CHRISTINA L. BLOEBAUM

Dennis and Rebecca Muilenburg Professor of Aerospace Engineering
Department Aerospace Engineering

1620F Howe Hall
Ames, Iowa 50011

bloebaum@iastate.edu
http://www.aere.iastate.edu/bloebaum/

Education:

Ph.D.	Aerospace Engineering, University of Florida, 1991
Title:	Formal and Heuristic System Decomposition Methods in Multidisciplinary Synthesis
Advisor:	Dr. Prabhat Hajela
M.S.	Aerospace Engineering, University of Florida, 1987
Title:	Implementation of Global Sensitivity Analysis in Dual Structural/Control Optimization
Advisor:	Dr. Prabhat Hajela
B.S.	Aerospace Engineering, University of Florida, 1986

Technical Interests:

Design of Complex Engineered Systems, Value Driven Design, UAS for Health Monitoring, Multidisciplinary Design Synthesis, Visualization and Visual Design Steering for Large-scale Optimal Design, Visualization of Multidimensional/Multivariate Data, Structural Analysis and Optimization

Professional Experience:

8/17 – present	Interim Department Chair, Department of Aerospace Engineering, Iowa State University, Ames, Iowa
8/17 – present	Director, Iowa Space Grant Consortium (NASA), Iowa State University, Ames, Iowa (Interim Director, 8/17-9/17)
8/12 – present	Dennis and Rebecca Muilenburg Professor for Aerospace Engineering, Department of Aerospace Engineering, Iowa State University, Ames, Iowa
8/15 – 7/17	Associate Chair for Research, Department of Aerospace Engineering, Iowa State University, Ames, Iowa
8/13 – 12/15	Director of Graduate Education, Department of Aerospace Engineering, Iowa

State University, Ames, Iowa

1/09 – 8/12 Program Director for Engineering Systems and Design (ESD), System Science (SYS), Design of Engineering Material Systems (DEMS) and Origami Design for Integration of Self-Assembling Systems for Engineering Innovation (ODISSEI), National Science Foundation (on IPA to NSF), Arlington, Virginia

2/10 – 8/12 Founding Member, Organizer, and Lead, Interagency Working Group on Engineered Systems (the National Science Foundation representative of 13 Federal Agencies), Washington, D.C.

1/11 – 8/12 Member (the National Science Foundation representative), Office of Science and Technology Policy (OSTP – White House) Aeronautics Science and Technology Subcommittee (ASTS), Washington, D.C.

9/06 – 12/08 Chair, President's Review Board (PRB) for Promotion and Tenure, State University of New York at Buffalo

7/07 – 12/08 Director, Graduate Studies, Department of Mechanical and Aerospace Engineering, State University of New York at Buffalo

9/00 – 8/12 University at Buffalo Professor for Competitive Product and Process Design, funded by the Assembly of the State of New York from 9/00-8/06 (Retained Chair while search conducted for Executive Director of NYSCEDII), Department of Mechanical and Aerospace Engineering, State University of New York at Buffalo

7/00 – 8/05 Executive Director, New York State Center for Engineering Design and Industrial Innovation (NYSCEDII), partially funded by the Assembly of the State of New York, State University of New York at Buffalo

8/01 – 8/04 Member, President's Review Board (PRB) for Promotion and Tenure, State University of New York at Buffalo

8/98 - 8/01 Department Chair, Department of Mechanical and Aerospace Engineering, State University of New York at Buffalo

8/96 - 9/00 Associate Professor, Department of Mechanical and Aerospace Engineering, University at Buffalo

8/96 - 8/98 Undergraduate Studies Director for Aerospace Engineering, Department of Mechanical and Aerospace Engineering, University at Buffalo

8/91 - 7/96 Assistant Professor, Department of Mechanical and Aerospace Engineering, University at Buffalo

Summer '96 Consultant, Institute for Computer Applications in Science and Engineering (ICASE), NASA Langley Research Center

Summer '95 Visiting Scientist, ICASE, NASA Langley Research Center

Summer '92 NASA/ASEE Summer Faculty Fellow, NASA Langley Research Center

Honors and Awards:

Keynote Panel Address, MDO Panel, AIAA Complex Aerospace System Exchange (CASE) Conference, San Diego, CA (2014)
Keynote Address, 9th AIAA MDO Specialist Conference, AIAA Aerospace Design and Structures (2013)
Fellow, American Institute of Aeronautics and Astronautics (AIAA), 2012
Multidisciplinary Design Optimization (MDO) Award, American Institute of Aeronautics and Astronautics, 2012
Named Dennis and Rebecca Muilenburg Professor for Aerospace Engineering, ISU, 2012
Keynote Address, ASME 2011 IDETC, 16th Design for Manufacturing and the Life Cycle Conference
(DFMLC), "Design and Manufacturing – Sustaining the Connection", August 2011
Outstanding Alumnus Award, Department of Mechanical and Aerospace Engineering, University of Florida, May 2009
Keynote Speaker for Graduate Student Excellence in Teaching Awards Ceremony, "Teaching: Art or Science?", March 2004
Honored for Notable Contributions to Teaching and Learning at UB, 2003
Visionary Innovator, STOR, University at Buffalo, 2003
Keynote Speaker, EDC 2002, London, England, July 2002
Excellence in Research Recognition, SUNY Research Foundation, Spring 2001
Named Professor for Competitive Product and Process Design, September 2000
AIAA Associate Fellow, Fall 1999
Buffalo Ambassador, Greater Buffalo Convention & Visitors Bureau, 1999
Business First, 40 Under Forty, 1998
Chancellor's Award for Excellence in Teaching, 1996
Presidential Faculty Fellow (PFF), National Science Foundation, 1995
Riefler Award, State University of New York at Buffalo, 1993
University Teaching Fellow, State University at Buffalo, 1992
NASA/ASEE (American Society of Engineering Educators) Summer Faculty Fellow, 1992
1st Place, Graduate Division Paper Competition, AIAA National Student Conference, Reno, Nevada, January 1989
1st Place, Graduate Div. Paper Competition, AIAA Regional Student Conference, Altamonte Springs, Florida, April, 1988
Zonta International Amelia Earhart Fellowship, Fall 1988 - Spring 1991
Langley Aerospace Summer Scholars Fellowship, 1988
Member, Sigma Gamma Tau (National Aerospace Honorary)

Professional Memberships and Activities:

American Institute of Aeronautics and Astronautics (AIAA)
- Fellow, 2012-present
- Associate Fellow, 1999-2012
- Senior Member, 1996-1999
- Member, 1991-1995
- Member, 2018 AIAA Fellows Aerospace Systems Integration, Management & Policy (ASIMP) PAG Peer Review Committee
- Member, Executive Board, Regional Section, 1993-1995
- Multidisciplinary Design Optimization (MDO) Technical Committee
  - Member, 2008-2010
    - Applications and Benchmarking Subcommittee Chair (08-10)
  - Member, 2004 – 2007
    - Applications Subcommittee Chair (06-07)
  - Member, 1992-1997
    - Education Subcommittee Chair (92-94)
    - Planning Subcommittee, Member (92-94)
    - Conference Support Subcommittee, Member (92-94)
- General Chair, 13th AIAA/ISSMO Multidisciplinary Analysis and Optimization Conference (co-located with 10th AIAA Aviation Technology, Integration, and Operations (ATIO) Conference), Fort Worth, Texas, 2010
- MDO Technical Chair for 36th AIAA SDM Conference, 1995
- Technical Chair, 6th AIAA/NASA/ISSMO MDO Conference, 1996
- Panel Member, "Issues in Engineering Education" Panel Session, 6th AIAA/NASA/ISSMO MDO Conference, 1996
- Panel Chair, "Visualization in Multidisciplinary Analysis and Optimization", 9th AIAA/NASA/ISSMO MDO Conference, 2002
- Co-Chair, "What is MDO?" Discussion Session, 6th AIAA/NASA/ISSMO MDO Conference, 1996
- Chair, "MDO in Industry - Pitfalls and Promise", Panel Session, 6th AIAA/NASA/ISSMO MDO Conference, 1996
- Developed and Taught Short Course, "Reducing Time and Cost in the Design Process", in conjunction with 6th AIAA/NASA/ISSMO MDO Conference, 1996
- Student Member, 1984-1991/Student Chapter President, 1986

American Society for Engineering Education (ASEE) Member, 1995-2003

American Society of Mechanical Engineers (ASME)
- Member, 1996-2003, 2016-present
- Associate Member, 1991-1994
- Member, Executive Board, Regional Section, 1991-1994
- Faculty Advisor, University at Buffalo Student Section, 1991-1994

Applied Artificial Intelligence in Engineering (AAIE) Graduate Group, Member, University at Buffalo, 1992-1994

Associate Editor/Editorial Board
- Associate Editor, ASME Journal of Mechanical Design (JMD), 2016 – present

Associate Editor, Journal of Engineering Design and Automation, 1995-1998
Editorial Advisory Board, Design Optimization: International Journal for Product and Process Improvement, 1998-2000
Editorial Board, International Journal of Structural Optimization, 1998-2002

Center for Computational Research (CCR) Member, Executive Committee, 1999-2002
Chair, Visualization Support Group, 1999-2002
Member, Search Committee for Associate Director (F/98)
Member, Search Committee for Computational Scientists (F/98-Sp/99)
Member, search Committee for Unix System Administrators (F/98-Sp/99)

Engineering Design Automation:
Organizing Committee for 1st International Engineering Design and Automation Conference, Bangkok, Thailand, March 1997
Organizing Committee for 2nd International Engineering Design and Automation Conference, Maui, Hawaii, August 1998
Organizing Committee for 3rd International Engineering Design and Automation Conference, Orlando, Florida, June 2000

Integrated Design Engineering (IDE) Graduate Group, University at Buffalo, Chairman and Organizer, 1994-1996

International Society of Structural and Multidisciplinary Optimization (ISSMO) Member, 1996-present
Member, Executive Committee (Elected, 5/99 – 5/03)
Secretary General, Executive Committee (Elected, 5/99 - 5/01)
Organizing Committee, 10th WCSMO Conference, Orlando, FL, 5/2013
General Chair, 3rd World Congress of Structural and Multidisciplinary Optimization (WCSMO-3), Buffalo/Niagara Falls, May 17-21, 1999

National Academy of Engineering
Selected participant at NAE's 3rd Annual Symposium on Frontiers of Engineering, Irvine, CA, September 1997
Organizing Committee, Design Methodology Coordinator, 1st German-American Symposium on Frontiers of Engineering, Dresden, Germany, May 1998

Sigma Gamma Tau (National Aerospace Honorary)
Faculty Advisor, University at Buffalo Chapter, 1991-2011
Charter President, University of Florida Chapter, 1988-1989
Charter Member, University of Florida, 1988-1991

Society of Automotive Engineers (SAE) Member, 1991- 1995

Society for Industrial and Applied Mathematics (SIAM) Member, 1997-2001

Reviewed for:

American Society of Mechanical Engineers – IDETC Design Conferences, Journal of Mechanical Design

American Institute of Aeronautics and Astronautics - AIAA Journal, Journal of Aircraft, SDM Conference, MDO Conference, MDO Specialist Conference

Design Automation: International Journal for Product and Process Improvement
Invited Review Article on the 7th AIAA/USAF/NASA/ISSMO Symposium on Multidisciplinary Analysis and Optimization, St. Louis, MO, September 1998

Design Optimization: International Journal for Product and Process Improvement

International Journal of Systems and Automation

INCOSE Journal of Systems Engineering
Journal of Engineering Design and Automation
EDA Book, Simultaneous Engineering: Methodologies and Applications
NSF Panel Review (numerous Divisions and Programs almost continuously since 1995)

Conference Session Chair:

2016 Conference on Systems Engineering Research (CSER), Huntsville, AL, March 2016
2nd AIAA Multidisciplinary Design Optimization Specialist Conference, Honolulu, Hawaii, April 2007
11th AIAA/ISSMO Symposium on Multidisciplinary Analysis and Optimization, Portsmouth, VA, September 2006
1st AIAA Multidisciplinary Design Optimization Specialist Conference, Austin, Texas, April 2005
10th AIAA/ISSMO Symposium on Multidisciplinary Analysis and Optimization, Albany, NY, September 2004
42nd AIAA Aerospace Sciences Meeting, Reno, Nevada, January 2004
9th AIAA/ISSMO Symposium on Multidisciplinary Analysis and Optimization, Atlanta, GA, September 2002
8th AIAA/USAF/NASA/ISSMO Symposium on Multidisciplinary Analysis and Optimization, Los Angeles, CA, September 2000
1st ASMO UK/ISSMO Conference on Engineering Design Optimization, Ilkley, UK, July 1999
7th AIAA/USAF/NASA/ISSMO Symposium on Multidisciplinary Analysis and Optimization, St. Louis, MO, September 1998
1st International Conference on Engineering Design and Automation, Bangkok, Thailand, March 1997
1st Optimization in Industry Conference, Palm Coast, Florida, March 1997
5th Pan American Congress of Applied Mechanics, San Juan, Puerto Rico, January 1997
21st ASME Design Automation Conference, Boston, Mass., September 1995
36th AIAA SDM Conference, New Orleans, Louisiana, April 1995
5th AIAA/AF/NASA/OAI Symposium on Multidisciplinary Analysis and Optimization, Panama City, Florida, September 1994
35th AIAA/AHS SDM Conference, Hilton Head, South Carolina, April 1994
19th ASME Design Automation Conference, Albuquerque, New Mexico, Sept. 1993
4th AIAA/AF/NASA/OAI Symposium on Multidisciplinary Analysis and Optimization, Independence, Ohio, September 1992

