

## I. CANDIDATE INFORMATION

### A. Name:

Eliot Winer

### B. Department and Current Rank:

Professor  
Department of Mechanical Engineering – Primary Appointment  
Department of Electrical and Computer Engineering – Courtesy Appointment

### C. Degrees Held

University at Buffalo	Ph.D. in Mechanical Engineering	1999
University at Buffalo	M.S. in Mechanical Engineering	1994
The Ohio State University	B.S. in Aerospace Engineering	1992

### D. Academic Positions Held

7/16 – present, Professor, Department of Mechanical Engineering, Iowa State University, Ames, Iowa

7/16 – present, Courtesy appointment, Professor, Department of Electrical and Computer Engineering, Iowa State University, Ames, Iowa

4/09 – present, Associate Director, Virtual Reality Applications Center (VRAC), Iowa State University, Ames, Iowa

7/13 – 6/16, Courtesy appointment, Associate Professor, Department of Electrical and Computer Engineering, Iowa State University, Ames, Iowa

7/09 – 6/16, Associate Professor, Department of Mechanical Engineering, Iowa State University, Ames, Iowa

11/03 – 6/09, Assistant Professor, Department of Mechanical Engineering, Iowa State University, Ames, Iowa

2/02 – 2/05, Adjunct Assistant Professor, Department of Mechanical and Aerospace Engineering, University at Buffalo, Buffalo, New York

6/00 – 11/03, Deputy Director, New York State Center for Engineering Design and Industrial Innovation (NYSCEDI), funded by the Assembly of the State of New York, Buffalo, New York

5/00 – 11/03, Research Assistant Professor, School of Engineering and Applied Sciences, University at Buffalo, Buffalo, New York

9/99 – 5/00, Postdoctoral Fellow, Department of Mechanical and Aerospace Engineering, University at Buffalo, Buffalo, New York

### E. Other Professional Employment

7/07 – present      Founder, Partner, Visual Medical Solutions, LLC, Ames, Iowa

6/00 – 10/05            Founder, Partner, Visual Design Systems, LLC, Buffalo, NY  
7/95 – 8/99             Senior Programmer/Analyst, EdgeNet, Inc., Buffalo, NY  
1/95 – 1/96             Programmer/Analyst, IT Services, Canisius College, Buffalo, NY

**F. Honors and Awards**

2016 – Human Computer Interaction Graduate Program - Research Excellence Award  
Ph.D. – Joseph Holub – “Dynamic Volume Rendering of Functional Medical Data on Dissimilar Hardware Platforms”

2011 – Prometheus Award for Breakout Company of the Year, Technology Association of Iowa

2010 – American Institute of Aeronautics and Astronautics Multidisciplinary Design Optimization Technical Committee (AIAA MDO TC) award for exemplary service to the committee

2009 – First place, John Pappajohn Iowa Business Plan Competition

2008 – Technology Association of Iowa Prometheus Award for Outstanding Startup Company of the Year

2008 – Iowa State University, Human Computer Interaction Faculty Member of the Year Award

2003 – University at Buffalo Office of Science, Technology Transfer and Economic Outreach Entrepreneurial Spirit Award

2003 – State University of New York Research Foundation Promising Inventor’s Award

2000 – Who’s Who Among Graduate Students in America

1988 – 1992 - Academic All Big Ten Conference

1988 – 1992 - Ohio State Scholar Athlete

1991 – 1992 - Mortar Board Senior Honor Society (Social Chairperson)

1992 – ASICS Men’s Volleyball Division I All-American

1992 – Ohio State Men’s Volleyball Most Valuable Player

## II. RESEARCH / CREATIVE ACTIVITIES

### A. Scholarship

@ Denotes any publication from work done at Iowa State University

# Denotes any publication derived from the candidate's thesis/dissertation

+ Denotes candidate's post-doctoral advisee or professional staff

\* Denotes graduate student co-author

^ Denotes undergraduate student co-author

#### 1. Articles in Peer-Reviewed Journals – In Print or Accepted

- 1) @ Holub, J. (\*) and Winer, E., “Enabling Real-time Volume Rendering of Functional Magnetic Resonance Imaging on an iOS Device”, *Journal of Digital Imaging*, 30(6), 738-750 (2017)
- 2) @ Hasiuk, F., J., Harding, C., Renner, A.R. (\*), and Winer, E., “TouchTerrain: A Simple Web-Tool for Creating 3D-Printable Topographic Models”, *Computers and Geosciences*, 109, 25-31 (2017)
- 3) @ Simpson, T. W., Miller, S., Tibor, E. B., Yukish, M. A., 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*, 20(2), 131–146 (2017)
- 4) @ Gilbert, S., Slavina, A. (\*), Dorneich, M.C., Sinatra, A.M., Bonner, D. (\*), Johnston, J., Holub, J. (\*), MacAllister, A. (\*), and Winer, E., “Creating a Team Tutor using GIFT”, *International Journal of Artificial Intelligence in Education*, <https://doi.org/10.1007/s40593-017-0151-2> (2017)
- 5) @ Kopecky K. (\*) and Winer E., “MetaTracker: Unifying and Abstracting 3D Motion Tracking Data from Multiple Heterogenous Hardware Systems,” *IEEE Access*, 4, 189-203 (2016)
- 6) @ Zou R., Kalivarapu V. (+), Winer E., Oliver J., and Bhattacharya S., “Particle Swarm Based Source Seeking,” *IEEE Transactions on Automation Science and Engineering*, 12(3), 865-875 (2015)
- 7) @ Richardson, T. (\*), and Winer, E., “Extending Parallelization of the Self-Organizing Map by Combining Data and Network Partitioned Methods,” *Advances in Engineering Software*, 88, 1-7 (2015)
- 8) @ Martinez-Escobar, M. (\*), Juhnke, B. (\*), Holub, J. (\*), Hisley, K., Eliot, D., and Winer, E., “Evaluation of Monoscopic and Stereoscopic Displays for Visual-Spatial Tasks in Medical Contexts,” *Computers in Biology and Medicine*, 61(1), 138-143 (2015)
- 9) @ Kalivarapu, V. (+), and Winer, E., “A Study of Graphics Hardware Accelerated Particle Swarm Optimization with Digital Pheromones,” *Journal of Structural and Multidisciplinary Optimization*, 36(4), 692-702 (2014)
- 10) @ Wang, Y., Bhattacharya, B. (\*), Winer, E., Kosmicki, P., El-Ratal, W., and Zhang, S., “Digital Micromirror Transient Response Influence on Superfast 3D Shape Measurement,” *Optics and Lasers in Engineering*, 58, 19-26 (2014)

- 11) @ Richardson, T. (\*), Nekolny, B. (\*), Holub, J. (\*), and Winer, E., "Visualizing Design Spaces Using Two-Dimensional Contextual Self Organizing Maps," *AIAA Journal – Special Section on Multidisciplinary Design Optimization*, 52(4), 725-738 (2014)
- 12) @ Kelly, J.W., Burton, M., Pollock, B. (\*), Rubio, E., Curtis, M., de la Cruz, J., Gilbert, S., and Winer, E., "Space Perception in Virtual Environments: Displacement from the Center of Projection Causes Less Distortion than Predicted by Cue-Based Models," *ACM Transactions on Applied Perception*, 10(4), Article 18 (2013)
- 13) @ Foo, J.L. (+), Martinez-Escobar, M. (\*), Juhnke, B. (\*), Cassidy, K., Hisley, K., Lobe, T., and Winer, E., "Evaluating Mental Workload of Two-Dimensional and Three-Dimensional Visualization for Anatomical Structure Localization", *Journal of Laparoendoscopic and Advanced Surgical Techniques*, 23(1), 65-70 (2013)
- 14) @ Martinez, M. (\*), Foo, J.L. (+), and Winer, E., "Colorization of CT Images to Improve Tissue Contrast for Tumor Segmentation," *Computers in Biology and Medicine*, 42(12), 1170-1178 (2012)
- 15) @ Noon, C. (\*), Zhang, R. (\*), Winer, E., Oliver, J., Gilmore, B., and Duncan, J., "A System for Rapid Creation and Assessment of Conceptual Large Vehicle Designs using Immersive Virtual Reality," *Computers in Industry*, 63(5), 500-512 (2012)
- 16) @ Pollock, B. (\*), Burton, M., Kelly, J.W., Gilbert, S., and Winer, E., "The Right View from the Wrong Location: Depth Perception in Stereoscopic Multi-User Virtual Environments", *IEEE Transactions on Visualization and Computer Graphics*, 18(4), 581-588 (2012)
- 17) @ Foo, J.L. (+), Miyano, G., Lobe, T., and Winer, E., "Tumor Segmentation from Computed Tomography (CT) Image Data using a Probabilistic Pixel Selection Approach," *Computers in Biology and Medicine*, 41, 56-65 (2011)
- 18) @ Kalivarapu, V. (\*), Foo, J.L. (\*), and Winer, E.H., "Synchronous Parallelization of Particle Swarm Optimization With Digital Pheromones," *Advances in Engineering Software*, 40(10), 975-985 (2009)
- 19) @ Foo, J.L. (\*), Miyano, G., Lobe, T., Winer, E., " Three-Dimensional Segmentation of Tumors from CT Image Data using an Adaptive Fuzzy System," *Computers in Biology and Medicine*, 39(10), 869-878 (2009)
- 20) @ Foo, J.L. (\*), Knutzon, J., Kalivarapu, V. (\*), Oliver, J., and Winer, E.H., "Path Planning of Unmanned Aerial Vehicles using B-Splines and Particle Swarm Optimization," *Journal of Aerospace Computing, Information, and Communication*, 6(4), 271-290, (2009)
- 21) @ Kalivarapu, V. (\*), and Winer, E.H., "Asynchronous Parallelization of Particle Swarm Optimization through Digital Pheromone Sharing," *Journal of Structural and Multidisciplinary Optimization*, 39(3), 263-274 (2009)
- 22) @ Kalivarapu, V. (\*), Foo, J.L. (\*), and Winer, E.H., "Improving Solution Characteristics of Particle Swarm Optimization using Digital Pheromones," *Journal of Structural and Multidisciplinary Optimization*, 37(4), 415-427 (2009)
- 23) @ Foo J.L. (\*), Lobe T., and Winer E., "A Virtual Reality Environment for Patient Data Visualization and Endoscopic Surgical Planning," *Journal of Laparoendoscopic & Advanced Surgical Techniques*, 19(s1), s211-s217 (2009)

