Thoe, S., 2007, EUREKA, "Pressure Measurement for Testing Tweels™", **completed**, Aug. 2007.
9. Miller, W., 2006, Undergraduate Research, "Facility Design for Off-load Site of Combined Recycling and Trash Truck", **completed**, May 2006
8. Werner, H., 2006, Undergraduate Research, "Trash Compactor Design for Combined Recycling and Trash Truck", **completed**, May 2006.
7. Austin, M., 2005, Undergraduate Research, "Lightweight Engineering: BMW 6 Series", **completed**, December 2005.
6. Manning, C., 2005, Undergraduate Research, "Lightweight Engineering: BMW 3 Series", **completed**, December 2005.
5. Pauley, S., 2005, Undergraduate Research, "Lightweight Engineering: Opel Astra", **completed**, December 2005.
4. Parker, R., 2005, Undergraduate Research, "Adapted Foot Steering", **completed**, May 2005.
 - NOTE: resulted in a 5th place finish at the Regional ASME Old Guard Competition.
3. Dempsey, C., 2004, Undergraduate Research, "Case Studies in Fixture Design with a New Representation", **completed**, May 2005.
 - NOTE: resulted in 2005 ASME Conference Publication.

2. Nichols, H., 2004, Undergraduate Research, "University and Industry Collaboration", **completed**, May 2004.
1. Danker, J., 2002, REU Student, "Design Exemplars and Gear Design", **completed**, August 2002.

Diplome & International (Completed)

5. Walchli, N., 2004, Diplome, "Impact of Innovation to Sustainable Business Success", **Graduated**, (co-advisor with Markus Meier and Georges Fadel)
4. Gunzenhauser, M., 2004, Diplome, "Collaboration between University and Industry in the Field of Product Innovation", **Graduated**, (co-advisor with Markus Meier and Georges Fadel)
3. Wommer, J., 2004, German Foreign Exchange, "Integration of CNC to an Undergraduate Lab Sequence", **completed**.
2. Berthod, Benoit, 2003, French Foreign Exchange, "Development of a Design Exemplar Production System for Gear Design", **completed**, July 2003.
1. Galea, F., 2002, French Foreign Exchange, "Implementation of the CADShell on the PocketPC", **completed**, August 2002.

Visiting Graduate Students (Completed)

3. Karimian, P., (PHD) 2009, summer study (NASA), home institution: University of Maryland. **completed**. home advisor: J. Hermann.
2. Kale, V., 2006, (MS) semester study (NSF), home institution: Michigan Tech. **completed**. home advisor: B. Bettig.
1. Bapat, V., (PHD) 2006, semester study (NSF), home institution: Michigan Tech. **completed**. home advisor: B. Bettig

Post-Doctoral (Completed)

5. Ju, J., 2008-2011, Ph.D. from Texas A&M University (2006), **completed**. Supported by Michelin/NASA.
 - **CURRENTLY WITH:** North Texas University Mechanical Engineering Department (Assistant Professor)
 - **Publications:** J32, J31, J27, J26, Ja13, Ja12, Ja2, Ja1, C117, C116, C112, C98, C91, C89, C87, C79, C77, C76, C73, C72, C70, A14, A13, P4, P3, P2, P1
4. Karimian, P., 2010, Ph.D. from University of Maryland (2010), **completed**. Supported by BMW/NASA.
 - **NOTE:** left the position early for personal health reasons.
3. Ma, J., 2008-2010, Ph.D. from Kansas State University (2007), **completed**. Supported by NASA.
 - **CURRENTLY WITH:** St. Louis University Mechanical and Aerospace Engineering Department (Assistant Professor)
 - **Publications:** C123, C122, C119, C106, C93, C90, C84, C79, C78, C75, C74, C69, C64
2. Ameri, F., 2007-2008, Ph.D. from University of Michigan (2006), **completed**. Supported by BMW/Michelin.
 - **CURRENTLY WITH:** Texas State University Industrial and Manufacturing Engineering Department (Assistant Professor)
 - **Publications:** J29, J21, J15, J14, Ja4, B6, C67, C53, C50, C46
1. Maier, J., 2006-2008, Ph.D. from Clemson University (2005), **completed**. Supported by BMW/NSF/Michelin.
 - **CURRENTLY WITH:** Clemson University General Engineering Department (Lecturer)
 - **Publications:** J30, C43, C42, C41, C40, A7, A6

Hosted Visitors

1. Mochida, S., 2015-2016 (), Japan.
2. Boujut, F., 2015 (Grenoble Tech), France.
3. Zanker, W., 2016 (UMAS), Germany.
4. Khaustov, S., 2012 (Fulbright), Ukraine.