Workshop Presenter/Participant:
Invited Participant, NSF/SERC/INCOSE Workshop on the Theoretical Foundations of Systems Engineering, Frost, WVA, February 2016
Invited Presenter, "Perspectives on Systems Engineering", NSF Workshop on Decision Engineering: From Engineering Phenomena to Value, Arlington, VA, October 2015
Invited Presenter, "From Requirements to Value: A Satellite System Case Study", NSF Workshop on Decision Engineering: From Engineering Phenomena to Value, Arlington, VA, October 2015
Invited Presenter and Organizing Committee, "The Enabling Role of Utility Theory, Game

Theory and Mechanism Design in a new Value-based System Engineering Approach for Large-scale Complex System Design", 4th Midwest Workshop on Control and Game Theory, April 2015

Invited Participant, NSF/INCOSE and DoD Workshop on The Science of Systems Engineering, Arlington, VA, November 2014

Participant and Presenter, "Complex System Design – Obstacles and Opportunities", CASE Academic Workshop, San Diego, CA, August 2014

Invited Presenter, "Challenges and Opportunities for Reinventing Systems Engineering", NSF Decision Analysis Workshop, NASA Langley Research Center, Hampton, VA, March 2014

Invited Speaker and Assisted in Organization, NSF Workshop: Origami Design for the Integration of Self-Assembling Systems for Engineering Innovation (ODISSEI), Orlando, FL, May 2013

Organization Committee, Leader 'Linking' Group, Presenter, and co-author of resulting CSER 2014 paper, Data-Driven Tradespace Exploration and Analysis (invitation only), sponsored by US ARL VTD and DOD SE, Arlington, VA, July 2012

Organizer, NSF/NASA Workshop on Large-Scale Complex Engineered Systems: From Basic Research through Product Realization, February 2012

Speaker, "Setting the Stage: Design of Large-scale Complex Engineered Systems", NSF/NASA Workshop on Large-Scale Complex Engineered Systems: From Basic Research through Product Realization, February 2012

Speaker, "Foundations for a Science of Engineered Systems", NSF/NASA Workshop on Large-Scale Complex Engineered Systems: From Basic Research through Product Realization, February 2012

Speaker, Complexity Workshop, DDR&E Science, Technology, Engineering and Mathematics (STEM) Development Office, December 2010

Invited Speaker, The Future of Multidisciplinary Design Optimization: Advancing the Design of Complex Systems, NSF Workshop, Ft. Worth, Texas, September 2010

NSF Design of Large-Scale Complex Systems Workshop, Ft. Worth, Texas, September 2010

NSF Engineering Systems Design Workshop, Arlington, VA, February 2010

Organizing team, DARPA/NSF Systems Engineering and Design of Complex Aerospace Systems Workshop, September, 2009

Speaker, Spanning Design Boundaries (part of NSF Interdisciplinary Graduate Design Workshop Series), Evanston, Illinois, April 2009

MIT DSM Workshop, MIT, Cambridge, Mass., September 1999, September 2000, September 2001

DARPA MicroAV Contractors Meeting, Quantico, VA, May 1999

ASME DTM Decision-Based Design Workshop, Sacramento, CA, September 1997

NSF Workshop on Engineering Curriculum Revision, Carnegie Mellon University, Pittsburgh, Pennsylvania, Fall 1997

NSF Workshop on Female/Minority Retention, Arlington, Virginia, September 1995

NSF Design Engineering Workshop, Phoenix, Arizona, May 1995

NSF/NASA Multidisciplinary Aircraft Design Workshop, Blacksburg, Virginia, May 1993

Service:

At Iowa State University (9/2012 – present)

University (ISU):
Director, Iowa Space Grant Consortium (ISGC), 2017-present
Provost Writing Group Leader, 2016-2017
Panel Member, NSF Career Grants Workshop, VPR, 2016

College of Engineering (ISU):
Dean's Budget Advisory Committee, Member, 2017-present
Peer Mentoring Program, Coordinator, 2015-2017
Research Strategic Plan Committee, Member, 2016-2017
Department Chair Review Committee, Member, 2014
Big Data Search Committee, Member, 2012 – 2014
Mini-Workshop on NSF Proposal Writing (CAREER Emphasis), Coordinator and Speaker, 2013

Departmental (ISU):
Interim Department Chair, 2017-present
Associate Chair for Research, 2015-2017
Strategic Planning Committee, Member, 2016-present
Mentor to Kristin Rozier, 2016-present
Mentor to Leifur Leifsson, 2014-present
Search Committee, Secretary I, Chair, 2016-2017
P&T Tenure Review Subcommittee, Chair, 2017
P&T 3rd Year Review Subcommittee, Member, 2016-2017
Freshman Honors Mentor to Samuel Dwyer, Benjamin Giles, Charles Vavrick, 2016 to present
Director of Graduate Education (DOGE), 2013 – 2015
Freshman Honors Mentor to Benjamin Halley, 2015
P&T 3rd year Review Subcommittee, Chair, 2014
Complex Systems Search Committee, Chair, 2013 – 2014
Graduate Education Committee, Member, 2012 – 2013
Freshman Honors Mentor to Christian White and David Shanot, 2013
Curriculum Committee, Member, 2012 – 2013
Aerospace Design Committee, Chair, 2012 - 2013

At University at Buffalo (9/1991 - 9/2012, NOTE: NSF PD on leave from UB from 2009 - 2012)

University (UB):
Tripartite Panel for SUNY Discrimination Complaint Procedure, Member, 2007 - 2008
President's Review Board (PRB) for Promotion and Tenure, Chair, 2006 – 2008
Faculty Senate Computer Services Committee, 2006 – 2008
Office of the Provost, Department Chair's Handbook Committee, 2006
President's Advocate, SUNY Chancellor's Advisory Committee, 2005
Search Committee, Vice Provost and Dean of Graduate School, 2004
President's Review Board (PRB), Member, 2001 –2004
Sigma Xi Research Day, Organizing Committee, Judge and Abstract Reviewer, 2001

Sloan Foundation Graduate Program Committee, 2000 - 2001
Science Exploration Day 2000, Presenter, 2000
Sigma Xi Research Day, Judge and Abstract Reviewer, 2000
Provost Search Committee, 1999 – 2000
Provost's Research Support Group, Member, 1999
UB/IBM Planning Session Participant, "Improving UB's Funded Research Performance", Office of the President, 1999
Sigma Xi Research Day, Judge and Abstract Reviewer, Spring 1999
Provost's Scientific Advisory Board, Member, 1998-2000
Woodburn/Presidential Fellowship Program Committee, 1998-1999
Center for Computational Research (CCR)
Search Committee for Associate Director, 1998
Search Committee for Computational Scientists and Unix System Administrators, 1998 – 1999
Graduate School Presentation to Presidential, Woodburn and Moore Fellowship awardees, 'The Fantasies and Realities of Virtual Reality', 1998
Candidate for Middle States' Commission on Higher Education evaluation team, 1998
Provost's Periodic Review Committee Member, 1998
Member of the President's Review Panel for Research and Sponsored Programs, 1998
Member of Review Panel for the Evaluation of the Great Lakes Program (GLP), 1998
Member of Review Panel for the Office of the Vice President for Research, 1998
Faculty Mentor to Samuel Baddoo and Ryan Oliver as part of SUNY Alliance for Minority Participation, 1997
Chancellor Award for Excellence in Teaching Review Committee, 1997
Pew Foundation Roundtable, 1996-1997
NSF Sponsored Stresses on Research and Education Research Roundtable, Stakeholders Panel, 1996
Senator from the Faculty of Engineering and Applied Science, University Faculty Senate 1996-1998
Member, Committee on Teaching and Learning, 1996-1998, 1999-2000
Dean's Search Committee, 1995/1996
Council on Research and Sponsored Programs (CSRP) Member, 1995-2000
Provost's Junior Faculty Development Committee, 1994-1996
Alternate Senator from the Faculty of Engineering and Applied Science, University Faculty Senate, '93-'95
Faculty Mentor to Honors Students - Mark Schultz and Jeffrey Parker, 1993-1995

School of Engineering (UB):
New York State Center for Engineering Design and Industrial Innovation (NYSCEDII), Executive Director, 2000-2005
Faculty Marshal, Commencement, 2005, 2008
Dean's Council Presentation (NYSCEDII Business Plan), 2005
Dean's Council Presentation (NYSCEDII Industrial Outreach), 2004
Faculty Mentor to Paul DesJardin, 2002 - 2007
Search Committee, Director, MCEER, 2002 – 2003
Search Committee, Development Officer, 2001 – 2002
EAS 140, Lecturer for MAE Department, 2000

Dean's Council Presentation (NYSCEDII), 2000
Faculty Mentor to Nine Engineering ASE Freshmen, 1999
Committee on Research Support and Incentives, Chair, 1999
Dean's Council Presentation/Demo (Visualization and Simulation), 1998
EAS 140 Guest Lecturer, 1998
Faculty Marshal, Commencement, 1997
Dean's Committee for Response to the "Report of the President's Task Force on Women at UB", 1997
Co-Op Committee Member, 1997 – 1998
Hosted 'Evening with Faculty' for Engineering Honors Students, 1997
Teacher for MS Program Course at Delphi-Harrison Division of General Motors, 1997
Faculty Mentor to K. Lewis and T. Kesavadas, 1996-2001
Lectures on Disciplines, EAS 140, 1996
Teacher for MS Program Course at Praxair, Inc., 1996
Presentation, SEAS Dean's Council, 1995, 1997
Member of Engineering Computing Search Committee, 1993, 1995
Organized SEAS Assistant Professors Group, 1993
Teacher for MS Program Course at Harrison, Division of GM, 1993
Lecturer for Design course, 1992, 1993, 1994
Faculty Advisor to AIAA/GD Aircraft Design Competition Group, 1992-1993
Faculty Advisor to AIAA LORAL Student Design Competition Group, 1991-1992
Faculty Advisor to SAE Supermileage Vehicle Design Competition Group, 1991-1999
Lecturer for Introduction to Engineering course, 1991

Departmental (UB):
Director, Graduate Studies, 2007 – 2008
Faculty Advisor, University at Buffalo Sigma Gamma Tau Chapter, 1991 – 2008
Interim Director, Undergraduate Studies for Mechanical Engineering, 2001 – 2002
Organizer, Design and Systems Group, MAE Department, 2001 – 2004
Co-advisor, Solar Splash Competition, 2000 – 2001
Department Chair, 1998 – 2001
Strategic Planning Committee Member, 1998
Director, Undergraduate Studies for Aerospace Engineering, 1996 – 1998
Seminar Organizer, 1996 – 1997
Member, Undergraduate Aerospace Engineering Curriculum Committee, 1992–1998, 2000-2003
Member, Ph.D. Qualifying Committee, Systems and Design Group, 1992–1993, 1995–1998, 2000– 2001, 2003 – 2005, 2006 – 2007
Faculty Advisor, University at Buffalo ASME Student Section, 1991-1994

Community:
Big Brothers/Big Sisters, Be-A-Friend Program of Erie County, 1997 – 2002
Habitat for Humanity, 1997 – 2000
Participant in NASA sponsored "Turning Ideas into Reality" program for National Engineers Week, 1991

Academic Courses Taught:

At Iowa State University (9/2012 – present)

AerE 362 Aerospace Systems Integration (Developed and introduced into core curriculum), Spring 2017, No text required

AerE 554X/XE Metaheuristic Optimization and Modeling for Complex System Design, (Developed), Spring 2016, No text required

AerE/IE 463/563/XE Introduction to Multidisciplinary Design Optimization (MDO), (Developed), Spring 2013, Spring 2014, optional text: Hazelrigg, G.A., Fundamentals of Decision Making for Engineers: For Engineering Design and Systems Engineering (Pearson Education, Inc., 2012), Vanderplaats, G.N., Numerical Optimization Techniques for Engineering Design: With Applications (McGraw-Hill Book Company, New York, NY, 1996), Reklaitis, G.V., Ravindran, A., and Ragsdell, K.M., Engineering Optimization: Methods and Applications (John Wiley and Sons, New York, NY, 1983)

AerE/IE 468/568/XE Large-Scale Complex Engineered Systems, (Developed), Fall 2013 - Fall 2016, optional texts: Hazelrigg, G.A., Fundamentals of Decision Making for Engineers: For Engineering Design and Systems Engineering (Pearson Education, Inc., 2012), Binmore, K., Playing for Real: A Text on Game Theory (Oxford University Press, New York, NY, 2007)

AerE 590 Game Theory and Mechanism Design, 7 graduate students in 2015, 3 graduate students in 2016, optional text: Fisher, L., Rock, Paper, Scissors: Game Theory in Everyday Life (Basic Books, New York, NY, 2008)

At University at Buffalo (9/1991 - 9/2012, NOTE: NSF PD on leave from UB from 2009 - 2012)

ASE 415/MAE 415 Aerospace Structural Analysis I (Course title changed to Analysis of Structures - MAE 415), required text: Donaldson, B. K., Analysis of Aircraft Structures (McGraw-Hill, New York, 1993), optional text: Megson, T. H. G., Aircraft Structures for Engineering Students (Edward Arnold, England, 1980)

ASE 416 Aerospace Structural Analysis II (Course title changed to Aerospace Structural Analysis), required text: Donaldson, B. K., Analysis of Aircraft Structures (McGraw-Hill, New York, 1993), optional text: Megson, T. H. G., Aircraft Structures for Engineering Students (Edward Arnold, England, 1980)

MAE 311	Machines and Mechanisms I, required text: Shigley and Mischke, Mechanical Engineering Design, (McGraw-Hill, 6th Edition).
MAE 414	Internship (various companies/student projects)
MAE 448/558	Issues in Concurrent Design (Developed), required text: Prasad, B., Concurrent Engineering Fundamentals, Volume I (Prentice-Hall, New Jersey, 1996), optional text: Kusiak, A., Concurrent Engineering Automation, Tools, and Techniques (John Wiley, New York, 1993)
MAE 451	Design Process and Methods, required text: Ullman, D. G., The Mechanical Design Process (McGraw-Hill, 3rd Edition, 2007)
MAE 459	Design Project (Supermileage vehicle, LORAL, Aircraft Design, Solar Splash, etc.) Coordinator - Fall 1999, Spring 2000, Fall 2000
MAE 499	Independent Study (various topics)
MAE 501	Individual Problems (various topics)
MAE 529	Finite Element Techniques, required text: Steele, J. M., Applied Finite Element Modeling (Marcel Dekker, Inc., New York, NY, 1989)
MAE 550	Optimization in Engineering Design, required text: Vanderplaats, G.N., Numerical Optimization Techniques for Engineering Design: With Applications (McGraw-Hill Book Company, New York, NY, 1996), optional text: Reklaitis, G. V., Ravindran, A., and Ragsdell, K. M., Engineering Optimization: Methods and Applications (John Wiley and Sons, New York, NY, 1983)
MAE 552	Heuristic Optimization Methods (Developed) - no text.