- 24) @ Koehring, A. (\*), Foo, J.L. (\*), Miyano, G., Lobe, T., and Winer, E.H., “A Framework for Interactive Visualization of Digital Medical Images,” *Journal of Laparoendoscopic & Advanced Surgical Techniques*, 18(5), 697-706 (2008)
- 25) @ Kalivarapu, V. (\*), and Winer, E.H., “A Multi-Fidelity Software Framework for Interactive Modeling of Advective and Diffusive Contaminant Transport in Groundwater,” *Journal of Environmental Modeling & Software*, 23 (12), 1370-1383, (2008)
- 26) Beck, J.G., Palyo, S.A., Winer, E., Schwagler B. (^), and Ang, E.J. (\*), “Virtual Reality Exposure Therapy for PTSD Symptoms after a Road Accident: An Uncontrolled Case Series,” *Behavior Therapy*, 38(1), 39-48 (2007)
- 27) Kanukolanu, D. (\*), Lewis, K., and Winer, E.H., “A Multidimensional Visualization Interface to Aid in Trade-off Decisions During the Solution of Coupled Subsystems Under Uncertainty,” *Journal of Computer and Information Science in Engineering*, 6(3), 288-299 (2006)
- 28) # Winer, E.H., and Bloebaum, C.L., “Development of Visual Design Steering as an Aid in Large Scale Multidisciplinary Design Optimization - Part I: Method Development,” *Journal of Structural and Multidisciplinary Optimization*, 23(6), 412-424 (2002)
- 29) # Winer, E.H., and Bloebaum, C.L., “Development of Visual Design Steering as an Aid in Large Scale Multidisciplinary Design Optimization - Part II: Method Validation,” *Journal of Structural and Multidisciplinary Optimization*, 23(6), 425-435 (2002)
- 30) # Winer, E.H., and Bloebaum, C.L., “Visual Design Steering for Optimization Solution Improvement,” *Journal of Structural and Multidisciplinary Optimization*, 22(3), 219-229 (2001)

## **2. Articles in Peer-Reviewed Journals – In Review**

- 1) Jung, S., Simpson, T.W., Bloebaum, C.L., Kannan, H., Winer, E., and Mesmer, B., “Value-Driven Design of Product Families Part II: Value Modeling and Value-Driven Design Approach”, *Journal of Structural and Multidisciplinary Optimization*, under review (2018)
- 2) @ Bhattacharya, B. (\*) and Winer E., “Augmented Reality via Expert Demonstration Authoring (AREDA),” *Computers in Industry*, under review (2018)

## **3. Books Authored or Co-Authored**

None

## **4. Books Edited or Co-Edited**

None

## **5. Book Chapters**

- 1) Gilbert, S.B., Dorneich, M., Walton, J., and Winer, E. “Five Lenses on Team Tutor Challenges: A Multidisciplinary Approach”, *Building Intelligent Tutoring for Teams: What Matters*, Bingley, UK: Emerald Publishing (2018)

## **6. Formally Invited Lectures and Presentations**

- 1) Winer, E. and Dorneich, M., “Running a Team Tutoring Study: Technical Development and Data Analysis”, ARL Workshop on Team Tutoring, Ames, IA, June 2017
- 2) Winer, E., “Visual and Data Analytics to Enable Improved Decision Making”, Iowa CIO Summit, Ames, IA, May 2017
- 3) Winer, E., “How Augmented Reality Can Dramatically Improve Manufacturing”, John Deere Des Moines Works, Des Moines, IA, April 2017
- 4) Winer, E., “Using Augmented Reality to Improve Manufacturing and Training”, CIRAS AR Workshop, Ames, IA, April 2017
- 5) Winer, E., “Authoring Augmented Reality Work Instructions by Expert Demonstration”, DMDII Technology Showcase, Chicago, IL, September 2016
- 6) Winer, E., “Trends, Tools, and Tips the Digital Mechanical Engineer Needs to Know”, 2016 ASME Joint Mechanical Engineering Education Leadership & Advanced Manufacturing Innovation Summits, Tampa, FL, March 2016
- 7) Winer, E., “The Virtual Reality Applications Center: Building Better Decision Tools for the Design of Complex Engineered Systems”, Boeing Advanced Learning Symposium, Seattle, WA, October 2015
- 8) Winer, E., “Virtual Reality and Design Optimization Methods to Improve Medical Education, Anatomical Exploration and Treatment Planning”, Creighton University Medical Center Grand Rounds, Omaha, NE, October 2014
- 9) Winer, E., “Advanced Visualization Trends and Themes in the Design and Manufacturing of Complex Systems”, *Invited presentation given to 3M*, St. Paul, MN, May 2014
- 10) Winer, E., “Advanced Visualization Trends and Themes: Looking Back and Going Forward”, *Invited Keynote – Boeing Advanced Visualization and Data Analysis Technologies Symposium (AVDATS)*, St. Louis, MO, April 2014
- 11) Winer, E., “Employing Augmented Reality Technologies in Digital Work Instructions”, *Invited Keynote - Navy’s Manufacturing Technology (ManTech) program 2013 workshop*, Baltimore, MD, June 2013
- 12) Winer, E., “Visualization of Digital Medical Data on Mobile Devices via a Newly Developed Platform Independent Volume Rendering Engine”, *Seminar Series Department of Electrical and Computer Engineering*, Iowa State University, Ames, IA, April 2013
- 13) Winer, E., “Teaching and Practicing Entrepreneurship: How Do We Meet the Opportunities and Challenges of Entrepreneurship Today?”, *Panel member, Part of the 2012 Reiman Entrepreneur Speaker Series*, Iowa State University, Ames, IA, October 2012
- 14) Winer, E., “The Application of VR Techniques to Medical Education”, *Touro University Seminar Series*, Vallejo, CA, March 2012

- 15) Winer, E., “Virtual Reality, Graphics, and Optimization: Building Better Decision Tools for the Design of Complex Engineered Systems”, *Boeing Distinguished Researcher And Scholar Seminar (B-DRASS) series*, Huntington Beach, CA, March 2012
- 16) Winer, E., “Accidental Entrepreneurship: Navigating the Market and University Policies to Transfer Technology”, *Presentation to State of Iowa Board of Regents*, Iowa State University, Ames, IA, April 2011
- 17) Winer, E., “Accidental Entrepreneurship: The Luck and Skill Needed to Recognize Opportunity”, *Pappajohn Entrepreneurship Seminar Series*, Iowa State University, Ames, IA, February 2010
- 18) Winer, E., “Commercialization of 3D Interactive Digital Medical Software for Surgical Planning and Training”, *President’s Council*, Iowa State University, Ames, IA, October 2009
- 19) Winer, E., “Tumor Segmentation and Visualization Methods for Endoscopic Surgical Planning”, *Seminar Series*, Johns Hopkins University, Baltimore, MD, April 2009
- 20) Winer, E., “Novel Methods and Tools for Complex Engineering Design: Heuristic Optimization and Virtual Reality Applied to Problems in Medicine and the Military”, *Mechanical Engineering Seminar Series*, University of Nebraska, Lincoln, NB, April 2009
- 21) Winer, E., “Heuristic Optimization and Virtual Reality: Solving Complex Design Problems in Applications from Medicine to Military”, *Mechanical Engineering Seminar Series*, University of Maryland, Baltimore County, Baltimore, MD, April 2008
- 22) Winer, E., “Virtual Reality and HCI: Inspiring the Next Generation of Medical Technologies”, *Invited keynote, Frontiers in Medicine Lecture, Society of American Gastrointestinal and Endoscopic Surgeons (SAGES) Annual Meeting and Conference*, Las Vegas, NV, April 2007
- 23) Winer, E., “Virtual Reality and Engineering: the Future”, *Central Iowa Section of the American Society of Mechanical Engineers*, October 2006
- 24) Winer, E., and Oliver, J., “Technological Evolution of Virtual Reality and Human Computer Interaction”, *Rotary Club*, Rochester, MN, June, 2005
- 25) Winer, E., and Oliver, J., “Technological Evolution of Virtual Reality and Human Computer Interaction”, *IBM*, Rochester, MN, June, 2005
- 26) English, K., Winer, E.H., and Bloebaum, C.L., “Visual Design Steering (VDS) as a New Paradigm for Engineering Design”, *Invited keynote address and paper, Engineering Design Conference (EDC’02)*, King’s College, London, UK., November 2002