TEACHING

Total courses taught: 20. Total assignments taught: 142. This is an average of over 10 assignments per year (Fall/Spring/Summer).

Courses Taught (undergraduate: 13 courses: 107 assignments)

ME 2900, 3900, 4900 (formerly ME 290, 390, 490), *Creative Inquiry*, (S08, F08, S09, F09x2, S10x2, F10x2, S11x2, F11, S12, F12, S13, F13, S14x2, Su14, F14x2, S15x2, F15x2, S16x2)

- NOTE: four conference papers have directly resulted from this work
- NOTE: an invention disclosure has been filed with Clemson University and is being considered for patenting
- NOTE: Lunar Tweel Development – testing design. Four students enrolled (all female) and coached by a graduate student (female)
- NOTE: the team placed 2nd in the 2008 SE ASEE design competition (most entries were for senior design projects; team consisted of four freshmen and sophomores)
- NOTE: formerly taught in the ENGR rubric prior to F11

ENGR 490, *Product Innovation*, (M07)

- NOTE: same course as ME 493 from May 2006 – Offered through General Engineering to support more interdisciplinary activities
- NOTE: One industry sponsor funded the project (\$7,500 collected for the Capstone Foundation Account)

IE 465, *Facilities Planning*, (F09)

- NOTE: co-taught the course with B. Melloy.

ME 202, *Fundamentals of Mechanical Systems*, (S02, F02x2, F03, F04, S05, F06)

- NOTE: a journal paper has resulted from the curriculum development in this class
- NOTE: two conference papers have resulted from the curriculum development in this class

ME 306, *Fundamentals of Machine Design*, (S03, S04, Su04)

ME 4010 (formerly ME 401), *Introduction to Engineering Design*, (F10, S11, F11, Su13, F13, S14, Su14, F14x2, S15, F15x2)

ME 402 Coordinator, *Internship in Engineering Design*, (F04, S05, F05, S06, F06, S07, F07, S08, F08, S09, F09, S10, Su10, Su11, Su12)

- NOTE: Traveled to Salt Lake City, UT in Fall 2009 to visit peer institutions to benchmark capstone design courses (BYU, Utah)
- NOTE: Traveled to Boston, MA in Spring 2006 to visit peer institutions to benchmark capstone design courses (BU, WPI, Olin College, MIT).
- NOTE: Fifty-eight industry sponsored projects (~\$430,000 collected for the Capstone Foundation Account).
- NOTE: took an undergraduate student and their design prototype to South Korea for International Capstone Design Fair in 2006, 2007, and 2008 (won second place in 2008)

ME 4020 (formerly ME 402) Project Advisor, *Internship in Engineering Design*, (S02, F03, S04, F04x2, S05, F05x3, S06, F06, S07, F07, S08, F08, S09, F09, S10x2, Su10*, Su11*, S12, Su12, F13)

- NOTE: In summer 2010 took 9 undergraduate students to Queretaro, Mexico for six week senior design program jointly with 5 WVU students and 16 Mexican students from UAQ, ITQ, Monterrey Tech, and CICATA. Sponsors from: VRK, Bombardier, CENAM, IMT, CIATEQ, CIAT, Condumex
- NOTE: In Summer 2011 took 13 undergraduate students to Queretaro, Mexico for six week senior design program jointly with 7 WVU students and 20 Mexican students from UAQ, ITQ, Monterrey Tech, CICATA, ITP. Sponsors from: Bombarier, CIATEQ, In-Mec, CENAM, MABE, Condumex, Tremec, Case-New Holland
- NOTE: in Summer 2012 completed the first summer version of ME 402 (capstone project) during the summer with BMW.