Graduate Student Research Supervision:

Ph.D. (University at Buffalo and Iowa State University)

completed:

Serhan, Hassan (1995) "Design of New Spinal Implants -- Experimental and Analytical Studies" (Present Position: Director, Research & Technology, DePuy AcroMed– a Johnson and Johnson Company, Raynham, Massachusetts)

Chi, Hua-Wei (1996) "Mixed Variable Optimization Methods for Complex Engineering System Design" (Present Position: Associate Professor, Department of Mechanical and Automation Engineering, Da Yeh University, Changhua, Taiwan; worked in industry for several years prior

to moving to academia)

McCulley, Collin (1999) "Simulation-Based Comparison and Development of Heuristic Convergence Strategies for Multidisciplinary Analysis" (Present Position: Design Engineer, Lockheed-Martin Tactical Aircraft Systems, Ft. Worth, Texas)

Winer, Eliot (1999) "Development of Visualization Techniques as an Aid in Multidisciplinary Design Optimization" (Present Position: Professor and Associate Director VRAC, Iowa State University, Ames, Iowa; worked as Deputy Director of NYSCEDII for several years prior to moving to academia)

Hulme, Kevin (2000) "The Design of a Simulation-based Framework for the Development of Solution Approaches in Multidisciplinary Design Optimization" (Present Position: Research Associate for Engineering Design, The New York State Center for Engineering Design and Industrial Innovation (NYSCEDII), University at Buffalo, Buffalo, New York)

English, Ken (2001) "Coupling Suspension in Complex System Optimization" (Present Position: Deputy Director, the New York State Center for Engineering Design and Industrial Innovation (NYSCEDII), University at Buffalo, Buffalo, New York)

Abdul-Jalil, Mohamad Kasim (2001) "Development of a Virtual Collaborative Environment for Finite Element Simulation" (Present Position: Associate Professor, Department of Design, Faculty of Mechanical Engineering, Universiti Teknologi Malaysia, Johor, Malaysia)

Huang, Chen-Hung (2003) "Development of Multi-Objective Concurrent Subspace Optimization and Visualization Methods for Multidisciplinary Design" (Present Position: Research Engineer, Industrial Technology Research Institute, Mechanical Industry Research Laboratories, Hsinchu, Taiwan)

Agrawal, Gautam (2005) "The Hyperspace Pareto Frontier for Intuitive Visualization of Multiobjective Optimization Problems" (Present Position: Engineering Design Manager, Integral Information Systems (IIS), Amherst, NY)

Parashar, Sumeet (2006) Development of Multi-objective Genetic Algorithm Concurrent Subspace Optimization (MOGACSSO) Method with Robustness (Present Position: Manager, Technical Services, ESTECO North America, Inc., Livonia, MI)

Chiu, Po-Wen (2009) The Hyper-Radial Visualization (HRV) Method for Visualization of the Hyperspace Pareto Frontier for Multi-objective Optimization Problems (Present Position: Senior Mechanical Engineer, Apple, Inc.)

Xue, Zhendan (2010) A Particle Swarm Optimization based Multi-agent Stochastic Evacuation Simulation Model (Present Position: Application Engineer, ESTECO North America, Inc., Livonia, MI)

Mesmer, Bryan (2012) Incorporation of Decision and Game Theories in Early-Stage Complex

Product Design to Model End-Use (Present Position: Assistant Professor, University of Alabama – Huntsville)

Kannan, Hanumanthrao (2015) An MDO Augmented Value-Based Systems Engineering Approach to Holistic Design Decision-Making: A Satellite System Case Study (Present Position: Postdoctoral Research Associate – Virginia Tech)

Kwasa, Benjamin (2017) Incorporation of Organization Design in a Value-based Systems Engineering Framework (Present Position: Postdoctoral Research Associate – Iowa State University)

In progress:

Syed Shihab (expected Spring 2018)
Nazareen Sikkandar Basha (expected Fall 2019)
Robert Philpott, III (expected Spring 2020)

M.S. Thesis (University at Buffalo and Iowa State University)

completed:

Serhan, Hassan (1992) "Experimental and Analytical Study of Transpedicular Screws"

Ford, Jeffrey (1993) "A Non-Hierarchic Decomposition Method for Synthesis of Mixed Discrete/Continuous Systems"

Khalak, Hanif (1994) "Solving Crystallographic Molecular Structures: An Investigation of a Simulated Annealing Application within 'Shake-And-Bake™'"

Rosner, Alfred (1994) "Concurrent Engineering With Manufacturing Considerations"

Muthyala, Ganga (1994) "Structural Shape Optimization of Gear Wheels"

Mulubagal, Girish (1994) "Multidisciplinary Design With Tolerance Allocation For Maximum Quality"

Chai, Young-Ho (1994) "Spline Representation of Optimal Shape To Avoid Stress Concentrations"

Fuessel, Dominik (1994) "Optimum Model Size for Complex Design"

McCulley, Collin (1995) "A Genetic Tool for Optimally Sequencing the Design of Complex Engineering Systems"

Lasher, Elizabeth (1995) "Impact of Sensitivity Analysis Error on Optimal Solution Accuracy"

Miller, Eric (1995) "Coupling Suspension and Elimination in Multidisciplinary Design Optimization"

Hulme, Kevin (1996) "Development of CASCADE -- a Test Simulator for Modeling Multidisciplinary Design Optimization Problems in Distributed Computing Environments"

Becker, Jan (1996) "Distributed Computing for Multidisciplinary Design Optimization Using Java"

English, Ken (1998) "Development of Multiple Cycle Coupling Suspension in Multidisciplinary Design Optimization"

Bowerman, Ethan (1998) "Response Surface Development for Sensitivity Approximations in Multidisciplinary Design and Optimization"

Rajesh, J. (2000) "Automatic Response Surface Generation in Graph Morphing"

Ahmad, Faisal (2001) "Development of a Direct Parallel Optimization Method"

Misra, Udayan (2001) "Development of a Hybrid Genetic Simulated Annealing Method"

Gosakan, Mala (2002) "Development of Heuristic Parallel Convergence Strategies for Multidisciplinary Analysis"

Nozaki, Yuji (2002) "Development of a Constrained Direct Parallel Optimization Method"

Jain, Anuj (2003) "Gradient Vector Visualization as an Aid for Decision-Making in Engineering Optimization"

Agrawal, Nitin (2003) Initial Development of a Medical Data Application Programmers Interface (Co-Advisor, Dr. Eliot Winer, lead Supervisor)

Chiam, Ter Wei (2003) "The Development of a Gradient-Augmented Heuristic Optimization Method"

Ang, Eu-Jin (2003) "Development of an Automatic Grid-based Driving Simulation Scene Generator for Virtual Reality Exposure Therapy" (Co-Advisor, Dr. Eliot Winer, lead Supervisor)

Desai, Ashwin (2003) "Parallel Paratrooper Optimization Algorithm"

Phatak, Amit (2004) "Derivation of Material Metric Homogenization Parameters for Hyperelastic Materials Using Finite Element-based Design Optimization"

Kasarekar, Nachiket (2004) "Development of a Hybrid MDF/IDF Multidisciplinary Optimization Solution Method with Coupling Suspension" (Advisor in name only, lead Supervisor is Dr. Ken English)

Vase, Aditya (2004) "Development of a Data Model for Real-time Web-based Visualization of Massive Engineering Analysis" (Co-Advisor with Dr. Eliot Winer, lead Supervisor)

Agarwal, Gautam (2004) "Development of a Web-based Visualization Environment for Decision- Making in Multidisciplinary Design Optimization"

Parashar, Sumeet (2004) "Decision-Support Tool for Multidisciplinary Design Optimization (MDO) Using Multi-Domain Decomposition"

Patwardhan, Sameer (2005) "Using Anthropometric Modeling for Optimal Ergonomic Considerations in Automobile Interior Design"

Tyagi, Gaurav (2005) "A Heuristic Optimization Based Methodology for Fire Evacuation Simulation Incorporating Human Behaviors"

Galuski, Jessica (2005) "Range Refinement and Design Selection in MDO-based Multiobjective Optimization"

Xu, Zhendan (2006) "A Particle Swarm Optimization-based Behavioral and Probabilistic Fire Evacuation Model Incorporating Fire Hazards and Human Behaviors"

Ries, Brian (2006) "A Heuristic Optimization-based Emergency Evacuation Simulation Approach for a Building and its Surrounding Environment"

Planchais, Tristan (2010) "A Particle Swarm Optimization based Behavioral and Probabilistic Fire Evacuation Model Incorporating an Occupant Characteristics based Decision-making Model"

Mesmer, Bryan (2010) "Incorporation of Personal Communication Devices in Multi-Environment Particle Swarm Optimization Based Evaluation Simulation"

Tibor, Elliott (2014) "Visualization-Based Decision Support for Value-Driven System Design"

Goetzke, Erik (2014) "Value-Driven Design of Non-Commercial Systems through Bargain Modeling"

Bhatia, Garima (2016) "A Game Theory Approach to Negotiations in Defense Acquisitions in the Context of Value-Driven Design: An Aircraft System Case Study"

Kis, David (2017) "A Coupling Analysis Approach to Capture Unexpected Behaviors in Ares 1"

Vidyadaran, Akash (2017) "Value-based Model and Analysis of Autonomous Unmanned Aircraft Systems based on Operational Scenario"

Subramanian, Tenkasi (2017) "A Study of Consistency in Design Selection and Rank Ordering

of Alternatives Using a Value Driven Design Approach"

Murugaiyan, Suresh (2017) "A Comprehensive Study on Modeling Requirements into a Value Formulation in a Satellite System Application"

Sikkandar Basha, Nazareen (2017) "Sensemaking in a Value Based Context for Large Scale Complex Engineered Systems"

Wenger, Christopher (2017) "Measuring System Value in the Ares 1 Rocket using an Uncertainty-Based Coupling Analysis Approach"

M.S. Project (University at Buffalo)

completed:

Song, Jaebin (1992) "Application of Wynn's Algorithm to Optimization"

Chi, Hua-Wei (1992) "Design of Adaptive Structure for Optimal Deployment Characteristics"

Culpo, Christopher (1992) "An Intelligent Decomposition Approach for Coupled Engineering Systems"

Peck, Tony (1993) "A Revised Move Limit Strategy for Efficient Optimization"

Crane, Donald (1993) "Dynamic Axial Crush of a Thin-Walled Square Tube Using DYNA3D"

Quattrini, Thomas (1994) "Rules Based Concurrent Engineering"

Hong, Wein (1994) "Efficient Move Limit Assignment for Optimization"

Chang, Chenglin (1994) "2-D Airfoil Shape Optimization for Performance in Subsonic, Potential Flow"

Shim, Young-Shik (1994) "Application of Neural Networks to Preliminary Airfoil Shape Design"

Reilly, Jean Marie (1994) "Intelligent Approximations for Structural Optimization"

Martens, Daryl (1996) "Development of a Nonlinear Programming Computational Infrastructure"

Gawve, Warren (1996) "Optimization of an Electro-Mechanical Knife for Thin Gage Material"

Zhou, Qihua (1997) "Development of Heuristic Optimization Software Package in X- Window Platform"

Chen, Chih-Yi (1998) "Comparison of Approximation Methods for Optimal Truss Design"

Huang, Chen-Hung (1998) "The Study of Sensitivity Error on Optimization Method"

Singh, Ajit (1998) "Tolerance Analysis and Allocation Using a Method of Design of Experiments"