## **7. Contributed Lectures and Presentations**

None

## **8. Peer-Reviewed Conference Proceedings, Bulletins, or Reports – In Print/Accepted**

- 1) @ MacAllister, A. (\*), Miller, J. (\*), and Winer, E., “Predicting Manufacturing Aptitude using Augmented Reality Work Instructions”, The Interservice/Industry Training, Simulation & Education Conference (I/ITSEC), Orlando, FL, November 27-December 1, Paper no. 17224, Acceptance Rate 40% (2017)
- 2) @ MacAllister, A. (\*), Hoover, M. (\*), Gilbert, S., Oliver, J., Radkowski, R., Garrett, T., Holub, J. (\*), Winer, E., Terry, S., and Davies, P., “Comparing Visual Assembly Aids for Augmented Reality Work Instructions” The Interservice/Industry Training, Simulation & Education Conference (I/ITSEC), Orlando, FL, November 27-December 1, Paper no. 17208, Acceptance Rate 40% (2017)
- 3) @ Schlueter, J. (\*) and Winer, E., “Expert-Assisted Field Maintenance using Augmented Reality”, The Interservice/Industry Training, Simulation & Education Conference (I/ITSEC), Orlando, FL, November 27-December 1, Paper no. 17262, Acceptance Rate 40% (2017)
- 4) @ MacAllister, A. (\*), Kohl, A. (\*), Gilbert, S., Winer, E., Dorneich, M., Bonner, D., Slavina, A., “Analysis of Team Tutoring Training Data”, MODSIM World, Virginia Beach, VA, April 25-27, Acceptance Rate 82% (2017)
- 5) @ Schlueter, J. (\*), Baiotto, H. (\*), Hoover, M. (\*), Kalivarapu, V., Evans, G. (\*), and Winer, E., “Best practices for Cross-Platform Virtual Reality Development”, SPIE Defense +Commercial Sensing, Anaheim, CA, April 9-13, Paper no. 1019709, Acceptance Rate 78% (2017)
- 6) @ Evans, G. (\*), Miller, J. (\*), Iglesias Pena, M. (\*), MacAllister, A. (\*), and Winer, E. “Evaluating the Microsoft HoloLens through an augmented reality assembly application”, SPIE Defense +Commercial Sensing, Anaheim, CA, April 9-13, Acceptance Rate 78% (2017)
- 7) @ Miller, J., Baiotto, H. (\*), MacAllister, A. (\*), Evans, G. (\*), Schlueter, J. (\*), Hoover, M. (\*), Kalivarapu, V., and Winer, E., “Comparison of a Virtual Game-Day Experience on Varying Devices”, IS&T International Symposium on Electronic Imaging, Burlingame, CA, January 29-31, Acceptance Rate 83% (2017)
- 8) @ MacAllister, A. (\*), Gilbert, S., Holub, J. (\*), Davies, P., and Winer, E., “Comparison of Navigation Methods in Augmented Reality Guided Assembly,” The Interservice/Industry Training, Simulation & Education Conference (I/ITSEC), Orlando, FL, November 28-December 2, Paper no. 16075, Acceptance Rate 35% (2016)
- 9) Gilbert, S., Keren, N., Winer, E., Franke, W., Godby, K. (\*), MacAllister, A. (\*), McPherson, C. (\*), de la Cruz, J., and Lyons, J., “Evaluating the Value of Dynamic Terrain Simulation on Training Quality,” The Interservice/Industry Training, Simulation & Education Conference (I/ITSEC), Orlando, FL, November 28-December 2, Paper no. 16114, Acceptance Rate 35% (2016)
- 10) @ Hoover, M. (\*), MacAllister, A. (\*), Holub, J. (\*), Gilbert, S., Davies, P., and Winer, E., “Assembly Training Using Commodity Physiological Sensors,” The Interservice/Industry Training, Simulation & Education Conference (I/ITSEC), Orlando, FL, November 28-December 2, Paper no. 16159, Acceptance Rate 35% (2016)



- 11) Bonner, D., Dorneich, M., Gilbert, S., and Winer, E., “Building Intelligent Tutoring Systems for Teams,” Human Factors and Ergonomics Society (HFES) International Annual Meeting, Washington, DC, September 19-23, Acceptance Rate 75% (2016)
- 12) @ Peck, B. (\*), Gilbert, S., Winer, E., and Ray, R. C. (\*), “HomCam A Wireless 360-Degree Wearable Streaming Camera for Remote Situational Awareness,” Human Factors and Ergonomics Society (HFES) International Annual Meeting, Washington, DC, September 19-23, Acceptance Rate 75% (2016)
- 13) Jung, S., Simpson, T. W., Bloebaum, C., Kannan, H., Winer, E., and Mesmer, B. “A Value-Driven Design Approach to Optimize a Family of Front-Loading Washing Machines,” In ASME 2016 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference (IDETC/CIE 2016), Charlotte, NC, August 21-24, DETC2016/DAC-60240, Acceptance Rate 88% (2016)
- 14) @ MacAllister A. (\*), Yeh, T. P., and Winer, E., “Implementing Native Support for Oculus and Leap Motion in a Commercial Engineering Visualization and Analysis Platform,” Electronic Imaging, San Francisco, CA, February 14-18, (4), 1-11, Acceptance Rate 84% (2016)
- 15) @ Walton J. (\*), Gilbert. S., Winer. E., Dorneich. M., and Bonner, D. (\*), “Evaluating Distributed Teams with the Team Multiple Errands Test”, The Interservice/Industry Training, Simulation & Education Conference (I/ITSEC), Orlando, FL, November 30 – December 4, Paper no. 15264, Acceptance Rate 38% (2015)
- 16) @ Holub, J. (\*) and Winer. E., “Visualizing fMRI Data Using Volume Rendering in Virtual Reality”, The Interservice/Industry Training, Simulation & Education Conference (I/ITSEC), Orlando, FL, November 30 – December 4, Paper no. 15253, Acceptance Rate 38% (2015)
- 17) @ Renner, A. (\*), Holub, J., Evans, G. (^), Sridhar, S. (^), and Winer, E., “A Virtual Reality Application for Additive Manufacturing Process Training,” ASME 2015 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference (IDETC/CIE 2015), Boston, MA, August 2-5, DETC2015-47807, Acceptance Rate 81% (2015)
- 18) Curtis, M. (\*), Dawson, K. (^), Jackson, K. (^), Litwin, L. (^), Meusel, C. (\*), Dorneich, M., Gilbert, S., Kelly, J., Stone, R., and Winer, E., “Mitigating Visually Induced Motion Sickness: A virtual hand- eye coordination task,” Human Factors and Ergonomics Society (HFES) International Annual Meeting, Los Angeles, CA, October 26-30, 59(1), 1839-1843 (2015)
- 19) @ Renner, A. (\*), Thompson, F. (\*), Kalivarapu, V. (+), Oliver, J., and Winer, E., “An Application of Conceptual Design and Multidisciplinary Analysis Transitioning to Detailed Design Stages,” 16th AIAA/ISSMO Multidisciplinary Analysis and Optimization Conference, Dallas, TX, June 22-26, Acceptance Rate 82% (2015)
- 20) @ Richardson T. (\*), and Winer E., “Increasing Feasibility of the Self-Organizing Map as a Design Tool for a Novel Convergence Heuristic,” 16th AIAA/ISSMO Multidisciplinary Analysis and Optimization Conference, Dallas, TX, June 22-26, Acceptance Rate 82% (2015)
- 21) @ Zou, R., Kalivarapu, V. (+), Bhattacharya, S., Winer, E., and Oliver, J., “Standard Particle Swarm Optimization on Source Seeking Using Mobile Robots,” AIAA Science and Technology Forum and Exposition 2015 (SCITECH 2015), Kissimmee, FL, January 5-9, AIAA-2015-0897, Acceptance Rate 87% (2015)

- 22) @ Kalivarapu, V. (+), MacAllister, A. (\*), Hoover, M. (^), Sridhar, S. (^), Schlueter, J. (^), Civitate, A. (^), Thompkins, P. (^), Smith, J. (^), Hoyle, J. (^), Oliver, J., Winer, E., and Chernoff, G., “Game-day Football Visualization Experience on Dissimilar Virtual Reality Platforms,” IS&T/SPIE Electronic Imaging, San Francisco, CA, February 9-12, Acceptance Rate 86% (2015)
- 23) @ Richardson, T. (\*), Gilbert, S., Holub, J. (\*), Thompson, F. (\*), MacAllister, A. (\*), Radkowski, R., Winer, E., Davies, P., and Terry, S., “Fusing Self-Reported and Sensor Data from Mixed-Reality Training,” The Interservice/Industry Training, Simulation & Education Conference (I/ITSEC), Orlando, FL, December 1-5, Paper no. 14158, Acceptance Rate 37% (2014)
- 24) @ Kopecky, K. (\*), Winer, E., and de la Cruz, J., “Simulating Participant Training Data to Test Mixed-Reality Training Systems,” The Interservice/Industry Training, Simulation & Education Conference (I/ITSEC), Orlando, FL, December 1-5, Paper no. 14252, Acceptance Rate 37% (2014)
- 25) @ Zou, R., Zhang, M., Kalivarapu, V. (+), Winer, E., and Bhattacharya, S., “Particle Swarm Optimization for Source Localization in Environment with Obstacles,” IEEE International Symposium on Intelligent Control (ISIC), Antibes, Italy, October 8-10, pp. 1602-1607, Acceptance Rate 66% (2014)
- 26) @ MacAllister, A. (\*), Yeh, T-P, Seal, D., Degenhardt, G., and Winer, E., “A Natural User Interface for Immersive Design Review,” ASME 2014 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference (IDETC/CIE 2014), Buffalo, NY, August 17-20, DETC2014-34633, Acceptance Rate 81% (2014)
- 27) @ Tibor, E., Miller, S., Stump, G., Bloebaum, C.L., Mesmer, B., Simpson, T.W., Winer, E., and Yukish, M., “Toward a Value-Driven Design Approach for Complex Engineered Systems Using Trade Space Exploration Tools,” ASME 2014 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference (IDETC/CIE 2014), Buffalo, NY, August 17-20, DETC2014-34503, Acceptance Rate 81% (2014)
- 28) @ Richardson, T. (\*), Kannan, H., Bloebaum, C., and Winer, E., “Incorporating Value-Driven Design into the Visualization of Design Spaces Using Contextual Self-Organizing Maps: A Case Study of Satellite Design,” 15th AIAA/ISSMO Multidisciplinary Analysis and Optimization Conference at the AIAA Aviation Forum, Atlanta, GA, June 16-20, AIAA 2014-2728, Acceptance Rate 84% (2014)
- 29) @ Richardson, T. (\*), Holub, J. (\*), and Winer, E., “Improving Contextual Self-Organizing Map Solution Times Using GPU Parallel Training,” 15th AIAA/ISSMO Multidisciplinary Analysis and Optimization Conference at the AIAA Aviation Forum, Atlanta, GA, June 16-20, AIAA 2014-2431, Acceptance Rate 84% (2014)
- 30) @ Kopecky, K. (\*), and Winer, E., “MetaTracker: Integration and Abstraction of 3D Motion Tracking Data from Multiple Hardware Systems,” SPIE Defense+Security, May 5-9, Baltimore, MD, Paper no. 9095-6, Acceptance Rate 88% (2014)
- 31) @ Gilbert, S., Civitate, A., Kelly, J.W., Thompson, F. (\*), Smith, A., Kopecky, K. (\*), Winer, E., and de la Cruz, J., “Comparing Training Performance With Vibrotactile Hit Alerts vs. Audio