ME 415, *Undergraduate Research*, (13 students)

ME 471, *Computer Aided Engineering, Analysis, and Design*, (S04, F08, F10)

ME 4550 (formerly 455), *Design for Manufacturing*, (F05, S07, S08, S09, S10, S11, S12, F13, Su14, Su15, Su16)

- NOTE: converted the course to a fully on-line, self-paced course for summer offerings

ME 493, *Independent Studies*, (9 students)

ME 493, *Product Innovation*, (M06)

- NOTE: Michelin is considering applying for patents based on the student work in this class.
- NOTE: Two industry sponsors funded the projects (\$10,000 collected for the Capstone Foundation Account)
- NOTE: Course won Innovations in Education Award 2006 (facilitated by Deloitte)

Courses Taught (graduate: 7 courses, 35 assignments)

IE 8930, *Design for Assembly and Manufacturing*, (S14)

- NOTE: the course is developed for on-line delivery

ME 6550 (formerly 655), *Design for Manufacturing* (F13, Su14, Su15, Su16) as ME 655 (F05, S07, S08, S09, S10, S11, S12)

ME 671, *Computer Aided Engineering, Analysis, and Design*, (S04, F08)

ME 693, *Product Innovation*, (M06, M07)

- NOTE: Michelin considered applying for patents based on the student work in this class.
- NOTE: this course is being studied for replication in the Electrical, Bio Engineering, and Civil Engineering Departments in various incarnations.

ME 870, *Advanced Engineering Design Methods*, (S06, F08, F09, F10)

- NOTE: one conference paper has resulted from student work in this class
- NOTE: one journal paper has resulted from student work in this class.

ME 8720, *Design Automation for Mechanical Engineers*, (S12, S15) as ME 893 (F03, S06, F07)

- NOTE: formerly offered as a special topics course in F03, S06, and F07

ME 8730, *Research Methods in Design*, (S14, S16), as ME 873 (F11), as ME 893 (Collaborative Design F02, F05; Coaching F04, F05, F06, F07, S09)

- NOTE: formerly offered as a special topics course in F02, F04, F05, F06, F07, and S09
- ME 893, *Research Issues in Collaborative Design*, (F02, F05)
 - NOTE: four conferences papers and one journal paper have resulted from student work in this class
- ME 893, *Graduate Design Coaching*, (F04, F05, F06, F07, S09)
 - NOTE: two conference paper has resulted from student work in this class
 - NOTE: one journal paper has resulted from student work in this class.

New Course Development

IE 8930, Special Topics – Design for Assembly and Manufacturing (S14) – Online course

ME 493/693/893, Special Topics – Product Innovation, May06, May07 (Relocated to ENGR 490 for May07)

ME 893, Special Topics – Collaborative Design Research, F02, F04

ME 893, Special Topics – Design Automation for Mechanical Engineers, F03, S06

ME 893, Special Topics – Design Coach Management, F04, F05, F06, F07, S09.

ME 893, Special Topics – Research Methods in Engineering Design, F11

ME 290, 390, 490 – Creative Inquiry for Mechanical Engineering

ME 872 – Design Automation for Mechanical Engineers

ME 873 – Collaborative Design Research Methods

UNIVERSITY AND PUBLIC SERVICE

Committees

Department:

Member, Curriculum Committee (2016-present)

Director of Graduate Studies (2014-present)

Member, Departmental Tenure/Promotion/Reappointment Committee (2013-present)

Member, Endowed Chair Review Committee (2014) (elected)

Member, Department Chair Review Committee (2014) (elected)

Member, Curriculum/Laboratory/International Committee (2013-2015)

Convener, Curriculum/Laboratory/International Committee (2010-2012)

Chair, Design and Manufacturing Group (2010-2011) (elected)

Member, Department Chair Advisory Committee (2010-2011) (elected)

Member, Department Faculty Search Committee (2010-2011)

Member, Undergraduate Committee (2008-2012)
Secretary, Departmental (2002-2005)
Member, Awards Committee (2002-2008)
ASME Faculty Advisor (2002-2003) (co-advised with J. Minor)
ASME Faculty Advisor (2003-2007)
ASME Faculty Advisor (2007-2008) (co-advised with G. Mocko)