Samant, Amit (2000) "Constraint Representation in Graph Morphing"

Shah, Pranay (2000) "Benchmarking of Design Variable Ranking for Graph Morphing"

Agarwal, Sonu (2003) "Multiple Response Surface Optimization Method"

Porcari, Richard (2003) "Web-based Design of a Portable Vertical Impactor Plant" (Dr. E. Winer primary advisor)

Morankar, Jitendra (2005) "Application of Multidisciplinary Design Optimization for Diesel Engine Cooling System Design"

Klump, Sasse (2005) "A Heuristic Optimization-based Methodology for Emergency Vehicle Evacuation Simulation"

Reddy, Mithun (2006) "Implications of Using the Hyperspace Diagonal Counting (HSDC) Method for Visually Representing 3-D Shapes"

Rajan, Rahul (2008) "Multidisciplinary Design Optimization (MDO) Test Suite"

Negi, Vipul (2009) "Multidisciplinary Design Optimization (MDO) Test Suite"

Franklin, Joseph (2008) "Heuristic Optimization (PSO) Based Extreme Event Simulation"

Nair, Roshin B. (2009) "Multidisciplinary Optimization Test Suite"

Ramachandran, Vivekananthan (2009) "Multidisciplinary Optimization Test Suite"

Miller, Phillip (2009) "Arc Welding of Type 201LN Nitrogen Strengthened Austenitic Stainless Steel for Cryogenic Pressure Vessel Applications"

M.Eng. Project (University at Buffalo)

completed:

Gionta, Matthew (1994)"Conceptual Design of a Composite Sport Plane"

Petrovic, Nicola (1999) "Optimal Design of Balancing Crankshafts"

M.S. All Course (University at Buffalo – through 2009) and MEng (Iowa State University – from 2012)

completed:

Chen, Jyh-Woei (1992)
Hang, Sho-Hsiang (1994)
Wang, Shu (1994)
Wey, Shyh-Jye (1994)
Chang, Yunchung (1994)
Liaw, Sing-Hua (1994)
Li, Yu-Chin (1995)
Liu, Chi-Ming (1995)
Su, Chung-Yu (1996)
Santarosa, Anthony (1997)
LaDelfa, Jeffrey (1998)
Sun, Chi-Ming (1999)
Avar, Robert (1999)
Hostetler, Daryl (2003)
Gavirneni, Sai (2005)
Ramaswamy, Anoop (2008)
Brooks, Katherine (2008)
Daniels, Jeffrey (2008)
Matthew Poetting (2016)

Graduate Student Committee Membership (University at Buffalo and Iowa State University)

Name	***Degree***	***Date***
Kohl, Adam	M.S.	11/17
Liu, Yen-Chen	M.S.	7/17
Bir, Devayan	M.S.	6/17
Craven, Terri	M.S.	1/17
Clemons, Lucas	Ph.D.	5/16
Anand-Amrit	M.S.	4/16
Ren, Jie	M.S.	4/16
Jairam, Anil	M.S.	4/16
Kaplan, Adam	M.S.	10/15
Naim, Aziz	M.S.	5/08
Schafer, Sebastian	M.S.	12/07
Dietz, Gregory	M.S.	5/06
See, Tung-King	Ph.D.	11/05
Thali, Rohit	M.S.	5/05
Kalivaripu, Vijay	M.S.	2/05
Bhabhrawala, Talib	M.S.	2/05

Jadhav, Chetan	M.S.	7/04
Kulok, Michael	M.S.	6/04
Gurnani, Ashwin	M.S.	8/03
Kanukolanu, Deepti	M.S.	4/03
Pinto, Pradeep	M.S.	1/03
Wang, Li	Ph.D.	12/02
Malik, Tabrez	M.S.	6/02
Brauen, Trevor	M.S.	4/01
Halecki, Thomas	M.S.	4/01
Callaghan, Alison	M.S.	11/99
Chen, Shi-Jie	Ph.D.	8/99
Tu, Weizhen	Ph.D.	6/99
Kasprczak, Edward	M.S.	2/99
Ramaswamy, Vasudevan	M.S.	2/99
Wang, Kerwin	M.S.	2/99
Enzer, Marc	M.S.	9/98
Boehly, Greg	M.S.	1/98
Pettitt, Edward	M.S.	1/98
Levy, Sharon	M.S.	1/97
Castillo, Luciano	Ph.D.	12/96
Chien, Chih-Te	M.S.	12/96
Song, Liugen	Ph.D.	7/96
Lo, Chia-Lung	M.S.	12/95
Tsai, Po-Yueh	M.S.	12/95
Chen, Shi-Hie	M.S.	10/95
Lubchenko, Erine	M.S.	10/95
Victor, Gary	M.S.	8/95
Crassidis, Agammemnon	Ph.D.	6/95
Nagaraz, Ashwin	Ph.D.	2/95
Yu, Chen-Hsien	M.S.	12/94
Yeh, Hsin-Fu	M.S.	11/94
VanNostrand, William	Ph.D.	3/94
Lavery, Mark	M.S.	12/93
Thompson, Shawn	M.S.	12/93
Pfister, Jorg	M.S.	7/93
Wentscher, Holger	M.S.	6/93
Branca, Caroline	M.S.	4/93
Crassidis, John L.	Ph.D.	4/93
Krishnaswami, Mukund	M.S.	4/93
Meyer, Thomas	M.S.	10/92
Macaluso, Peter	M.S.	8/92
Nguyen, Son	M.S.	4/92
Song, Dongwoo	M.S.	4/92
Van Nostrand, William	M.S.	4/92
Hamernick, Tami	M.S.	1/92
Mason, Paul	M.S.	11/91

Undergradute Honor Student Committee Membership:

Scott Ferguson B.S. 5/02

Grants and Contracts:

Submitted (Pending):

Title: Iowa Space Grant Consortium NASA STEM Training Grant Funding Extension for FY 2018-2019
Participation: PI (Iowa State University) with Co-PIs Jay Staker and Tomas Gonzales-Torres
Source: NASA
Amount: $720,000

Awarded:

Title: INFEWS/T2: Cyber-based Decision Support Strategies to Achieve Consensus for FEW System Sustainability using Incentive and Policy Structures
Participation: PI with Co-PIs Amy Kaleita-Forbes, J. W. Clark Wolf, and James Oliver (Iowa State University); and Ali Abbas (University of Southern California)
Source: National Science Foundation
Period: 10/1/2017-9/30/2022
Amount: $2,399,279 total ($1,099,760 in 2017 and $1,299,519 in 2018)

Title: Iowa Space Grant Consortium NASA STEM Training Grant Funding Extension for FY 2018-2019
Participation: PI (Iowa State University) with Co-PI Jay Staker (former PI Rich Wlezien)
Source: NASA
Period: 6/22/2016 – 6/21/2018
Amount: $1,520,000

Title: Collaborative Research: Theoretical Impact of Acquisition Mechanisms on System Design Outcomes under Uncertainty
Participation: PI (Iowa State University) with PI Paul Collopy (University of Alabama, Huntsville)
Source: National Science Foundation (Division of Civil, Mechanical, and Manufacturing Innovation: Engineering Design and Innovation)
Period: 8/15/2017 – 7/31/2020
Amount: $299,004 at ISU ($312,877 at UAH)

Title: EAGER/Collaborative Research: Lectures for Foundations in Systems Engineering
Participation: PI with PI Ali Abbas (University of Southern California)
Source: National Science Foundation (Division of Civil, Mechanical, and Manufacturing

Innovation: System Science)
Period: 8/1/2016 – 7/31/2018
Amount: $150,000 (Iowa State University)

Title: Exploration of Multidisciplinary Couplings and Coupling Strengths to Mitigate Unintended Behaviors: Ares I Thrust Oscillation
Participation: PI
Source: University of Alabama, Huntsville (Flow-through from NASA Marshall Consortium for Systems Engineering)
Period: 2/1/2015 – 12/31/2017
Amount: $218,311

Title: REU: Uncertainty Impacts of Couplings in a System Design Framework
Participation: PI
Source: National Science Foundation Supplement
Period: 05/10/2016 – 07/30/2017
Amount: $10,000

Title: ERP: Encoded Ethics for Safe UAS Operation Under 400 Feet
Participation: PI with Co-PI Clark Wolf
Source: Iowa State University, College of Engineering
Period: 08/05/2016 – 05/15/2017
Amount: $24,206

Title: Collaborative Research: Organizational and Uncertainty Impacts of Couplings in a System Design Framework
Participation: PI with Co-PIs Bryan Mesmer (Iowa State University – now University Alabama - Huntsville) and Collaborative PI Ali E. Abbas (University of Illinois at Urbana-Champaign)
Source: National Science Foundation (Division of Civil, Mechanical, and Manufacturing Innovation: System Science)
Period: 8/1/2013 – 7/31/2017
Amount: $330,000 (Iowa State University), $240,000 (University of Illinois at Urbana-Champaign)

Title: Collaborative Research: Visual Analytics for Creation of Value Functions in Complex Systems Design Under Uncertainty
Participation: PI with Co-PI's Bryan Mesmer (now at University of Alabama – Huntsville) and Eliot H. Winer (Iowa State University), Collaborative PI Timothy W. Simpson (The Pennsylvania State University), and Co-PI Michael Yukish (The Pennsylvania State University)
Source: National Science Foundation (Division of Civil, Mechanical, and Manufacturing Innovation: System Science)
Period: 8/1/2014-7/31/2017
Amount: $215,233 (Iowa State University), $184,767 (The Pennsylvania State University)

Title: Advanced Development of a High Torque Warp Motor for Use in Leading Edge Flap Systems (Phase II)
Participation: Co-PI with PI Andres Soom (25%) and Co-PIs Gary Dargush (25%) and Tarun Singh (25%)
Source: CUBRC (NavAir/Sprung-Brett) Period: 11/1/2007-10/31/2010
Amount: $277,238

Title: Visual Hyperspace Pareto Frontier (VHPF) for Multi-attribute Decision-Making
Participation: PI (45%) with Co-PIs Kemper E. Lewis (45%) and Kenneth W. English (10%) (transferred PI to K. E. Lewis to avoid Conflict of Interest while at NSF as PD)
Source: National Science Foundation
Period: 5/15/2006 – 4/30/2010
Amount: $260,000

Title: NYSCEDII: New York State Center for Engineering Design and Industrial Innovation (2005/2006)
Participation: PI (25%) with Co-PIs Mark Karwan (10%), Kemper Lewis (25%), Venkat Krovi (10%), Andres Soom (10%), and Ken English (20%) (NOTE – PI status changed to K. Lewis in Spring 2006 to enable easier administration of grant)
Source: New York State, NYSTAR Period: 11/01/05 – 12/31/06
Amount: $250,000

Title: NYSCEDII: New York State Center for Engineering Design and Industrial Innovation (2004/2005)
Participation: PI (25%) with Co-PIs Mark Karwan (10%), Kemper Lewis (25%), Venkat Krovi (10%), Andres Soom (10%), and Ken English (20%)
Source: New York State, NYSTAR Period: 7/01/04 – 12/31/05
Amount: $250,000

Title: Roll-out and Application of SOLVE – A Coldbox Optimal Design and Visualization Tool
Participation: PI with Co-PIs K. English, T. Kesavadas
Source: Praxair, Inc.
Period: 1/01/03 - 12/31/04
Amount: $70,333 (Grant), $90,000 (Development Contribution)

Title: NYSCEDII: New York State Center for Engineering Design and Industrial Innovation (2003/2004)
Participation: PI with Co-PIs Mark Karwan, Andres Soom, and Eliot Winer
Source: New York State, NYSTAR Period: 1/01/03 - 5/31/04
Amount: $488,000

Title: ITR/AP+IM: Information Processing for Integrated Observation and Simulation-Based Risk Management of Geophysical Mass Flows
Participation: Co-PI with PI Abani Patra, Co-PIs T. Kesavadas, E. Bruce Pitman, and Michael Sheridan, and Senior Personnel M. Bursik, M. Jones, D. Mark, E. Winer

Source: National Science Foundation
Period: 9/15/01 - 8/31/05
Amount: $1,924,981

Title: Visual Design Steering as a Decision Support Aid in Design and Rapid Virtual Prototyping.
Participation: Co-PI with PI Kemper Lewis, Co-PIs Aidong Zhang, Ann Bisantz, and Eliot Winer
Source: National Science Foundation
Period: 9/1/01 - 8/31/05
Amount: $347,000

Title: Integration and the Implementation of a Distributed Multi-package Coldbox Optimization and Visualization Design Capability
Participation: PI with Co-PIs K. English, K. Lewis, T. Kesavadas Source: Praxair, Inc.
Period: 1/01/02 – 12/31/02
Amount: $58,809 (Grant), $45,000 (Development Contribution)

Title: NYSCEDII: New York State Center for Engineering Design and Industrial Innovation (2002)
Participation: PI with Co-PIs Mark Karwan, Andres Soom, and Eliot Winer
Source: New York State, NYSTAR Period: 1/01/02 - 12/31/02
Amount: $488,000

Title: NYSCEDII: New York State Center for Engineering Design and Industrial Innovation (2000/2001)
Participation: PI with Co-PIs Mark Karwan, T. Kesavadas, Andres Soom, and Eliot Winer
Source: New York State, NYSTAR Period: 6/1/00 - 9/15/01
Amount: $1,000,000

Title: NYSCEDII: New York State Center for Engineering Design and Industrial Innovation
Participation: PI with Co-PIs Mark Karwan, T. Kesavadas, Andres Soom, and Eliot Winer
Source: New York State, New York State Dormitory Authority
Period: 6/1/00 - 12/31/02
Amount: $1,500,000

Title: SOLVE - A Multi-package Optimal Design and Visualization Tool
Participation: PI with Co-PI Kemper Lewis and T. Kesavadas
Source: Praxair, Inc.
Period: 1/01/01 - 12/31/01
Amount: $51,655 (Grant), $45,000 (Development Contribution)

Title: Development of a Multi-Package Site Optimization Capability
Participation: PI with Co-PI Kemper Lewis
Source: Praxair, Inc.