- Alerts,” The Interservice/Industry Training, Simulation & Education Conference (I/ITSEC), Orlando, FL, December 2-5, Acceptance Rate 36% (2013)
- 32) @ Kelly, J.W., Winer, E., Gilbert, S., Curtis, M., Rubio, E., Kopecky, K. (\*), Holub, J. (\*), and de la Cruz, J., “Assessing Multiple Participant View Positioning in Virtual Reality-Based Training,” The Interservice/Industry Training, Simulation & Education Conference (I/ITSEC), Orlando, FL, December 2-5, Acceptance Rate 36% (2013)
  - 33) @ Kopecky, K. (\*), Gilbert, S., Winer, E., Civitate, A. (^), and de la Cruz, J., “A Software Approach to Manage and Maintain Warfighter Training Systems,” The Interservice/Industry Training, Simulation & Education Conference (I/ITSEC), Orlando, FL, December 2-5, Acceptance Rate 36% (2013)
  - 34) @ Juhnke, B. (\*), Berron, M. (^), Philip, A. (^), Williams, J. (^), Holub, J. (\*), and Winer, E., “Comparing the Microsoft Kinect to a Traditional Mouse for Adjusting the Viewed Tissue Densities of Three-Dimensional Anatomical Structures,” Proceedings of the 2013 SPIE Medical Imaging Conference, Burlingame, CA, February 3-7, Acceptance Rate 82% (2013)
  - 35) @ Martinez-Escobar, M. (\*), Juhnke, B. (\*), Hisley, K., Eliot, D., and Winer, E., “Assessment of Visual-Spatial Skills in Medical Context Tasks when Using Monoscopic and Stereoscopic Visualization,” Proceedings of the 2013 SPIE Medical Imaging Conference, Burlingame, CA, February 3-7, Acceptance Rate 82% (2013)
  - 36) @ Noon, C. (\*), Holub, J., and Winer, E., “Real-Time Volume Rendering of Digital Medical Images on an iOS Device,” Proceedings of the 2013 SPIE Medical Imaging Conference, Burlingame, CA, February 3-7, Acceptance Rate 82% (2013)
  - 37) @ Peterson, A. (\*), Gilbert, S., Winer, E., Welch, J., de la Cruz, J., and Gonzalez, H., “OmniScribe - Enhancing AAR in an LVC Environment”, The Interservice/Industry Training, Simulation & Education Conference (I/ITSEC), Orlando, FL, December 3-6, Acceptance Rate 25% (2012)
  - 38) @ Kalivarapu, V. (+), and Winer, E., “Graphics Hardware Acceleration of Particle Swarm Optimization with Digital Pheromones using the CUDA Architecture,” 12th AIAA Aviation Technology, Integration, and Operations (ATIO) Conference and 14th AIAA/ISSMO Multidisciplinary Analysis and Optimization Conference, Indianapolis, IN, September 17-19, Acceptance Rate 84% (2012)
  - 39) @ Holub, J. (\*), Richardson T. (\*), Dryden, M. (^), La Grotta, S. (^), and Winer, E., “Contextual Self-Organizing Map Visualization to Improve Optimization Solution Convergence,” 12th AIAA Aviation Technology, Integration, and Operations (ATIO) Conference and 14th AIAA/ISSMO Multidisciplinary Analysis and Optimization Conference, Indianapolis, IN, September 17-19, Acceptance Rate 84% (2012)
  - 40) @ Holub, J. (\*), Foo, J.L. (+), Kalivarapu, V. (+), and Winer, E., “Three Dimensional Multi-Objective UAV Path Planning Using Digital Pheromone Particle Swarm Optimization,” 8th AIAA Multidisciplinary Design Optimization Specialist Conference, Honolulu, HI, April 23-26, Acceptance Rate 89% (2012)
  - 41) @ Pollock, B. (\*), Burton, M., Kelly, J.W., Gilbert, S., and Winer, E., “The Right View from the Wrong Location: Depth Perception in Stereoscopic Multi-User Virtual Environments,”

- IEEE Virtual Reality Conference, Orange County, CA, March 4-8, Acceptance Rate unknown (2012)
- 42) @ Noon, C. (\*), Foo, E. (+), and Winer, E., “Interactive GPU Volume Raycasting in a Clustered Graphics Environment,” Proceedings of the 2012 SPIE Medical Imaging Conference, San Diego, CA, February 19-24, Acceptance Rate unknown (2012)
  - 43) @ Burton, M., Pollock, B. (\*), Kelly, J., Gilbert, S., Winer, E., and de la Cruz, J., “Diagnosing Perceptual Distortion Present in Group Stereoscope Viewing,” IS&T/SPIE Electronic Imaging, San Francisco, CA, January 22-26, Acceptance Rate unknown (2012)
  - 44) @ Pollock, B. (\*), Winer, E., Gilbert, S., and de la Cruz, J., “LVC Interaction Within a Mixed Reality Training System,” IS&T/SPIE Electronic Imaging, San Francisco, CA, January 22-26, Acceptance Rate unknown (2012)
  - 45) @ Richardson, T. (\*), and Winer, E., “Visually Exploring a Design Space Through the Use of Multiple Contextual Self-Organizing Maps,” ASME 2011 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference (IDETC/CIE 2011), Washington, DC, August 29-31, Paper No. DETC2011-47944, Acceptance Rate 82% (2011)
  - 46) @ Newendorp, B. (\*), Noon, C. (\*), Holub, J. (\*), Winer, E., Gilbert, S., and de la Cruz, J., “Configuring Virtual Reality Displays in a Mixed-Reality Environment for LVC Training,” Proceedings of the ASME 2011 World Conference on Innovative Virtual Reality (WINVR2011), Milan, Italy, June 27-29, WINVR2011-5583, Acceptance Rate 93% (2011)
  - 47) @ Martinez, M. (\*), Peloquin, C. (\*), Juhnke, B. (\*), Peddicord, J. (\*), Jose, S. (^), Noon, C. (^), Foo, J.L. (+), and Winer, E., “Development of a Customizable Software Application for Medical Imaging Analysis and Visualization,” Proceedings of 18th Medicine Meets Virtual Reality (MMVR), Newport Beach, CA, February 8 – 12, Acceptance Rate unknown (2011)
  - 48) @ Nokolny, B. (\*), Richardson, T., and Winer E. H., “Visual Design Space Exploration using Contextual Self-Organizing Maps,” 13th AIAA/ISSMO Multidisciplinary Analysis Optimization Conference, Fort Worth, TX, September 13-15, AIAA-2010-9326, Acceptance Rate 84% (2010)
  - 49) @ Kalivarapu V. (+), and Winer E. H., “Performance of Hardware Accelerated Particle Swarm Optimization with Digital Pheromones on Dissimilar Computing Platforms,” 13th AIAA/ISSMO Multidisciplinary Analysis Optimization Conference, Fort Worth, TX, September 13-15, AIAA-2010-9270, Acceptance Rate 84% (2010)
  - 50) @ Zhang, R. (\*), Winer, E., and Oliver, J., “Subdivision-Based 3D Remeshing with a Fast Spherical Parameterization Method,” ASME 2010 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference (IDETC/CIE 2010), Montreal, Quebec, Canada, August 15-18, Paper No. DETC2010-28904, Acceptance Rate 81% (2010)
  - 51) @ Marsh, W., Swartzentruber, L. (\*), Holub, J. (\*), Gilbert, S., Oliver J., and Winer, E., “Interfaces for 3D Flight Path Visualization,” ASME 2nd World Conference on Innovative Virtual Reality (WINVR10), Ames, IA, May 12-14, WINVR2010-3755, Acceptance Rate 88% (2010)