College:

ABET Steering Committee (2016-present)
Member, Industrial Engineering Department Tenure/Promotion/Reappointment Committee (2014)
CoES Awards Selection Committee (2014)
Chair, Search Committee for Associate Dean of Research (2013) (elected)
Member, Dean's Advisory Committee (2013-2015)
Member, CoES Curriculum Committee (2010-2012)
Member, General Engineering Freshman Advisory Committee (2010-2012)
McQueen-Quattlebaum Award Selection Committee (2006)

University:

Provost's Safety Culture Taskforce (2016-present)
Graduate Council (2016-present) (elected)
Grievance Board (2016-present) (elected)
Assessment Committee (2015-present) (elected)
Senator, Faculty Senate (2013-2016) (elected)
Chair, Faculty Senate Finance Committee (2015-2016)
Chair, University Oversight and Budget Committee (2015-2016)
Member, Faculty Senate Executive Advisory Committee (2015-2016)
Member, Faculty Senate Sub-Committee on Research (2013-2015)
Member, University Research Committee (2011-2014) (elected)
Member, Graduate Council (2011-2012) (elected)
Member, Graduate College Curriculum Committee (2011-2012) (elected)
Member, Freshman/Sophomore Committee (2010-2011) (elected)

Other Service

External Tenure/Promotion evaluator for:

- University of Idaho (2012)
- Washington State University (2013)
- Colorado School of Mines (2014)
- Bucknell University (2015)
- The Ohio State University (2015)
- University of Louisville (2015)
- University of Buffalo (2015)
- Oregon State University (2016)
- Pennsylvania State University (2016)

Served as an external Ph.D. dissertation reviewer for Srikat Bansal of the Indian Institute of Technology-Kanpur in spring 2006. Thesis topic was developing a feature based fixture recognition system.

Senior Design Lab Development/Coordinator, Established a dedicated lab for the senior design course sequence (EIB 252/253: The WarRoom). Equipped lab with computers, software, hand tools, library materials, and dedicated teaching assistant for the lab. (2004-2010)

CAD Software Coordinator for Department, Arranged for the purchase of UGS (NX, IDEAS, SolidEdge), CATIA, SolidWorks for departmental educational use (2003-present)

MSDNAA Software Coordinator for Department, Arranged for the registration and support of Microsoft Development Package for Academic Institutions as incorporated into departmental educational use (2006-present)

Advisor, American Society of Mechanical Engineers, Student Chapter (2004-2007)

Co-Faculty Advisor, American Society of Mechanical Engineer, Student Chapter (2002-2003, 2008)

CAD/RP lab development, developed a four week lab sequence (jointly with Georges Fadel) that introduces Sophomore ME students to concepts and principles associated with CAD, Rapid Prototyping, Metrology, and Design of Experiments (2003-2006)
Faculty Coach, Human Powered Vehicle, ASME Clemson (2002)

MISCELLANEOUS

Research Collaborators at Clemson (*no longer at Clemson)

ME: Drs. Biggers, Fadel, Grujicic, Huang*, Joseph, Mocko, Pataky, Saylor, Thompson, Turner, Wagner, Wood*

AuE: Drs. Kurfess*, Mears, Ziegert*

BioE: Dr. Desjardins

CE: Dr. Ravichandran

CS: Drs. Goddard, Hodges, Apon

Gen. Engr: Dr. Ohland*

IE: Drs. Gramopadhye, Greenstein, Kurz, Mayorga*

MSE: Drs. Blouin, Cole*, Rack*

Education: Drs. Linnell*, Switzer

Psychology: Dr. Shuffler

General Contributions

Clemson University Post-Doctoral Association, 2016, invited as guest panelist to annual dinner (September 23, 2016)

Clemson Elementary, 2011, "Future Engineers Club", coordinated an afterschool club activity at the elementary school for 20 fifth graders and graduate students as they design and build wind tunnels for use in the elementary school classrooms (E. Namouz, S. Joshi, M. Miller, C. Shorts).