Period: 1/01/00 - 12/31/00
Amount: $83,394

Title: Creation of an Interactive Product Development Tool (Phase 3)
Participation: PI with Co-PIs T. Kesavadas, Kemper Lewis
Source: Praxair, Inc.
Period: 1/01/99 - 12/31/99
Amount: $91,000

Title: Visualization as a Decision Support Tool in Multidisciplinary Design
Participation: Co-PI with PI Kemper Lewis Source: National Science Foundation
Period: 6/1/98 - 9/1/00
Amount: $185,917

Title: Conferences in the Disciplines: Support for 3rd World Congress of Structural and Multidisciplinary Optimization
Participation: PI with Co-PIs Kemper Lewis and Roger Mayne
Source: University at Buffalo
Period: 7/98 - 6/99
Amount: $2,500

Title: An Empirical Investigation of Concurrent Engineering Practices and Their Impact on Firm Performance
Participation: Co-PI with PI Nallen Suresh and Co-PI Kemper Lewis
Source: University at Buffalo
Period: 6/98-5/99
Amount: $20,000

Title: Establishment of a High Performance Real-Time Visualization Research Laboratory
Participation: Co-PI with PI T. Kesavadas and Co-PI's Rakesh Nagi, Raj Acharya
Source: National Science Foundation
Period: 1/98 - 1/01
Amount: $86,714 (with $32,750 matching from UB)

Title: Presidential Faculty Fellow (PFF): Development of Methods for MDO
Participation: PI
Source: National Science Foundation
Period: 9/95 - 8/00
Amount: $500,000

Title: ILI: Improvement of Force Measurement Laboratory
Participation: PI with with Co-PI's Barry Lieber and William Rae
Source: National Science Foundation
Period: 6/97 - 5/99
Amount: $24,238 (with $25,000 matching from UB)

Title: Creation of an Interactive Product Development Tool (Phases 1 & 2)
Participation: PI with Co-PIs T. Kesavadas, Kemper Lewis
Source: Praxair, Inc. Period: 10/97-12/98
Amount: $118,809

Title: Development of Optimal Convergence Strategies for Distributed Complex Design
Participation: PI
Source: NASA Langley Research Center
Period: 3/96-9/98
Amount: $112,064

Title: Optimal Product Line Development
Participation: PI
Source: Praxair, Inc. Period: 8/96-9/97
Amount: $17,557

Title: Support for Research with Modeling and Simulation Program at LMTAS
Participation: PI
Source: Lockheed Martin Tactical Aircraft Systems
Period: 1/97-6/97
Amount: $6,394

Title: REG: Development of an ATM-based Cluster Platform for Integrated Design
Participation: PI with Co-PI Patrick W. Dowd
Source: National Science Foundation Period: 3/96 - 3/97
Amount: $83,719 (with $42,000 matching from UB)

Title: Human - Computer Interfacing in Multisensor Fusion Systems
Participation: Co-PI with PI James Llinas and Co-PI's Colin Drury, Stuart Chen
Source: University at Buffalo
Period: 5/96-1/97
Amount: $17,874

Title: Upgrade of a High Performance Parallel Computer Platform for SEAS
Participation: PI with Co-PI Charles Brunskill
Source: Sun Microsystems
Period: 3/96-12/96
Amount: $126,930 (with $25,000 matching from UB)

Title: RIA: System Reduction Strategies for Efficient Design Synthesis
Participation: PI
Source: National Science Foundation
Period: 8/93 - 8/96
Amount: $94,797

Title: Graduate Group in Integrated Design Engineering
Participation: PI with Co-PI Rakesh Nagi Source: University at Buffalo Period: 7/94 - 6/96
Amount: $5,000

Title: Optimal Networking for Integrated Design Engineering
Participation: PI with Co-PI Patrick Dowd
Source: University at Buffalo
Period: 5/94 - 7/95
Amount: $20,000

Title: Optimal Scheduling for Reduction of Complex Systems
Participation: PI
Source: NASA Langley Research Center
Period: 3/94-3/96
Amount: $91,496

Title: Multidisciplinary Design and Analysis Program
Participation: PI with Co-PI Andres Soom
Source: NASA Headquarters
Period: 11/93 - 5/94
Amount: $50,000

Title: Acquisition of High Performance Parallel Computer for SEAS
Participation: PI with Co-PI's including 15 Assistant Professors from SEAS
Source: University at Buffalo
Period: 1/94 - 12/94
Amount: $228,000

Title: An Intelligent Synthesis Method for Concurrent Engineering Applications
Participation: PI
Source: Engineering Foundation
Period: 9/92 - 8/93
Amount: $23,000

Title: Summer Faculty Fellowship
Participation: PI
Source: ASEE/NASA Langley Research Center
Period: 5/92 - 8/92
Amount: $11,000

Title: University Teaching Fellowship - Development of In-Class Structures Demonstrations
Participation: PI
Source: University at Buffalo
Period: 1/92 - 12/92
Amount: $1,750

Title: Travel Grant and Advanced Study Institute Grant for NATO ASI
Participation: PI
Source: NSF/NATO Period: 9/91 - 10/91
Amount: $866 and $870

Technology and Economic Outreach Activities

Technology Entrepreneurship Competition (Panasci): Finalist, "HyperViz, LLC", STOR and UB School of Management, 2005 (with G. Agrawal, T. Vijiyendranathan, K. Lewis)

Patent: U.S. Provisional Patent No. 60/601, 421, filed 8/13/2004 for Hyperspace Diagonal Counting for Multiobjective and Multidimensional Applications, Co-Inventor with K. Chugh, G. Agrawal, K. Lewis, C.- H. Huang, S. Parashar

Technology Disclosure: Using Anthropometric Modeling For Optimal Ergonomic Considerations In Automobile Interior Design, Co-Inventor with S. Patwardhan, 2005

Technology Disclosure: An Optimization-based Methodology for Fire Evacuation Simulation Incorporating Human Behaviors, Co-Inventor with G. Tyagi, 2004

Technology Disclosures: Hyperspace Diagonal Counting for Multiobjective Pareto Frontier Visualization, Hyperspace Diagonal Counting for Multidimensional Visualization, and Hyperspace Diagonal Counting for Multidimensional Database Visualization and Data Mining, Co-Inventor with K. Chugh, G. Agrawal, K., Lewis, C.-H. Huang, S. Parashar, 2004

Technology Disclosures: Geographic Independent Virtual Environment (GIVE), Visual Dependency Structure Matrix, and Graph Morphing (technology licensed to Visual Design Systems, LLC), Co-Inventor with E. Winer and K. English, 2002

Invited Presentations/Seminars

"Autonomous Systems" – Boeing Industry Visit, Ames IA, November 2016

"Use of UAS for NDE Applications" –Shawcor and Fraunhofer Society, Ames IA, November 2016

"History of NSF Workshops in Systems Engineering" – Invited Seminar – Rockwell Collins, September 2016

"Value-Based Systems Engineering" – Invited Seminar – Rockwell Collins, September 2016

"Developing a CAREER Proposal" – Invited Seminar, University of Oklahoma, February 2016.

"System Consistency in Value-based Systems Engineering" – Invited Seminar, University of Oklahoma, February 2016

"Design and Manufacturing – Sustaining the Connection", Keynote Address, ASME 2011 IDETC, 16th Design for Manufacturing and the Life Cycle Conference (DFMLC), August 2011

"Design of Large-scale Complex Engineered Systems", Complexity Workshop, DDR&E Science, Technology, Engineering and Mathematics (STEM) Development Office, December 2010

"Trends and Funding Opportunities in Engineering Design at the National Science Foundation", Department of Mechanical and Nuclear Engineering, Penn State University, January 2010

"Visual Design Steering (VDS) as a New Paradigm for Engineering Design", Keynote Address, Engineering Design Conference 2002 (EDC2002), King's College London, England, July 2002

"The New York State Center for Engineering Design and Industrial Innovation (NYSCEDII)", Special Presentation for UB Open House, See UB in 3-D, April 2002

"The New York State Center for Engineering Design and Industrial Innovation (NYSCEDII)", Service Excellence Task Force, University at Buffalo, October 2001

"Visual Design Steering for Complex Systems", Seminar, Department of Aeronautics, Mechanics, and Mechanical Engineering, Rensselaer Polytechnic Institute, April 2001

"Visualization as a Tool for Steering Complex Design", Seminar, Department of Industrial Engineering, University at Buffalo, April 2001

"Visualization as an Aid in Complex Analysis and Design: An Overview of NYSCEDII Activities", Seminar, Center for Computational Research (CCR), University at Buffalo, May 5, 2000

"Visual Design Steering in Multidisciplinary Design Optimization", Invited Seminar, Department of Mechanical Engineering, Iowa State University, October 28, 1999

"Using a Virtual DSM to improve Coupling Selection for Suspension in Multidisciplinary Design Optimization", LFM/LAI/CIPD/FORD MIT Design Structure Matrix (DSM) Workshop, MIT, Cambridge, Mass., September 1999

"Managing Efficiency versus Accuracy Decisions in Multidisciplinary Design Optimization", Seminar, Department of Aerospace Engineering, Mechanics, and Engineering Science, University of Florida, May 1998

"Reducing Time and Cost in the Design Process", Short Course developed and taught in conjunction with 6th AIAA/NASA/ISSMO MDO Conference, Bellevue, WA, September 1996

"Multidisciplinary Design Optimization - Applications to Systems and Controls", NSF Underrepresented/Minority Workshop, Washington, D.C., September 1995

"Decomposition in Aircraft Design", Presentation, NSF/NASA Multidisciplinary Aircraft Design Workshop, Virginia Polytechnic Institute and State University, Blacksburg, Virginia, May 1993

"A Non-Hierarchic Decomposition Method for Synthesis of Mixed Discrete/Continuous Systems", Seminar, NASA Langley Research Center, February 1993

"Concurrent Optimal Design", Presentation, Zonta International - Geneva Chapter, January 1993.

"Heuristics-Based Coupling Strengths in Complex Engineering Systems", Seminar, State University at Buffalo, Department of Mechanical and Aerospace Engineering, Applied Artificial Intelligence in Engineering Graduate Group, September 1992.

"An Intelligent Decomposition Approach for Efficient Design of Non-Hierarchic Systems", Seminar, NASA Langley Research Center, August 1992.

"Non-Hierarchic System Decomposition for Multidisciplinary Synthesis", Seminar, Pennsylvania State University, Department of Mechanical Engineering, March 1991.

"Non-Hierarchic System Decomposition for Multidisciplinary Synthesis", Seminar, Iowa State University, Department of Aerospace Engineering and Engineering Mechanics, March 1991.

"Non-Hierarchic System Decomposition for Multidisciplinary Synthesis", Seminar, Modeling & Computing Services, Freemont, California, February 1991.

"Non-Hierarchic System Decomposition for Multidisciplinary Synthesis", Seminar, State University of New York at Buffalo, Department of Mechanical and Aerospace Engineering, February 1991.

"Non-Hierarchic System Decomposition for Multidisciplinary Synthesis", Seminar, Virginia Technical Institute and State University, Department of Aerospace and Ocean Engineering, December 1990.

"Non-Hierarchic System Decomposition for Multidisciplinary Synthesis", Seminar, University of Texas at Arlington, Department of Aerospace Engineering, November 1990.

Publications-Book Chapters:

Bloebaum, C.L., Hajela, P., and Sobieski-Sobieszczanski, J., "Decomposition Methods for Multidisciplinary Synthesis", Chapter for the Volume *Multidisciplinary Engineering Systems: Design and Optimization Techniques and Their Applications* for the series Control and Dynamic Systems, Academic Press, Vol. 57, pp. 1-23, 1993.

Publications–Invited Journal Contributions:

Bloebaum, C. L., and McGowan, A. M. R., "Design of Complex Engineered Systems", *ASME Journal of Mechanical Design*, Vol 132 (12), December 2010.

Bloebaum, C. L., "The Promise of Visualization for Computational Design Steering", *Design Optimization: International Journal for Product and Process Improvement,* Vol. 2, March 1999.

Bloebaum, C. L., Review of the 7th AIAA/USAF/NASA/ISSMO Symposium on Multidisciplinary Analysis and Optimization – an Academic Perspecitve, *Design Optimization: International Journal for Product and Process Improvement,* Vol. 1, January 1999.