- 52) @ Noon C. (\*), Newendorp B. (\*), Zhang, R. (\*), Winer E., Oliver J., Duncan, J., and Gilmore, B., “Intuitive Measurement Interface for Simplified Mesh Models for Rapid Conceptual Design,” ASME 2nd World Conference on Innovative Virtual Reality (WINVR10), Ames, IA, May 12-14, WINVR2010-3713, Acceptance Rate 88% (2010)
- 53) @ Noon C. (\*), Newendorp B. (\*), Winer E., and Oliver J., “Keyframe-Based Scenegraph Animation API for Virtual Reality Applications,” ASME 2nd World Conference on Innovative Virtual Reality (WINVR10), Ames, IA, May 12-14, WINVR2010-3721, Acceptance Rate 88% (2010)
- 54) @ Swartzentruber L. (\*), Foo J. (+), and Winer E., “Multi-Objective UAV Path Planning with Refined Reconnaissance and Threat Formulations,” 6th AIAA Multidisciplinary Design Optimization Specialist Conference, Orlando, FL, April 12-15, AIAA-2010-2758, Acceptance Rate 82% (2010)
- 55) @ Kalivarapu, V. (+), and Winer, E., “Diversity and Frame Invariance Characteristics in Particle Swarm Optimization with and without Digital Pheromones,” 6th AIAA Multidisciplinary Design Optimization Specialist Conference, Orlando, FL, April 12-15, AIAA-2010-3080, Acceptance Rate 82% (2010)
- 56) @ Noon, C. (\*), and Winer, E., “A Study of Different Metamodeling Techniques for Conceptual Design,” ASME 2009 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference (IDETC/CIE 2009), San Diego, CA, USA, August 30-September 2, Paper No. DETC2009-86496, Acceptance Rate 86% (2009)
- 57) @ Noon, C. (\*), Koehring, A. (\*), and Winer, E., “Comparison of Metamodeling Techniques for Real-Time Conceptual Design Analysis,” 8th ISSMO World Congress on Structural and Multidisciplinary Optimization (WCSMO8), Lisbon, Portugal, June 1-5, Acceptance Rate 71% (2009)
- 58) @ Kalivarapu, V. (\*), and Winer, E., “Digital Pheromone Implementation of PSO with Velocity Vector Accelerated by Commodity Graphics Hardware,” 5th AIAA Multidisciplinary Design Optimization Specialist Conference, Palm Springs, CA, May 4-7, AIAA 2009-9192, Acceptance Rate 88% (2009)
- 59) @ Swartzentruber, L. (\*), Foo, J.L. (\*), and Winer, E., “Three-Dimensional Multi-Objective UAV Path Planner Using Terrain Information,” 5th AIAA Multidisciplinary Design Optimization Specialist Conference, Palm Springs, CA, May 4-7, AIAA 2009-2222, Acceptance Rate 88% (2009)
- 60) @ Noon, C. (\*), Zhang, R. (\*), Winer, E., Oliver, J., Gilmore, B., and Duncan, J., “An Immersive VR Application for Interactive Product Concept Generation and Qualitative Evaluation,” ASME 2nd World Conference on Innovative Virtual Reality (WINVR09), Chalon-sur-Saône, France, February 25-26, Paper No. WINVR09-712, Acceptance Rate 85% (2009)
- 61) @ Newendorp, B. (\*), Noon, C. (\*), Chan, C., Winer, E., and Oliver, J., “Development Methods and a Scenegraph Animation API for Cluster Driven Immersive Applications,” ASME 2nd World Conference on Innovative Virtual Reality (WINVR09), Chalon-sur-Saône, France, February 25-26, Paper No. WINVR09-736, Acceptance Rate 85% (2009)

- 62) @ Koehring, A. (\*), and Winer, E., “An Augmented Reality Tool for Conceptual Design,” ASME 2nd World Conference on Innovative Virtual Reality (WINVR09), Chalon-sur-Saône, France, February 25-26, Paper No. WINVR09-739, Acceptance Rate 85% (2009)
- 63) @ Foo, J.L. (\*), Lobe, T., and Winer, E., “Automated Probabilistic Segmentation of Tumors from CT Data using Spatial and Intensity Properties,” Proceedings of the 2009 SPIE Medical Imaging Conference, Lake Buena Vista, FL, February 8-10, Acceptance Rate 83% (2009)
- 64) @ Foo, J.L. (\*), Martinez, M. (\*), Peloquin, C. (\*), Lobe, T., and Winer, E., “A Collaborative Interaction and Visualization Multi-Modal Environment for Surgical Planning,” Proceedings of 17th Medicine Meets Virtual Reality (MMVR), Long Beach, CA, January 19 – 22, Acceptance Rate 86% (2009)
- 65) @ Swartzentruber, L. (\*), Foo, J.L. (\*), and Winer, E., “Three-Dimensional Multi-Objective UAV Path Planner Using Meta-Paths for Decision Making and Visualization,” 12th AIAA/ISSMO Multidisciplinary Analysis and Optimization Conference, British Columbia, CA, September 10-12, AIAA-2008-5830, Acceptance Rate 82% (2008)
- 66) @ Koehring, A. (\*), Noon, C. (\*), Zhang, R. (\*), Winer, E., Oliver, J., Gilmore, B., and Duncan, J., “Metamodeling for the Quantitative Assessment of Conceptual Designs,” 12th AIAA/ISSMO Multidisciplinary Analysis and Optimization Conference, British Columbia, CA, September 10-12, AIAA-2008-5973, Acceptance Rate 82% (2008)
- 67) @ Kalivarapu, V. (\*), and Winer, E., “Implementation of Digital Pheromones in PSO Accelerated by Commodity Graphics Hardware,” 12th AIAA/ISSMO Multidisciplinary Analysis and Optimization Conference, British Columbia, CA, September 10-12, AIAA-2008-6021, Acceptance Rate 82% (2008)
- 68) @ Kalivarapu, V. (\*), and Winer, E., “Parallel Implementation of Particle Swarm Optimization (PSO) through Digital Pheromone Sharing”, ASME 2008 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference (IDETC/CIE 2008), Brooklyn, NY, August 3–6, DETC2008-49444, Acceptance Rate 75% (2008)
- 69) @ Foo, J.L. (\*), and Winer, E., “Interactive Multi-Modal Visualization Environment for Complex System Decision Making,” ASME 2008 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference (IDETC/CIE 2008), Brooklyn, NY, August 3–6, DETC2008-49805, Acceptance Rate 75% (2008)
- 70) @ Foo, J.L. (\*), Miyano, G., Lobe, T., and Winer, E., “A Framework for Interactive Examination of Automatic Segmented Tumors in a Virtual Environment,” 16th Medicine Meets Virtual Reality (MMVR), January 29, Long Beach, CA, vol. 132, pp. 120-122, Acceptance Rate 50% (2008)
- 71) @ Foo, J.L., Miyano, G., Lobe, T., and Winer, E.H., “Adaptive Fuzzy Segmentation of Tumors in Three-Dimensional Computed Tomography (CT) Image Data,” ASME 2007 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference (IDETC/CIE 2007), Las Vegas, NV, September 4-7, DETC2007-35413, Acceptance Rate 78% (2007)
- 72) @ Zhang, R. (\*), Noon, C. (^), Oliver, J., Winer, E., Gilmore, B., and Duncan, J., “Immersive Product Configurator for Conceptual Design,” ASME 2007 International Design Engineering

- Technical Conferences & Computers and Information in Engineering Conference (IDETC/CIE 2007), Las Vegas, NV, September 4-7, DETC2007-35390, Acceptance Rate 78% (2007)
- 73) @ Zhang, R. (\*), Noon, C. (^), Winer, E., Oliver, J., Gilmore, B., and Duncan, J., “Immersive Product Configurator for Conceptual Design,” 3rd Annual AIAA Multidisciplinary Design Optimization Specialists Conference, Waikiki, HI, April 23-26, AIAA-2007-1931, Acceptance Rate 85% (2007)
- 74) @ Kalivarapu, V. (\*), and Winer, E., “A Statistical Analysis of Particle Swarm Optimization With and Without Digital Pheromones,” 3rd Annual AIAA Multidisciplinary Design Optimization Specialists Conference, Waikiki, HI, April 23-26, AIAA-2007-1882, Acceptance Rate 85% (2007)
- 75) @ Foo, J.L. (\*), Knutzon, J.S., Oliver, J.H., and Winer, E., “Three-Dimensional Multi Objective Path Planner for Unmanned Aerial Vehicles Using Particle Swarm Optimization,” 3rd Annual AIAA Multidisciplinary Design Optimization Specialists Conference, Waikiki, HI, April 23-26, AIAA-2007-1881, Acceptance Rate 85% (2007)
- 76) @ Batkiewicz, T.J., Dohse, K.C., Kalivarapu, V. (\*), Dohse, T., Walter, B., Knutzon, J., Parkhurst, D., Winer, E., and Oliver, J., “Multimodal UAV Ground Control System,” 11th AIAA/ISSMO Multidisciplinary Analysis and Optimization Conference, Portsmouth, VA, Sept 6-8, AIAA-2006-6963, Acceptance Rate 80% (2006)
- 77) @ Foo, J.L. (\*), Knutzon, J.S., Oliver, J.H., and Winer, E., “Three-Dimensional Path Planning of Unmanned Aerial Vehicles Using Particle Swarm Optimization,” 11th AIAA/ISSMO Multidisciplinary Analysis and Optimization Conference, Portsmouth, VA, Sept 6-8, AIAA-2006-6995, Acceptance Rate 80% (2006)
- 78) @ Kalivarapu, V. (\*), Foo, J.L. (\*), and Winer, E., “A Parallel Implementation of Particle Swarm Optimization Using Digital Pheromones,” 11th AIAA/ISSMO Multidisciplinary Analysis and Optimization Conference, Portsmouth, VA, Sept 6-8, AIAA-2006-6908, Acceptance Rate 80% (2006)
- 79) @ Kopecky, K. (\*), Muth, D. J. Jr., McCorkle, D. S., Winer, E. H., and Bryden, K. M., “A Web-Based Interface for Complex Design Using a Virtual Engineering Software Framework,” 2nd Annual AIAA Multidisciplinary Design Optimization Specialist Conference, 2006, Newport, RI, May 1-4, AIAA-2006-1614, Acceptance Rate 85% (2006)
- 80) @ Foo, J.L. (\*), Kalivarapu, V. (\*), and Winer, E., “Implementation of Digital Pheromones for use In Particle Swarm Optimization,” 2nd Annual AIAA Multidisciplinary Design Optimization Specialist Conference, 2006, Newport, RI, May 1-4, AIAA-2006-1917, Acceptance Rate 85% (2006)
- 81) @ Foo, E(\*)., and Winer, E., “A Multi-Phase, Probabilistic Approach to Image Segmentation in MRI and CT Studies,” Biomedicine 2005: 6th International Conference on Modeling in Medicine and Biology, Bologna, Italy, September 7-9, pp. 581-590, Acceptance Rate 56% (2005)
- 82) @ McKean, A., Kalivarapu, V. (\*), Winer, E., Vance, J., and Duncan, J., “Using a Web-Based Query Engine and Immersive Virtual Reality to Select and View 3D Anthropometry in Vehicle Operator Workstation Design,” 1st Annual AIAA Multidisciplinary Design Optimization