Boy Scouts, 2011, Invention Merit Badge Workshop, coordinated a workshop on engineering design for 19 Boy Scouts and leaders on Saturday morning (1 day) (students: P. Mehta, J. Owensby, T. Hess, A. Shanthakumar, V. Rayate)

Cub Scouts, 2011, Blue and Gold Banquet guest speaker on engineering and space exploration. Gave a talk with prototype lunar wheels to Cub Scouts from 1st – 7th grade (1 day, 2011) (student: J. Mathieson)

Clemson Alumni Association "Bring Your Daughter to Clemson Weekend" – offered two Reverse Engineering Workshops for girls 5th-11th grade (1 day, 2008) (students: M. Orr, A. O'Dell, T. Camp)

Clemson Elementary "Math Superstars" – volunteer to work weekly with 1st-3rd graders on extra math projects and assignments (2007-2010)

Clemson Elementary "Future Engineers" – coordinated a 8 week sequence of reverse engineering consumer products for the 13 student club meeting every week after school (2009-2010) (students: B. Caldwell, B. Morkos, S. Joshi)

Clemson Elementary "Paws for Safety" – Demonstrated the working cold chamber Tweel test rig that was designed and built for Lunar Tweel projects (1 day, 2008) (students: A. Kanda, S. Miller, G. Kauffman)

Clemson Elementary "Space Week" – Gave a teaching unit to first grade class on space exploration and demonstrated the active work on the Lunar Tweel (1 day, 2008) (students: M. Orr)

Clemson Elementary, 2007, Gave a talk to Kindergarten class on space exploration. Used footage from the JPL/Michelin Tweel project to interest students in space (1 day; 2007)

Clemson Girl Scouts Weekend, 2006, Introduced girl scouts (girls 12-18) to concepts of mechanical engineering (what is an engineer, how does this differ from scientists, c-sketch, morphological charts, and gallery method as tools for design) (1 day; 2006)

Reverse Engineering for Elementary Schools, 2005, Developed and conducted a 5 week module on reverse engineering (principles, tools, and methods) to Upper Elementary at Clemson Montessori in Spring 2005. Module included undergraduate and graduate student participation. NOTE: This module has been requested by elementary and high schools in Greenville and Anderson and is under further development.

University Lutheran Church Summer Children's Program, 2005, provided a lab tour and explanation of mechanical engineering to 4-12 year olds.

Cub Scouts, 2005, Introduced boys to engineering design principles and a specific idea generation method (Collaborative Sketching). NOTE: an example is included in supplemental documentation.

Central Arizona Regional Science and Engineering Fair 2000 – Judged local secondary school student engineering and science projects. (2000)

Coordinated Panel Discussion – “Technology Transfer from Academia to Industry – How to Leverage Your Research into Profits”. Responsible for garnering funding to bring an international expert on technology transfer. Primary contact with entire panel of experts. Developed format and acted as MC for the discussion session. Compiled and edited panelist paper submissions for Preparing Future Faculty Occasional Series. (2000)

Panelist for the “Success in Graduate Study Workshop” – ASU Graduate College. Discussed experiences as a graduate student at ASU with new ASU doctoral students. (2000)

Minority Engineering Program – tutored minority engineering students in statics, dynamics, physics, and calculus. (1998-1999)

Mathematics, Engineering, and Science Achievement (MESA) – worked with middle school and high school science classes exploring science and engineering projects through extra-curricular activities. Built a “wind tunnel” for middle school students and experimented with the forces of flight. Helped the teachers integrate science projects into their curriculum. Helped organize MESA Day, an academic outreach program at Tribal American reservation schools (1998-1999)

Dean’s Curriculum Committee, University of Missouri – First student representative on committee. Worked in development of new courses, degrees, and ABET certification. (1996-1997)

Engineering Graduate Council, University of Missouri – Founding member of graduate engineering student council. Organized to voice concerns in college budget, faculty hunts, curriculum development, and other issues. (1995-1997)

Language

French – Writing (intermediate); Reading (intermediate); Speaking (moderate) (4 years HS, 2 years college, **11 months of residency**)

Spanish – Writing (low); Reading (low); Speaking (low) (1 year HS, **4 months residency**)

Japanese – Writing (low); Reading (low); Speaking (low) (1 year college; **7 months residency**)

September 20, 2016