Publications-Archived Journals:

In preparation:

Kwasa, B., Kannan, H., Bloebaum, C.L., "Stochastic Design of Large-Scale Complex Engineered Systems by Incorporation of Organization Design", *in preparation for American Society of Engineering Management (ASEM) Engineering Management Journal (EMJ)*

Kis, D., Wenger, C., Bloebaum, C.L., "A Coupling Analysis Approach to Identify Unexpected Thrust Oscillation Behavior in Ares 1", *in preparation for AIAA Journal*

Murugaiyan, S., Kannan, H., Mesmer, B., Abbas, A.E., Bloebaum, C.L., "A Comprehensive Study on Modeling Requirements into Value Formulation using a Value Gap Analysis", *in preparation for IEEE Systems Journal*

Subramanian, T.R., Kannan, H., Mesmer, B., Bloebaum, C.L., "An Investigation on Fidelity and Validity of Value Functions using Rank Correlation Metrics", *in preparation for IEEE Systems Journal*

Under Review (Submitted):

Jung, S., Simpson, T.W., Bloebaum, C.L., Rao, H., Winer, E., Mesmer, B., "Value-Driven Design of Product Families Part II: Value Modeling and Value-Driven Design Approach", under review in *Structural and Multidisciplinary Optimization*

Under Revision:

Bhatia, G., Kannan, H., Bloebaum, C.L., "A Game Theory Approach to Negotiations in a Combined Price, Performance and Value-Based Contracting Scenario: An Aircraft System Case Study", *under revision for Systems Engineering*

Kannan, H., Bloebaum, C.L., Mesmer, B., "Incorporation of Risk Preferences in a Value-Based Systems Engineering Framework", *under revision for Journal of Engineering Design*

Accepted and Appeared:

Wang, M., Kannan, H., Bloebaum, C.L., "Beyond Mean-Variance: The Mean-Gini Approach to Optimization Under Uncertainty", *ASME Journal of Mechanical Design*, 140 (3), 031401 (2017), doi: 10.1115/1.4038566

Kwasa, B., Kannan, H., Bloebaum, C.L., "Incorporation of Organization Design in the Design of Large-Scale Complex Engineered Systems", accepted for publication in *Journal of Aerospace Operations (JAO) (revision submitted)*

Vidyadharan, A., Philpott, R., Kwasa, B., Bloebaum, C.L., "Analysis of Autonomous Aircraft Systems Based on Operational Scenarios Using Value Modeling", *Drones **2017**, 1, 5.*

Kannan, H., Mesmer, B.L. and Bloebaum, C.L., "Increased System Consistency through Incorporation of Coupling in Value-based Systems Engineering", *Systems Engineering (INCOSE),* Volume 20, pp 21-44, 2017, doi:10.1002/sys.21377

Simpson, T.W., Miller, S., Tibor, E., Yukish, M., Stump, G., Kannan, H., Mesmer, B., Winer, E.H., and Bloebaum, C.L., "Adding Value to Trade Space Exploration when Designing Complex Engineered Systems", *Systems Engineering (INCOSE),* Volume 20, pp 131-146, 2017, doi:10.1002/sys.21384

Mesmer, B., Bloebaum, C.L., "An End-User Decision Model with Information Representation for Improved Performance and Robustness in Complex System Design", *Research in Engineering Design*, July 2015, Volume 26, Issue 3, pp 235-251.

Mesmer, B., and Bloebaum, C.L., "Incorporation of Decision, Game, and Bayesian Game Theory in an Emergency Evacuation Exit Decision Model", *Fire Safety Journal*, July 2014, Volume 67, p. 121-134.

Mesmer, B., and Bloebaum, C.L., "Importance of Incorporation of Personal Communication Devices in Evacuation Simulators", *Safety Science*, June 2012. Volume 50, Issue 5, p. 1313-1318.

Chiu, P.-W. and Bloebaum, C. L. "Hyper-Radial Visualization (HRV) Method with range-based Preferences for Multi-objective Decision making", *Journal of Structural and Multidisciplinary Optimization*, 2010, Volume 40, Numbers 1-6, pp 97-115.

Chiu, P.-W., Naim, A. M., Lewis, K. E., Bloebaum, C. L., "The Hyper-Radial Visualization Method for Multi-Attribute Decision-Making Under Uncertainty", *International Journal for Product Development*, 2009, Volume 9, Issue 1/2/3, pp 4-31.

English, K., Bloebaum, C. L., "Visual Dependency Structure Matrix for Multidisciplinary Design Optimization Tradeoff Studies", *AIAA Journal of Aerospace Computing, Information, and Communication*, 2008, Volume 5, Number 9, pp. 274-297.

Huang, C. H., Galuski, J., and Bloebaum, C. L., "Multi-objective Pareto Concurrent Subspace Optimization for Multidisciplinary Design", *AIAA Journal*, 2007, Vol. 45, No. 8, pp 1894-1906.

Sheridan, M.F., Bloebaum, C.L., Kesavadas, T., Patra, A.K, and Winer, E., Visualization and Communication, Risk Management of Landslides, C.A. Brebbia (editor), Risk Analysis III, WIT Press, Southampton, 2002, pp. 691-701.

Winer, E.H., Bloebaum, C.L., "Development of Visual Design Steering as an Aid in Large Scale Multidisciplinary Design Optimization – Part I: Method Development, *Structural and Multidisciplinary Optimization*, Vol. 23, No. 6, July 2002, pp. 412-424.

Winer, E.H., Bloebaum, C.L., "Development of Visual Design Steering as an Aid in Large Scale Multidisciplinary Design Optimization – Part II: Method Validation, *Structural and Multidisciplinary Optimization*, Vol. 23, No. 6, July 2002, pp. 425-435.

K. English , C.L. Bloebaum , E. Miller, "Development of multiple cycle coupling suspension in the optimization of complex systems", *Structural and Multidisciplinary Optimization* , Vol. 22, No. 4, pp 268-283, 2001.

E.H. Winer , C.L. Bloebaum, "Visual design steering for optimization solution improvement", *Structural and Multidisciplinary Optimization*, Vol. 22, No. 3, pp 219-229, 2001.

Hulme, K. F., Bloebaum, C. L., "A Simulation-based Comparison of Multidisciplinary Solution Strategies using CASCADE", *Structural Optimization*, Vol. 19, No. 1, March 2000, pp17-35.

Rogers, J. L., McCulley, C., Bloebaum, C. L., "Optimizing the Process Flow for Complex Design Projects", *Design Optimization: International Journal for Product and Process Improvement*, Number 3, 1999, pp. 281-292.

Becker, J.C., Bloebaum, C.L., "Distributed Computing for Multidisciplinary Design Optimization Using Java", *Structural Optimization*, Volume 14, Number 4, December 1997, pp. 203-218.

McCulley, C., Hulme, K., and Bloebaum, C.L., "Simulation-Based Development of Heuristic Strategies for Complex System Convergence", *Applied Mechanics Reviews*, Vol. 50 (11), November 1997, pp. 117-124.

Hulme, K.F., Bloebaum, C.L., "Development of a Multidisciplinary Design Optimization Test Simulator", *Structural Optimization*, Volume 14, Number 2-3, October 1997, pp. 129-137.

McCulley, C., Bloebaum, C. L., "A Genetic Tool for Optimal Design Sequencing in Complex Engineering Systems", *Structural Optimization*, Volume 12, Number 2-3, October 1996, pp.

186-201.

Chi, H. -W., Bloebaum, C. L., "Mixed Variable Optimization Using Taguchi's Orthogonal Arrays", *Structural Optimization*, Volume 12, Number 2/3, October 1996, pp. 147-152.

Serhan, H., Bloebaum, C. L., Bennett, G., "Multidisciplinary Design Optimization of Lumbar Transpedicular Screws", *Structural Optimization*, Volume 10, Number 3/4, December 1995, pp. 222-230.

Bloebaum, C. L. "Coupling Strength-based System Reduction for Complex Engineering Design", *Structural Optimization*, Volume 10, Number 2, October 1995, pp. 113-121.

Bloebaum, C. L., Hajela, P., and Sobieski, J., "Non-Hierarchic System Decomposition in Structural Optimization", *Engineering Optimization*, Volume 19, 1992, pp. 171-186.

Sobieski, J., Bloebaum, C. L., and Hajela, P., "Sensitivity of Control-Augmented Structure Obtained by a System Decomposition Method", *AIAA Journal*, Volume 29, Number 2, 1991, pp. 264-270.

Hajela, P., Bloebaum, C .L., and Sobieski, J., "Application of Global Sensitivity Equations in Multidisciplinary Aircraft Synthesis", *Journal of Aircraft*, Volume 27, Number 12, 1990, pp. 1002-1010.

Bloebaum, C. L., "Global Sensitivity Analysis in Control-Augmented Structural Synthesis", *AIAA Student Journal*, Summer issue, 1989.

Publications - Peer Reviewed Conference Proceedings (Full Papers):

Kwasa, B., Kannan, H., Bloebaum, C.L., "Impact of Varying Decision-Maker Beliefs in a Value-Based Systems Engineering Framework", 2017 ASEM International Conference, Huntsville, AL October 2017

Sikkandar Basha, N., Kwasa, B., Kannan, H., Bloebaum C.L., "Impact of Sensemaking Framework in Design and Development of Large Scale Complex Engineered Systems", 2017 ASEM International Conference, Huntsville, AL October 2017

Kis, D., Wenger, C., and Bloebaum, C., "Measuring Coupling Strengths in the Ares 1 Rocket Using and Uncertainty Approach", 2017 AIAA Space Forum, Orlando, FL, September 2017 (AIAA Space Forum Cancelled due to hurricane. Paper in proceedings)

Jung, S., Simpson, T.W., and Bloebaum, C.L., "Value-Driven Design Using Discipline-Based Decomposition for a Family of Front-Loading Washing Machines," 2017 IDETC Conference, Design Automation, August 6-9, 2017, Cleveland, OH

Vidyadharan, A., Carter, T., Ceylan, H., Bloebaum C.L., Gopalakrishnan, K., Kim, S., "Civil

Infrastructure Health Monitoring and Management using Unmanned Aerial Systems" ASCE Pavements 2017, Philadelphia, PA, August 2017

Kannan, H., Salimi, E., Bloebaum, C.L., Abbas, A.E., "Preference Modeling for Government-Owned Large Scale Complex Engineered Systems: A Satellite Case Study", CSER 2017, Redondo Beach, CA, March 2017

Kis, D., M., Wenger, C., and Bloebaum, C.L., "A Value-driven Approach to Capture Unintended Consequences Impacting Mission Success", CSER 2017, Redondo Beach, CA, March 2017

Wang, M., Kannan, H., Bloebaum, C.L., "Value Driven Optimizations in a Dynamic Market: Measuring Uncertainty with the Gini Coefficient", AIAA SciTech 2017, Grapevine, TX, January 2017

Kwasa, B., Kannan, H., Bloebaum, C.L., "Capturing Organizational Uncertainty in a Value-Based Systems Engineering Framework", 2016 ASEM International Conference, Concord, NC, October 2016

Sikkandar Basha, N., Kwasa, B., Kannan, H., Bloebaum C.L., "Sense-Making in a Value-Based Context due to Requirements Creep", 2016 ASEM International Conference, Concord, NC, October 2016

Jung, S., Simpson, T., Bloebaum, C., Kannan, H., Winer, E., Mesmer, B., "A Value-Driven Design Approach to Optimize a Family of Front-Loading Washing Machines", ASME 2016 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference, Charlotte, NC

Kis, D., Poetting, M., Wenger, C., and Bloebaum, C.L., "A Multidisciplinary Coupling Analysis Method to Support Investigation of Ares 1 Thrust Oscillation", CSER 2016, Huntsville Alabama.