- Specialist Conference, Austin, TX, April 18-21, AIAA-2005-1814, Acceptance Rate 85% (2005)
- 83) @ Kalivarapu, V. (\*), and Winer, E.H., “An Approach to Convert Vertex-Based 3D Representations to Combinatorial B-Splines for Real-Time Visual Collaboration,” 43rd AIAA Aerospace Sciences Meeting and Exhibit, Reno, NV, January 10-13, AIAA-2005-0124, Acceptance Rate 75% (2005)
  - 84) @ Vaze, A. (\*), Kalivarapu, V. (\*), and Winer, E.H., “Data Modeling and Handling for Analysis and Visualization in a Collaborative Setting,” 10th AIAA/ISSMO Multidisciplinary Analysis and Optimization Conference, Albany, New York, August 26-September 2, AIAA-2004-4603, Acceptance Rate 80% (2004)
  - 85) Kanukolanu, D. (\*), Lewis, K.H., and Winer, E.H., “Robust Design of Coupled Sub-Systems Using Visualization,” 42nd AIAA Aerospace Sciences Meeting and Exhibit, Reno, NV, January 7-10, AIAA-2004-0115, Acceptance Rate 85% (2004)
  - 86) Malik, T. (\*), and Winer, E. H., “An Analytical Curve Based Approach for Multi-Modal Optimization,” 9th AIAA/ISSMO Multidisciplinary Analysis and Optimization Conference, Atlanta, GA, September 9-11, AIAA-2002-5520, Acceptance Rate 86% (2002)
  - 87) Samant, A. (\*), Shah, P. (\*), and Winer, E. H., “Visual Design Steering to Aid Decision-Making in Optimal Design,” 9th AIAA/ISSMO Multidisciplinary Analysis and Optimization Conference, Atlanta, GA, September 9-11, AIAA-2002-5623, Acceptance Rate 86% (2002)
  - 88) 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 III, pp. 691-701, Acceptance Rate unknown (2002)
  - 89) # English, K., Winer, E.H., and Bloebaum, C. L., “A Visualization-based Framework for Trade-offs in Complex Engineering Design,” 5th International Conference on Engineering Design and Automation, Las Vegas, NV, August 7-10, Acceptance Rate 70% (2001)
  - 90) # Winer, E.H., and Bloebaum, C.L., “Visual Design Steering For Optimization Solution Improvement,” 8th AIAA/ISSMO Multidisciplinary Analysis and Optimization Conference, Long Beach, CA, September 6-8, Acceptance Rate 80% (2000)
  - 91) # Winer, E.H., and Bloebaum, C.L., “Using the World Wide Web to Employ Concurrent Design Methodologies,” 3rd World Congress of Structural and Multidisciplinary Optimization (WCSMO3), Amherst, NY, May 17-21, Acceptance Rate 79% (1999)
  - 92) # Winer, E. H., Abdul Jalil, M. K., and Bloebaum, C. L., “Development of a Geographic Independent Virtual Design Environment for Large-Scale Design,” 7th AIAA/ISSMO Multidisciplinary Analysis and Optimization Conference, St. Louis, MO, September 5-7, Acceptance Rate 84% (1998)
  - 93) # Winer, E.H., and Bloebaum, C.L., “Interactive 3-D Visualization for Large-Scale Multidisciplinary Design Optimization,” 2nd International Conference on Engineering Design and Automation, Maui, HI, Acceptance Rate unknown (1998)
  - 94) # Abdul Jalil, M. K., Winer, E. H., and Bloebaum, C. L., “Development of a Virtual Visualization Environment for Large-Scale Design,” 39th AIAA/ASME/ASCE/AHS/ASC



Structures, Structural Dynamics and Materials Conference, Long Beach, CA, March 5-7, Acceptance Rate 85% (1998)

- 95) # Winer, E.H., and Bloebaum, C.L., “N-Dimensional Design Visualization via Graph Morphing for Large-Scale Optimization,” 2nd World Congress of Structural and Multidisciplinary Optimization (WCSMO2), Zakopane, Poland, pp. 911-916, Acceptance Rate 90% (1997)
- 96) # Winer, E.H., and Bloebaum, C.L., “Design Visualization by Graph Morphing for Multidisciplinary Design Optimization,” 1st International Conference on Engineering Design and Automation, Bangkok, Thailand, Acceptance Rate 89% (1997)

### ***9. Other Conference Proceedings, Bulletins, or Reports – In Print or Accepted***

- 1) @ Bonner, D., Walton, J., Dorneich, M. C., Gilbert, S. B., Winer, E., and Sottolare, R. A., “The Development of a Testbed to Assess an Intelligent Tutoring System for Teams,” Proceedings of the Workshops at 2015 Artificial Intelligence in Education (AIED) Conference, Madrid, Spain, June 22-26 (2015)
- 2) @ Gilbert, S., Winer, E., Holub, J. (\*), Richardson, T. (\*), Dorneich, M., & Hoffman, M., “Characteristics of a Multi User Tutoring Architecture”, Proceedings of the 3rd Annual Generalized Intelligent Framework for Tutoring (GIFT) Users Symposium (GIFTSym3), Orlando, FL, June 15 (2015)
- 3) @ Bonner, D., Gilbert, S., Dorneich, M., Burke, S., Walton, J., Ray, C., and Winer, E., “Taxonomy of Teams, Team Tasks, and Tutors,” Proceedings of the 2nd Annual Generalized Intelligent Framework for Tutoring (GIFT) Users Symposium, June 12-13, Pittsburgh, PA (2014)
- 4) @ Walton, J., Dorneich, M., Gilbert, S., Bonner, D., Winer, E., Ray, C., “Modality and Timing of Feedback: Implications for GIFT,” Proceedings of the 2nd Annual Generalized Intelligent Framework for Tutoring (GIFT) Users Symposium, June 12-13, Pittsburgh, PA (2014)
- 5) @ Martinez, M. (\*), Juhnke, B. (\*), Cassidy, K., Foo, J.L. (\*), Hisley, K., and Winer, E., “A Study Evaluating the Effectiveness of Two-Dimensional and Three-Dimensional Medical Visualization in Anatomy Education,” International Pediatric Surgery Group 20th Annual Congress for Endosurgery in Children, Prague, Czech Republic, May 3-7, Poster presentation (2011)
- 6) @ Koehring, A. (\*), Laughlin, D., Gilbert, S., Winer, E., de la Cruz, J., and Gonzalez, H., “Mobile Interface for the Communication and Reference of Dynamic Tactical Information,” ITEC Defense Training Simulation and Education Conference, May 10-12, Cologne, Germany, Oral Presentation (2011)
- 7) @ Noon, C. (\*), Newendorp, B. (\*), Ragusa, C., Winer, E., and Gilbert, S., “A Software Architecture Combining Multiple Game Engines, Tracking Systems and Immersive Displays for LVC Training,” ITEC Defense Training Simulation and Education Conference, May 10-12, Cologne, Germany, Oral Presentation (2011)
- 8) @ Nekolny, B.M. (\*), Crawford, K.L. (^), Goering, J.S. (^), Kaphingst, S.S. (^), Kaleita, A.L., and Winer, E.H., “Multidimensional Tool for the Visualization of Spatiotemporal Variant Soil

- Moisture Data,” American Society of Agricultural and Biological Engineers Annual International Meeting, Reno, NV, June 21-24, 097207 (2009)
- 9) @ Winer, E., “Multidisciplinary Design Optimization Year in Review”, Aerospace America, December, pp. 42 (2007)
  - 10) @ Winer, E., “Multidisciplinary Design Optimization Year in Review,” Aerospace America, December pp. 41 (2006)
  - 11) # Lewis, K., Winer, E., English, K., Bloebaum, C.L., Bisantz, A., and Zhang, A., “Visual Design Steering as a Decision Support Aid in Design and Rapid Virtual Prototyping,” 2004 NSF Design, Service and Manufacturing Grantees and Research Conference, Dallas, TX, January 5-8 (2004)
  - 12) # Lewis, K., Winer, E., and Bloebaum, C.L., “Visual Design Steering As A Decision Support Aid In Design And Rapid Virtual Prototyping,” NSF Design, Manufacturing, and Industrial Innovation Grantees Conference, Birmingham, AL (2003)

### ***B. Patents, Disclosures, and Technology Transfer***

- 1) Patent-pending, “Method and System For Manufacturing an Article Using Portable Hand-Held Tools”, U.S. Patent Application Serial No. 12022230, Iowa State University Research Foundation #03594, 2008
- 2) Invention Disclosure: Iowa State University Research Foundation #03540, “An Automated Method for Tumor Segmentation of Computed Tomography Data”, 2007
- 3) Founding partner, Visual Medical Solutions, LLC., company formed in July 2007
- 4) Provisional patent application, “An Automatic Grid-Based Driving Simulation Scene Generator for Virtual Reality”, registration number 40041, docket number 11520.0395, filed in 2006

### ***C. Funded Grants and Contracts***

- 1) **Investigators:** Anuj Sharma, Eliot Winer, Stephen Gilbert, Michael Dorneich, Jonathan Claussen, and Mo Zhao  
**Title:** Topic 3, Iowa State University - FHWA EAR BAA 2016 InterchangeSE: A Federated Multi-Modal Simulation Environment for Studying Interactions Between Different Modes of Travel  
**Granting Agency:** DOT  
**Period:** 8/1/17-7/31/20  
**Total Amount:** \$1,265,169  
**Amount Allocated:** \$125,000  
**Role:** Co-principal investigator responsible for developing network infrastructure and visualization methods.

- 2) **Investigators:** Eliot Winer, Stephen Gilbert, and Jim Oliver  
**Title:** Augmented Reality Hardware and Software Evaluation for Shop Floor Assembly Application  
**Granting Agency:** Boeing  
**Period:** 1/1/17-12/31/17  
**Total Amount:** \$275,000  
**Amount Allocated:** \$100,000  
**Role:** Principal investigator responsible for all aspects of project.
- 3) **Investigators:** Eliot Winer and Jim Oliver  
**Title:** Development of a Virtual Reality Training Platform for Battery Manufacturing Activities  
**Granting Agency:** East Penn Manufacturing  
**Period:** 8/15/17-8/14/18  
**Total Amount:** \$228,169  
**Amount Allocated:** \$92,000  
**Role:** Principal investigator responsible for all aspects of project.
- 4) **Investigators:** Stephen Gilbert and Eliot Winer  
**Title:** Workshop: Research Roadmap for Virtual Reality Sim Sickness  
**Granting Agency:** NSF  
**Period:** 7/1/17-6/30/18  
**Total Amount:** \$10,871  
**Amount Allocated:** \$0  
**Role:** Co-principal investigator responsible for assisting in workshop planning.
- 5) **Investigators:** Stephen Gilbert, Michael Dorneich, and Eliot Winer  
**Title:** Team Tutoring with GIFT  
**Granting Agency:** ARL  
**Period:** 8/15/17-5/15/18  
**Total Amount:** \$50,000  
**Amount Allocated:** \$7,000  
**Role:** Co-principal investigator responsible for data analysis.
- 6) **Investigators:** Jonathan Claussen, Carmen Gomes, and Eliot Winer  
**Title:** Collaborative Research: Disposable All-Graphene Microfluidic Biosensor System For Real-Time Foodborne Pathogen Detection In Food Processing Facilities  
**Granting Agency:** NSF  
**Period:** 6/15/17-5/31/20

- Total Amount:** \$450,000  
**Amount Allocated:** \$65,000  
**Role:** Co-principal investigator responsible for data analysis, visualization and cloud resources.
- 7) **Investigators:** Stephen Gilbert and Eliot Winer  
**Title:** New CISE REU PI Resources  
**Granting Agency:** NSF  
**Period:** 8/15/16-8/14/17  
**Total Amount:** \$79,499  
**Amount Allocated:** \$9,000  
**Role:** Co-principal investigator responsible for technical aspects of setting up web portal for PI resources.
- 8) **Investigators:** Stephen Gilbert and Eliot Winer  
**Title:** REU Site: Summer Program for Interdisciplinary Research and Education-Emerging Interface  
**Granting Agency:** NSF  
**Period:** 6/1/16-5/31/17  
**Total Amount:** \$20,000  
**Amount Allocated:** \$0  
**Role:** Co-principal investigator responsible for setting up program for K-12 teachers to participate in program.
- 9) **Investigators:** Eliot Winer, Jim Oliver, Stephen Gilbert, Rafael Radkowski, and Arun Somani  
**Title:** Authoring Augmented Reality Work Instructions by Expert Demonstration  
**Granting Agency:** DMDII  
**Period:** 3/22/16-9/22/17  
**Total Amount:** \$1,006,912  
**Amount Allocated:** \$175,000  
**Role:** Principal investigator responsible for all aspects of project.
- 10) **Investigators:** Jonathan Claussen and Eliot Winer  
**Title:** Development of a Multi-enzyme Biosensor With Ink Jet Printed Nanoparticles for Real-time Multipesticide Screening in the Field  
**Granting Agency:** USDA/NIFA  
**Period:** 3/1/16-2/28/19  
**Total Amount:** \$478,000  
**Amount Allocated:** \$72,000  
**Role:** Co-principal investigator responsible for data synthesis/analysis and

visualization.

- 11) **Investigators:** Stephen Gilbert and Eliot Winer  
**Title:** REU Site: Summer Program for Interdisciplinary Research and Education–Emerging Interface Technologies  
**Granting Agency:** NSF  
**Period:** 5/1/15-6/30/18  
**Total Amount:** \$358,980  
**Amount Allocated:** \$28,472  
**Role:** Co-principal investigator responsible for screening and selecting applicants, helping ISU faculty to define and run projects, and day-to-day operations while the program is ongoing.
- 12) **Investigators:** Nir Keren, Stephen Gilbert, and Eliot Winer  
**Title:** Evaluating the Value of Dynamic Terrain Simulation on Training Quality  
**Granting Agency:** Applied Research Associates  
**Period:** 8/15/14-6/30/15  
**Total Amount:** \$55,000  
**Amount Allocated:** \$9,000  
**Role:** Co-principal investigator responsible for developing training simulations and experimental design.
- 13) **Investigators:** Christina Bloebaum and Eliot Winer  
**Title:** Collaborative Research: Visual Analytics for Creation of Value Functions in Complex Systems Design Under Uncertainty  
**Granting Agency:** NSF  
**Period:** 7/1/14-6/30/16  
**Total Amount:** \$403,248  
**Amount Allocated:** \$75,000  
**Role:** Co-principal investigator responsible for developing multidimensional data visualization representations for value driven design functions.
- 14) **Investigators:** Stephen Gilbert, Michael Dorneich, and Eliot Winer  
**Title:** Team Tutoring with GIFT  
**Granting Agency:** DoD – Army Research Lab  
**Period:** 2/1/14-1/31/17  
**Total Amount:** \$586,387  
**Amount Allocated:** \$85,000  
**Role:** Co-principal investigator responsible for developing mixed-reality simulations to study team tutoring methods.

- 15) **Investigators:** Song Zhang and Eliot Winer  
**Title:** High-resolution, Real-time 3-D Shape Measurement for Particle Motion Capture  
**Granting Agency:** John Deere  
**Period:** 1/1/14-12/31/16  
**Total Amount:** \$367,693  
**Amount Allocated:** \$90,000  
**Role:** Principal investigator responsible for developing image processing, visualization and modeling capabilities from real-time 3D captured data.
- 16) **Investigators:** Eliot Winer  
**Title:** Evaluation of Commodity Low Cost Immersion Devices  
**Granting Agency:** NSF (e-Design IUCRC Center at Iowa State)  
**Period:** 1/1/14-12/31/14  
**Total Amount:** \$30,324  
**Amount Allocated:** \$30,324  
**Role:** Principal investigator responsible for all aspects of project.
- 17) **Investigators:** Eliot Winer, Stephen Gilbert, and Jim Oliver  
**Title:** Mixed Reality Work Guidance  
**Granting Agency:** Boeing  
**Period:** 1/1/14-12/31/14  
**Total Amount:** \$400,000  
**Amount Allocated:** \$100,000  
**Role:** Principal investigator responsible for all aspects of project.
- 18) **Investigators:** Jim Oliver and Eliot Winer  
**Title:** Markerless Tracking to Enable Augmented Reality on the Factory Floor  
**Granting Agency:** John Deere  
**Period:** 9/1/13-10/15/13  
**Total Amount:** \$40,000  
**Amount Allocated:** \$10,000  
**Role:** Co-principal investigator responsible for developing software framework for augmented reality capability.
- 19) **Investigators:** Eliot Winer, Stephen Gilbert, and Jim Oliver  
**Title:** Augmented Reality Prototyping  
**Granting Agency:** Boeing

- Period:** 10/1/13-12/31/13  
**Total Amount:** \$65,000  
**Amount Allocated:** \$30,000  
**Role:** Principal investigator responsible for all aspects of project.
- 20) **Investigators:** Eliot Winer and Jim Oliver  
**Title:** 3D Visualization of Medical Data on Mobile Devices for Training, Diagnosis and Treatment - Phase II  
**Granting Agency:** State of Iowa Research Innovation Fund  
**Period:** 7/5/13-3/15/14  
**Total Amount:** \$50,000  
**Amount Allocated:** \$25,000  
**Role:** Principal investigator responsible for all aspects of project.
- 21) **Investigators:** Eliot Winer and Jim Oliver  
**Title:** Factory of the Future  
**Granting Agency:** Boeing  
**Period:** 3/15/13-12/31/13  
**Total Amount:** \$294,300  
**Amount Allocated:** \$95,000  
**Role:** Principal investigator responsible for all aspects of project.
- 22) **Investigators:** Eliot Winer and Jim Oliver  
**Title:** 3D Visualization of Medical Data on Mobile Devices for Training, Diagnosis and Treatment – Phase I  
**Granting Agency:** State of Iowa Research Innovation Fund  
**Period:** 1/1/13-8/31/13  
**Total Amount:** \$50,000  
**Amount Allocated:** \$25,000  
**Role:** Principal investigator responsible for all aspects of project.
- 23) **Investigators:** Eliot Winer and Jim Oliver  
**Title:** Immersive Design Center Support and Multidisciplinary Design Analysis and Optimization  
**Granting Agency:** Boeing  
**Period:** 6/14/12-12/31/12  
**Total Amount:** \$156,042  
**Amount Allocated:** \$156,042  
**Role:** Principal investigator responsible for all aspects of project.
- 24) **Investigators:** Eliot Winer and Jim Oliver