Murugaiyan, S., Kannan, H., Mesmer, B., Abbas, A.E., Bloebaum, C.L., "A Comprehensive Study on Modeling Requirements into Value Formulation in a Satellite System Application", CSER 2016, Huntsville, AL, March 2016

Kwasa, B., Kannan, H., Bloebaum C.L., "Impact of Organization Structure on the Value of a Commercial Communication Satellite", CSER 2016, Huntsville, AL, March 2016

Kannan, H., Bloebaum, C.L., Mesmer, B., "Incorporation of Risk Preferences in a Value-Based Systems Engineering Framework for a Satellite system", AIAA SciTech 2016, San Diego, CA, January 2016

Bhatia, G., Kannan, H., Bloebaum, C.L., "A Game Theory Approach to Bargaining over Attributes of Complex Systems in the context of Value-Driven Design: An Aircraft System Case Study", AIAA SciTech 2016, San Diego, CA, January 2016

Subramanian, T.R., Kannan, H., Mesmer, B., Bloebaum, C.L., "Understanding the Impact of

Uncertainty on the Fidelity of the Value Model", AIAA SciTech 2016, San Diego, CA, January 2016

Kannan, H., Bloebaum, C.L., Mesmer, B., "Incorporation of Coupling Strength Models in a Value-based Systems Engineering Framework for Optimization", AIAA Aviation 2015 (16th AIAA/ISSMO Multidisciplinary Analysis and Optimization Conference), Dallas TX, June 2015

Kwasa, B., Kannan, H., Bloebaum C.L., "Impact of Organization Structure in a Value-based Systems Engineering Framework" 2015 ASEM International Conference, Indianapolis, IN, October 2015

Hupman, A., Abbas, A.E., Tibor, E., Kannan, H., Bloebaum, C.L., Mesmer, B., "Calculating Value Gaps Induced by Requirements, Deterministic Modeling, Fixed Targets" AIAA Scitech 2015, Kissimme, FL, January 2015

Kwasa, B., Bloebaum, C.L., Kannan, H., Mesmer, B., "Organization Design in the Context of Value-Driven Design" AIAA Scitech 2015, Kissimme, FL, January 2015

Kannan, H., Bloebaum, C.L., Mesmer, B., "Incorporation of Coupling Strength Models in Decomposition Strategies for Value-Based MDO", AIAA Aviation 2014 (15th AIAA/ISSMO Multidisciplinary Analysis and Optimization Conference), June 2014

Richardson, T., Kannan, H., Bloebaum, C.L., Winer, E., "Incorporating Value-Driven Design in to the Visualization of Design Spaces using Contextual Self-Organizing Maps: A Case Study of Satellite Design", AIAA Aviation 2014 (15th AIAA/ISSMO Multidisciplinary Analysis and Optimization Conference), June 2014

Goetzke, E., Bloebaum, C.L., Mesmer, B., "Profit and Mission-Based Value Functions in a VDD/MDO Framework", AIAA Aviation 2014 (14th AIAA Aviation Technology, Integration, and Operations Conference), June 2014

Tibor, E., Miller, S. Stump, G., Simpson, T., Yukish, M., Bloebaum, C.L., Mesmer, B., Winer, E., "Assessment of Trade Space Exploration Tools for Decision Support in Value-Driven Design" AIAA Aviation 2014 (14th AIAA Aviation Technology, Integration, and Operations Conference), June 2014

Mesmer, B., Bloebaum, C.L., Kannan, H., "Incorporation of Value-Driven Design in Multidisciplinary Design Optimization", 10th World Congress of Structural and Multidisciplinary Optimization (WCSMO), Orlando, FL, May, 2013

Mesmer, B., Bloebaum, C.L., "Use of an End-User Decision Model to Improve Robustness in Multidisciplinary Design Optimization", 14th AIAA/ISSMO Multidisciplinary Analysis and Optimization Conference (MA&O), Indianapolis, IN, September, 2012

Mesmer, B., Bloebaum, C.L., "Representation of Information in Large-Scale, Complex System End-User Decision Models", 14th AIAA/ISSMO Multidisciplinary Analysis and Optimization

Conference (MA&O), Indianapolis, IN, September, 2012

Collopy, P., Bloebaum, C. L., Mesmer, B., "The Distinct and Interrelated Roles of Value-Driven Design, Multidisciplinary Design Optimization, and Decision Analysis", 14th AIAA/ISSMO Multidisciplinary Analysis and Optimization Conference (MA&O), Indianapolis, IN, September, 2012

Mesmer, B., Bloebaum, C.L., "Vacate-GT: An Emergency Evacuation Simulator Incorporating a Decision and Game Theory Based Exit Decision Model", 2nd International Conference on Evacuation Modeling and Management (ICEM), Chicago, IL, August, 2012

Mesmer, B., Bloebaum, C.L., "Modeling Decision and Game Theory Based Pedestrian Velocity Vector Decisions in Emergency Evacuations", 2nd International Conference on Evacuation Modeling and Management (ICEM), Chicago, IL, August, 2012

Chiu, P.-W. and Bloebaum, C. L., "Variable Range-based Preference Incorporation in Multi-objective Decision Making", Proceedings of 47th AIAA Aerospace Sciences Meeting and Exhibit, AIAA-2009-1166, Reno, Nevada, January 2009.

Chiu, P.-W. and Bloebaum, C. L., "Visual Steering for Design Generation in Multi-objective Optimization Problems", Proceedings of 47th AIAA Aerospace Sciences Meeting and Exhibit, AIAA-2009-1167, Reno, Nevada, January 2009.

Chiu, P.-W. and Bloebaum, C. L. (2008), "Hyper-Radial Visualization (HRV) with Weighting Procedure for Multi-objective Decision-making", Proceedings of 12th AIAA/ISSMO Multidisciplinary Analysis and Optimization Conference, British Columbia, Canada, September 2008.

Naim, A. M., Chiu, P.-W., Bloebaum, C. L. and Lewis, K. E. (2008), "Hyper-Radial Visualization for Multi- objective Decision-making Support Under Uncertainty", Proceedings of 12th AIAA/ISSMO Multidisciplinary Analysis and Optimization Conference, British Columbia, Canada, September 2008.

Xue, Z., and Bloebaum, C. L., 2008, "Aircraft Cabin Configuration Design using VacateAir – an Aircraft Evacuation Simulation Model," Proceedings of 12th AIAA/ISSMO Multidisciplinary Analysis and Optimization Conference, Victoria, British Columbia, Canada, September 2008.

Schafer, S., Hoffmann, K., Noel, P., and Bloebaum, C.L., "3D-3D Alignment using Particle Swarm Optimization", SPIE 2008, San Jose, California, February 2008.

Z. Xue and C. L. Bloebaum, "A Particle Swarm Optimization-Based Aircraft Evacuation Simulation Model – VacateAir", Proceedings of 46th AIAA Aerospace Sciences Meeting, Reno, Nevada, January 2008.

Chiu, P. and Bloebaum, C. L., "Hyper-Radial Visualization (HRV) for Decision-making in Multi-objective Optimization", Proceedings of 46th AIAA Aerospace Sciences Meeting, Reno,

Nevada, January 2008.

Z. Xue, P. DesJardin, C. L. Bloebaum. "A Particle Swarm Optimization Based Behavioral and Probabilistic Fire Evacuation Model Incorporating Fire Hazards & Human Behaviors", 2007 N.I.S.T. Fire Conference, Gaithersburg, MD, April 2007 (Short length article).

Agrawal, G., Bloebaum, C.L., "Intuitive Visualization of Hyperspace Pareto Frontier for Multi-attribute Decision-Making Under Uncertainty", proceedings of AIAA 11th MDO Conference, VA, September 2006.

Parashar, S., and Bloebaum, C. L., "A Heuristic Solution Strategy for Multi-Objective Multidisciplinary Design Optimization (MOMDO-GA)", proceedings of AIAA 11th MDO Conference, VA, September 2006.

Agrawal, G., and Bloebaum, C. L. "An Intuitive Approach to Visualize Multidimensional Functional Relationships and Geometry", proceedings of AIAA 11th MDO Conference, VA, September 2006.

Parashar, S., and Bloebaum, C. L., "Multi-Objective Genetic Algorithm Concurrent Subspace Optimization (MOGACSSO) for Multidisciplinary Design", proceedings of 47th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics & Materials Conference, Newport, RI, May 2006.

Agrawal, G., Bloebaum, C.L., "An Intuitive Approach to Visualize Multi-dimensional Functional Relationships for Optimization Applications", proceedings of 44th AIAA Aerospace Sciences Meeting and Exhibit, Reno, Nevada, January 2006.

Agrawal, G., Lewis, K., Bloebaum, C.L., "Intuitive Visualization of Hyperspace Pareto Frontier", proceedings of 44th AIAA Aerospace Sciences Meeting and Exhibit, Reno, Nevada, January 2006.

Parashar, S., Bloebaum, C.L., "Decision Support Tool for Multidisciplinary Design Optimization (MDO) using Multi-Domain Decomposition", Proceedings of 1st AIAA Multidisciplinary Design Optimization Specialist Conference, Austin, Texas, April 18-21, 2005.

Agrawal, G., Lewis, K., Bloebaum, C.L., "Intuitive Design Selection Using Visualized n-Dimensional Pareto Frontier", Proceedings of 1st AIAA Multidisciplinary Design Optimization Specialist Conference, Austin, Texas, April 18-21, 2005.

Chiam, T.-W., Bloebaum, C. L., "Developement of a Pseudo- Gradient Augmented Heuristic Optimization Method", proceedings of 10th AIAA/ISSMO Multidisciplinary Analysis and Optimization Conference, Albany, NY, September 2004.

Agrawal, G., Lewis, K. E., Chugh, K., Huang, C.-H., Parashar, S., and Bloebaum, C. L., "Intuitive Visualization of Pareto Frontier for Multi-Objective Optimization in n-Dimensional Performance Space", proceedings of 10th AIAA/ISSMO Multidisciplinary Analysis and

Optimization Conference, Albany, NY, September 2004.

Huang, C.-H., Bloebaum, C. L., "Visualization as a Solution Aid for Multi-Objective Concurrent Subspace Optimization in a Multidisciplinary Design Environment", proceedings of 10th AIAA/ISSMO Multidisciplinary Analysis and Optimization Conference, Albany, NY, September 2004.

Huang, C.-H., Bloebaum, C. L., "Incorporation of Preferences in Multi-Objective Concurrent Subspace Optimization", proceedings of 10th AIAA/ISSMO Multidisciplinary Analysis and Optimization Conference, Albany, NY, September 2004.

Morankar, J., Bloebaum, C. L., "Application of Multidisciplinary Design Optimization for a Diesel Engine Cooling System" proceedings of 10th AIAA/ISSMO Multidisciplinary Analysis and Optimization Conference, Albany, NY, September 2004.

Agrawal, G., Bloebaum, C. L., English, K., Bisantz, A., "Web-based Visualization Environment for Decision- making in Multidisciplinary Design Optimization", Proceedings of 45th AIAA/ASME/ASCE/ASC Structures, Structural Dynamics, and Materials Conference, April 2004, Palm Springs, California.

Huang, C. H., Bloebaum, C. L., "Multi-Objective Pareto Concurrent Subspace Optimization for Multidisciplinary Design", Proceedings of 41st AIAA Aerospace Sciences Meeting and Exhibit, January 2004, Reno, Nevada.

Parashar, S., English, K., Bloebaum, C. L., "Data Transmission in Multidisciplinary Design Optimization using Platform-Independent Data Structures", Proceedings of 41st AIAA Aerospace Sciences Meeting and Exhibit, January 2004, Reno, Nevada.

Bhandewale, A., Kesavadas, T., English, K., Bloebaum, C.L., Lewis, K.E., and Chugh, K., "Interactive Design and Visualization of a Chemical Plant", Proceedings of 2003 ASME International Mechanical Engineering Congress and R&D Expo, Washington, D.C., November 2003.

Abdul-Jalil, M.K., Bloebaum, C.L., "Collaborative Virtual Engineering Design Environment", CoGRAMM'02, National Conference on Computer Graphics and Multimedia, October 2002, Melaka, Malaysia.

Sheridan, M.F., Bloebaum, C.L., Kesavadas, T., Patra, A.K., and Winer, E., "Visualization and Communication in Risk Management of Landslides", Proceedings of Risk Analysis 2002 (the Third International Conference on Computer Simulation in Risk Analysis and Hazard Mitigation), Sintra, Portugal, June 2002.

Ahmad, F., Bloebaum, C., "A Scalable Parallel Direct Optimization Method for Large-Scale Design", Proceedings of 9th AIAA/ISSMO MDO Conference, Atlanta, Georgia, September, 2002.

Misra, U., Bloebaum, C., "A Parallel Hybrid Genetic Simulated Annealing Algorithm for Large-

Scale Constrained Optimization", Proceedings of 9th AIAA/ISSMO MDO Conference, Atlanta, Georgia, September, 2002.

Bloebaum, C., English, K., Winer, E., "Visual Design Steering (VDS) as a New Paradigm for Engineering Design", Keynote Address, Engineering Design Conference 2002 (EDC2002), London, England, July 2002.

English, K., Bloebaum, C. L., "Subsystem and Coupling Cost Considerations Using a Visual Dependency Structure Matrix", proceedings of 40th IAA Aerospace Sciences Meeting, Reno, Nevada, January 2002.

English, K., Winer, E., Bloebaum, C. L., "A Visualization-based Framework for Trade-offs in Complex Engineering Design", proceedings of the 5th International Conference on Engineering Design and Automation, Las Vegas, Nevada, August 2001.

Abdul-Jalil, M.K., Bloebaum, C.L., "Development of a Collaborative Environment for Finite Element Simulation", proceedings of the 9th International Conference on Human Computer Interaction, New Orleans, Louisiana, August 2001.

English, K., Bloebaum, C. L., "Enhanced Total Derivative-based Coupling Suspension in Complex System Optimization", proceedings of 39th AIAA Aerospace Sciences Meeting, Reno, Nevada, January, 2001.

Winer, E.H., Bloebaum, C.L., "Visual Design Steering For Optimization Solution Improvement", proceedings of 8th AIAA/USAF/NASA/ISSMO Symposium on Multidisciplinary Analysis and Optimization, Long Beach, CA, September 2000.

Hulme, K., Bloebaum, C.L., "A Performance-based Investigation of Parallel and Serial Approaches to Multidisciplinary Analysis Convergence", proceedings of 8th AIAA/USAF/NASA/ISSMO Symposium on Multidisciplinary Analysis and Optimization, Long Beach, CA, September 2000.

English, K., Bloebaum, C.L., "A Comparison of Optimization Techniques for Solving the Coupling Suspension Problem", proceedings of 8th AIAA/USAF/NASA/ISSMO Symposium on Multidisciplinary Analysis and Optimization, Long Beach, CA, September 2000.

Abdul-Jalil, M.K., Bloebaum, C.L., "Development Of A Distributed Collaborative Virtual Environment For Engineering Design Application", proceedings of 8th AIAA/USAF/NASA/ISSMO Symposium on Multidisciplinary Analysis and Optimization, Long Beach, CA, September 2000.

Hulme, K., Bloebaum, C.L., "Development of a Simulation-based Framework for Exploiting New Tools and Techniques in Multidisciplinary Design Optimization", proceedings of 1st ASMO UK/ISSMO Conference on Engineering Design Optimization, West Yorkshire, England, July 8-9, 1999.

Bloebaum, C.L., et. al, "The Development of a Robust Layout Optimization Tool and its Application in the Air Separation Industry", proceedings of Optimization in Industry 2, Banff, Canada, June 6-11, 1999.

English, K., Bloebaum, C.L., "Complex System Solution Management Using Visualization", proceedings of 3rd ISSMO/UBCAD/UB/AIAA World Congress of Structural and Multidisciplinary Optimization, Niagara Falls/Amherst, NY, May 1999.

Hulme, K.F., Bloebaum, C.L., "A Comparison of Formal and Heuristic Strategies for Iterative Convergence of a Coupled Multidisciplinary Analysis", proceedings of 3rd ISSMO/UBCAD/UB/AIAA World Congress of Structural and Multidisciplinary Optimization, Niagara Falls/Amherst, NY, May 1999.

Winer, E., Bloebaum, C.L., "Using the World Wide Web to Employ Concurrent Design Methodologies", proceedings of 3rd ISSMO/UBCAD/UB/AIAA World Congress of Structural and Multidisciplinary Optimization, Niagara Falls/Amherst, NY, May 1999.

English, K., Bloebaum, C.L., "Development of Multiple Cycle Coupling Suspension in Complex System Optimization", proceedings of the 7th AIAA/USAF/NASA/ISSMO Symposium on Multidisciplinary Analysis and Optimization, St. Louis, MO, September 1998.

Hulme, K.F., Bloebaum, C.L., "A Comparison of Solution Strategies for Simulation-based Multidisciplinary Design Optimization", proceedings of the 7th AIAA/USAF/NASA/ISSMO Symposium on Multidisciplinary Analysis and Optimization, St. Louis, MO, September 1998.

McCulley, C., Bloebaum, C.L., "Comparison of Heuristic Convergence Strategies for Multidisciplinary Analysis", proceedings of the 7th AIAA/USAF/NASA/ISSMO Symposium on Multidisciplinary Analysis and Optimization, St. Louis, MO, September 1998.

Winer, E.H., Abdul-Jalil, M.K., Bloebaum, C.L., "Development of a Geographic Independent Virtual Design Environment for Large-Scale Design", proceedings of the 7th AIAA/USAF/NASA/ISSMO Symposium on Multidisciplinary Analysis and Optimization, St. Louis, MO, September 1998.

English, K., Nair, A.R., Bloebaum, C.L., Lewis, K., "Layout Optimization for Component Packing", proceedings of the 2nd International Conference on Engineering Design and Automation, Maui, Hawaii, August 1998.

Winer, E., Bloebaum, C.L., "Interactive 3-D Visualization for Large-Scale Multidisciplinary Design Optimization", proceedings of the 2nd International Conference on Engineering Design and Automation, Maui, Hawaii, August 1998.

Abdul-Jalil, M.K., Winer, E.H., Bloebaum, C.L., "Development of a Virtual Visualization Environment for Large-Scale Design", proceedings of the 39th AIAA/ASME/ASCE/AHS/ASC SDM Conference, Long Beach, CA, April 1998 (Invited Paper).

Winer, E., Bloebaum, C.L., "N-Dimensional Design Visualization via Graph Morphing for Large Scale Optimization", proceedings of the 2nd World Congress of Structural and Multidisciplinary Optimization, Zakopane, Poland, May 1997.

Winer, E., Bloebaum, C.L., "Design Visualization by Graph Morphing for Multidisciplinary Design Optimization", proceedings of the 1st International Conference of Engineering Design and Automation, Bangkok, Thailand, March 1997.

Bloebaum, C.L., McCulley, C., "Genetic Algorithm-Based Optimal Sequencing for Reduction of Design Cycle Time and Cost", proceedings of the 5th Pan American Congress of Applied Mechanics, San Juan, Puerto Rico, January 1997.

Becker, J. C., Bloebaum, C.L., "Distributed Computing for Multidisciplinary Design Optimization Using JAVA as a Web Interface", proceedings of the 6th AIAA/USAF/NASA/ISSMO Symposium on Multidisciplinary Analysis and Optimization, Bellevue, WA, September 1996.

Chi, H. -W., Bloebaum, C.L., "Concurrent Subspace Optimization for Mixed Variable Coupled Engineering Systems", proceedings of the 6th AIAA/USAF/NASA/ISSMO Symposium on Multidisciplinary Analysis and Optimization, Bellevue, WA, September 1996.

English, K., Miller, E., Bloebaum, C.L., "Total Derivative-Based Coupling Suspension for System Reduction in Complex Design", proceedings of the 6th AIAA/USAF/NASA/ISSMO Symposium on Multidisciplinary Analysis and Optimization, Bellevue, WA, September 1996.

Hulme, K., Bloebaum, C.L., "Development of CASCADE: A Multidisciplinary Design Test Simulator", proceedings of the 6th AIAA/USAF/NASA/ISSMO Symposium on Multidisciplinary Analysis and Optimization, Bellevue, WA, September 1996.

McCulley, C., Bloebaum, C.L., "Complex System Design Task Sequencing for Cost and Time Considerations", proceedings of the 6th AIAA/USAF/NASA/ISSMO Symposium on Multidisciplinary Analysis and Optimization, Bellevue, WA, September 1996.

Rogers, J., McCulley, C., Bloebaum, C. L., "Integrating a Genetic Algorithm into a Knowledge-based System for Ordering Complex Design Processes", proceedings of 4th International Conference on AI in Design, Stanford, CA, June 1996.

Chi, H. -W., Bloebaum, C. L., "Mixed Variable Optimization Using Taguchi's Orthogonal Arrays", proceedings of 21st ASME Design Automation Conference, Boston, Mass., September, 1995.

Lasher, E. J., Bloebaum, C. L., "Impact of Sensitivity Analysis Error on Optimal Solution Accuracy", proceedings of 36th AIAA/ASME/ASCE/AHS/ASE SDM Conference, New Orleans, LA, April 1995.

Fuessel, D., Singh, T., Bloebaum, C. L., "Optimum Model Size for Minimum Residual

Vibration", proceedings of 36th AIAA/ASME/ASCE/AHS/ASE SDM Conference, New Orleans, LA, April 1995.

Rogers, J., Bloebaum, C. L., "Organization of Tasks for Complex Design", proceedings of the 5th AIAA/USAF/NASA/ISSMO Symposium on Multidisciplinary Analysis and Optimization, Panama City, Florida, September 1994.

Fuessel, D., Bloebaum, C. L., "Optimal System Model Accuracy for Complex Design", proceedings of the 5th AIAA/USAF/NASA/ISSMO Symposium on Multidisciplinary Analysis and Optimization, Panama City, Florida, September 1994.

McCulley, C., Bloebaum, C. L., "Optimal Scheduling for Complex Engineering Systems Using Genetic Algorithms", proceedings of the 5th AIAA/USAF/NASA/ISSMO Symposium on Multidisciplinary Analysis and Optimization, Panama City, Florida, September 1994.

Bloebaum, C. L., Hong, W., Peck, A., "Improved Move Limit Strategy for Approximate Optimization", proceedings of the 5th AIAA/USAF/NASA/ISSMO Symposium on Multidisciplinary Analysis and Optimization, Panama City, Florida, September 1994.

Khalak, H., Miller, R., Weeks, C., Bloebaum, C. L., "Simulated Annealing Applied to Molecular Structure Determination", proceedings of the 5th AIAA/USAF/NASA/ISSMO Symposium on Multidisciplinary Analysis and Optimization, Panama City, Florida, September 1994.

Bloebaum, C. L., Chi, H. -W., "A Concurrent Decomposition Approach for Mixed Discrete/Continuous Variables", proceedings of 35th AIAA/ASME/ASCE/AHS/ASE SDM Conference, 1994.

Bloebaum, C. L., Mulubagal, G., Rosner, A., "Multidisciplinary Design with Tolerance Allocation for Maximum Quality", proceedings of 35th AIAA/ASME/ASCE/AHS/ASE SDM Conference, 1994.

Serhan, H. A., Bloebaum, C. L., Bennett, G. J., "Multidisciplinary Design of Spinal Transpedicular Screws", proceedings of 35th AIAA/ASME/ASCE/AHS/ASE SDM Conference, 1994.

Serhan, H. A., Bennett, G. J., Bloebaum, C. L., Sorini, P. M., "Effects of PVD & IBAD TiN Coatings on the Fatigue Performance of Spinal Transpedicular Screws", proceedings of 35th AIAA/ASME/ASCE/AHS/ASE SDM Conference, 1994.

Serhan, H., Bennett, G., Bloebaum, C. L., "The Effects of Thread Shape on Stress Magnitudes in Spinal Transpedicular Screws", proceedings of Joint Section on Disorders of the Spine and Peripheral Nerves, Ft. Lauderdale, FL., February 9-12, 1994.

Ford, J. M., Bloebaum, C. L., "Decomposition Method for Concurrent Design of Mixed Discrete/Continuous Systems", proceedings of ASME Design Automation Conference,

Albuquerque, New Mexico, September 19-22, 1993.

Bloebaum, C. L., "Decomposition in Aircraft Design", proceedings of NSF Workshop on Multidisciplinary Optimization for Aircraft Design, Blacksburg, Virginia, May 5-8, 1993.

Bloebaum, C. L., Sobieski, J., "Sensitivity-Based Coupling Strengths in Complex Engineering Systems", proceedings of 34th AIAA/ASME/ASCE/AHS/ASE SDM Conference, La Jolla, California, April 19-21, 1993 (Paper Number AIAA-93-1472).

Kincaid, R., Bloebaum, C. L., "Damper Placement Problem for CSI-Phase I Evolutionary Model", proceedings of 34th AIAA/ASME/ASCE/AHS/ASE SDM Conference, La Jolla, California, April 19-21, 1993 (Paper Number AIAA-93-1655).

Bloebaum, C.L., "An Intelligent Decomposition Approach for Coupled Engineering Systems", proceedings of the 4th AIAA/AF/NASA/OAI Symposium on Multidisciplinary Analysis and Optimization, Independence, Ohio, September 1992.

Bloebaum, C.L. and Hajela, P., "Heuristic Decomposition for Non-Hierarchic Systems", proceedings of 32nd AIAA/ASME/ASCE/AHS/ASE SDM Conference, Baltimore, Maryland, April 1991.

Bloebaum, C. L., "Variable Move Limit Strategy for Efficient Optimization", proceedings of 32nd AIAA/ASME/ASCE/AHS/ASE SDM Conference, Baltimore, Maryland, April 1991.

Hajela, P., Bloebaum, C. L., and Sobieski, J., "Application of Global Sensitivity Equations in Multidisciplinary Aircraft Synthesis", proceedings of AIAA/AHS/ASEE Aircraft Design and Operations Meeting, Seattle, Washington, July 1989.

Sobieski, J., Bloebaum, C. L., and Hajela, P., "Sensitivity of Control-Augmented Structure Obtained by a System Decomposition Method", proceedings of the 29th AIAA/ASME/ASCE/AHS/ASE SDM Conference, Williamsburg, Virginia, April 1988.

Publications–Technical Reports:

Bloebaum, C. L., "An Intelligent Decomposition Approach for Efficient Design of Non-Hierarchic Systems", from NASA/ASEE Summer Faculty Fellowship Program (J. Spencer - Compiler), NASA CR 189691, September 1992.

Bloebaum, C. L., "Formal and Heuristic System Decomposition Methods for Multidisciplinary Synthesis", NASA CR 4413, December 1991.

Conference Presentations (No Proceedings)

English, K., Bloebaum, C. L., "Using a Virtual DSM to improve Coupling Selection for

Suspension in Multidisciplinary Design Optimization", proceedings of LFM/LAI/CIPD/FORD MIT Design Structure Matrix (DSM) Workshop, MIT, Boston, Mass., September 1999.

"Concurrent Design Techniques for Space Applications", 2nd NE Space Development Conference, Buffalo, New York, October 1993.

H. A., Bennett, G. J., Bloebaum, C. L., "Titanium Nitride Ceramic Coatings of Spinal Implants", Poster Session at Ceramics in Biomedical Applications Workshop, Alfred, New York, June 1993.

Bloebaum, C. L., Hajela, P., and Sobieski, J., "Non-Hierarchic System Decomposition in Structural Optimization", Presented at 3rd AF/NASA Symposium on Multidisciplinary Analysis and Optimization, San Francisco, California, September 1990.

Bloebaum, C. L., Sobieski, J., and Hajela, P., "Evaluation of Performance Sensitivities in Multidisciplinary Aircraft Synthesis", Presented at 3rd AF/NASA Symposium on Multidisciplinary Analysis and Optimization, San Francisco, California, September 1990.

Bloebaum, C. L., "Global Sensitivity Analysis in Control-Augmented Structural Synthesis", Presented at AIAA National Student Conference, Aerospace Sciences Meeting, Reno, Nevada, January 1989 (also at AIAA Regional Student Conference, Altamonte Springs, Florida, April 1988.

Bloebaum, C. L., "Implementation of Oil Flow Method in Unsteady Flow for Skin-Friction Line Determination", Presented at AIAA Regional Student Conference, Huntsville, Alabama, April 1986.