- Title:** Immersive Development Self-Organizing Map Enhancement  
**Granting Agency:** Boeing  
**Period:** 6/14/12-12/31/12  
**Total Amount:** \$60,314  
**Amount Allocated:** \$60,314  
**Role:** Principal investigator responsible for all aspects of project.
- 25) **Investigators:** Stephen Gilbert, Jim Oliver, and Eliot Winer  
**Title:** REU Site: Summer Program for Interdisciplinary Research and Education–Emerging Interface Technologies  
**Granting Agency:** NSF  
**Period:** 5/1/12-12/31/14  
**Total Amount:** \$358,135  
**Amount Allocated:** \$0  
**Role:** Co-principal investigator responsible for screening and selecting applicants, helping ISU faculty to define and run projects, and day-to-day operations while the program is ongoing.
- 26) **Investigators:** Stephen Gilbert and Eliot Winer  
**Title:** NCHCI Medical Training Simulation System  
**Granting Agency:** National Center for Healthcare Informatics  
**Period:** 2/10/12-6/28/13  
**Total Amount:** \$66,819  
**Amount Allocated:** \$33,409  
**Role:** Co-principal investigator responsible development of client architecture to communicate DIS packets to overall simulation framework.
- 27) **Investigators:** Eliot Winer  
**Title:** Preflight Augmented Reality Inspection Program  
**Granting Agency:** Boeing  
**Period:** 10/1/11-12/31/11  
**Total Amount:** \$42,852  
**Amount Allocated:** \$42,852  
**Role:** Principal investigator responsible for all aspects of project.
- 28) **Investigators:** Eliot Winer and Stephen Gilbert  
**Title:** Tanker Receiver Simulation  
**Granting Agency:** Boeing  
**Period:** 10/17/11-12/31/12  
**Total Amount:** \$200,000  
**Amount Allocated:** \$100,000



- Role:** Principal investigator responsible for all aspects of project.
- 29) **Investigators:** Eliot Winer and Jim Oliver  
**Title:** Visualization of Multidisciplinary Design Data Phase II  
**Granting Agency:** Boeing  
**Period:** 5/30/11-12/23/11  
**Total Amount:** \$149,999  
**Amount Allocated:** \$115,000  
**Role:** Principal investigator responsible for all aspects of project.
- 30) **Investigators:** Eliot Winer and Jim Oliver  
**Title:** Development of Advanced Collaboration and Modular Methods to Facilitate Transition between Concept and Detailed Design Stages  
**Granting Agency:** John Deere  
**Period:** 1/1/11-12/31/13  
**Total Amount:** \$508,695  
**Amount Allocated:** \$375,000  
**Role:** Principal investigator responsible for all aspects of project.
- 31) **Investigators:** Song Zhang and Eliot Winer  
**Title:** High-resolution, Real-time 3-D Shape Measurement for Particle Motion Capture  
**Granting Agency:** John Deere  
**Period:** 1/1/11-12/31/13  
**Total Amount:** \$487,228  
**Amount Allocated:** \$243,614  
**Role:** Co-principal investigator responsible for developing visualization and modeling capabilities from experimental data to create simulation for debris in a farmfield.
- 32) **Investigators:** Eliot Winer  
**Title:** Technology Evaluation for Aircraft Maintenance Training  
**Granting Agency:** Department of Education (sub-contract through Embry Riddle Aeronautical University)  
**Period:** 9/1/11-8/31/12  
**Total Amount:** \$16,988  
**Amount Allocated:** \$16,988  
**Role:** Principal investigator responsible for developing prototype software to demonstrate feasibility of using virtual tools to train aircraft maintenance.

- 33) **Investigators:** Stephen Gilbert, Jim Oliver, and Eliot Winer  
**Title:** Advanced Live, Virtual and Constructive Training Systems  
**Granting Agency:** Department of the Army  
**Period:** 10/1/10-9/30/13  
**Total Amount:** \$2,686,000  
**Amount Allocated:** \$975,000  
**Role:** Co-principal investigator responsible for developing software architecture to allow real-time training and assessment of soldiers. Also responsible for development of optimization and analysis tools for assessment of body positions during training.
- 34) **Investigators:** Eliot Winer  
**Title:** Collaborative Research: Jaws and Backbone: Chondrichthyan Phylogeny and a Spine for the Vertebrate Tree of Life  
**Granting Agency:** NSF  
**Period:** 9/1/10-8/31/15  
**Total Amount:** \$150,000  
**Amount Allocated:** \$150,000  
**Role:** Principal investigator responsible for development of visualization and segmentation methods for volume datasets.
- 35) **Investigators:** Jim Oliver and Eliot Winer  
**Title:** Visualization of Multidisciplinary Design Data  
**Granting Agency:** Boeing  
**Period:** 4/1/10-12/30/10  
**Total Amount:** \$117,208  
**Amount Allocated:** \$95,000  
**Role:** Co-principal investigator responsible for software development, data processing, and user interaction features.
- 36) **Investigators:** Jim Oliver and Eliot Winer  
**Title:** Development of a Collaborative Design Environment  
**Granting Agency:** Boeing  
**Period:** 4/1/10-12/30/10  
**Total Amount:** \$186,525  
**Amount Allocated:** \$135,000  
**Role:** Co-principal investigator responsible for software development, building of analysis models and user testing.
- 37) **Investigators:** Stephen Gilbert and Eliot Winer  
**Title:** Device Interaction Study for Google Earth for Command and Control Operations

- Granting Agency:** Mechdyne  
**Period:** 8/1/09-9/30/10  
**Total Amount:** \$130,000  
**Amount Allocated:** \$65,000  
**Role:** Principal investigator responsible for studying feasibility of using mobile devices for command and control functions for soldiers in the field.
- 38) **Investigators:** Jim Oliver and Eliot Winer  
**Title:** Conceptual Design of a Eucalyptus Machine Form  
**Granting Agency:** John Deere  
**Period:** 6/1/09-12/1/09  
**Total Amount:** \$77,936  
**Amount Allocated:** \$77,936  
**Role:** Principal investigator responsible for developing conceptual design capabilities specific to a new machine form.
- 39) **Investigators:** Jim Oliver and Eliot Winer  
**Title:** Virtual Reality Implementation Study  
**Granting Agency:** Boeing  
**Period:** 7/1/09-3/1/10  
**Total Amount:** \$75,000  
**Amount Allocated:** \$75,000  
**Role:** Co-principal investigator responsible for studying feasibility of using virtual reality capabilities in a product design process.
- 40) **Investigators:** Jim Oliver, Eliot Winer, and Stephen Gilbert  
**Title:** Advanced Live, Virtual and Constructive Training Systems  
**Granting Agency:** Department of the Army  
**Period:** 10/1/09 – 9/31/10  
**Total Amount:** \$1,550,000  
**Amount Allocated:** \$575,000  
**Role:** Co-principal investigator responsible for developing software architecture to allow real-time training and assessment of soldiers. Also responsible for development of optimization and analysis tools for assessment of body positions during training.
- 41) **Investigators:** Stephen Gilbert, Jim Oliver, and Eliot Winer  
**Title:** REU Site: Summer Program for Interdisciplinary Research and Education–Emerging Interface Technologies  
**Granting Agency:** NSF  
**Period:** 1/1/09-12/31/11

- Total Amount:** \$300,000  
**Amount Allocated:** \$36,000  
**Role:** Co-principal investigator responsible for screening and selecting applicants and helping ISU faculty to define and run projects.
- 42) **Investigators:** Eliot Winer  
**Title:** Real-Time Virtual Collaborative Product Development Environment  
**Granting Agency:** John Deere  
**Period:** 1/1/08-12/31/08  
**Total Amount:** \$50,000  
**Amount Allocated:** \$50,000  
**Role:** Principal investigator responsible for all aspects of project.
- 43) **Investigators:** Eliot Winer  
**Title:** Development of a VR Simulator for 3D Painter Training  
**Granting Agency:** John Deere  
**Period:** 1/1/08-12/31/10  
**Total Amount:** \$273,158  
**Amount Allocated:** \$273,158  
**Role:** Principal investigator responsible for all aspects of project.
- 44) **Investigators:** Eliot Winer and Jim Oliver  
**Title:** Development of the Advanced Systems Design Suite  
**Granting Agency:** John Deere  
**Period:** 1/1/08-12/31/10  
**Total Amount:** \$463,779  
**Amount Allocated:** \$302,500  
**Role:** Principal investigator responsible for developing all optimization, analysis, and metamodeling methods for assessment of conceptual vehicle designs. Also responsible for development of software interface in which all methods are implemented.
- 45) **Investigators:** Alex Stoytchev and Eliot Winer  
**Title:** Development of a Real-time System for Tool Tracking  
**Granting Agency:** John Deere  
**Period:** 1/1/08-12/31/10  
**Total Amount:** \$373,125  
**Amount Allocated:** \$125,000  
**Role:** Co-principal investigator responsible for tracking system implementation for real-time position information of tools and development of user interface for software product.

- 46) **Investigators:** Eliot Winer  
**Title:** Commercialization of 3D Interactive Digital Medical Software for Surgical Planning and Training  
**Granting Agency:** State of Iowa (Grow Iowa Values Fund)  
**Period:** 7/1/07-6/30/09  
**Total Amount:** \$109,533  
**Amount Allocated:** \$109,533  
**Role:** Principal investigator responsible for all aspects of project.
- 47) **Investigators:** Jim Oliver, Eliot Winer, and Alex Stoytchev  
**Title:** Virtual Teleoperation of Unmanned Aerial Vehicles (UAVs) – Phase III  
**Granting Agency:** United States Air Force Office of Scientific Research  
**Period:** 5/1/07-4/30/09  
**Total Amount:** \$4,302,900  
**Amount Allocated:** \$450,000  
**Role:** Co-principal investigator responsible for development of optimization algorithms for 3D path planning, graphical interface for 3D path planning, overall architecture and maintenance of software, terrain visualization engine, and creation of augmented reality interface for command and control decision-making.
- 48) **Investigators:** Shahin Vassigh, Eliot Winer, Omar Khan, and Ken McKay  
**Title:** Building Literacy: The Integration of Building Technology and Design into Architectural Education  
**Granting Agency:** Department of Education  
**Period:** 1/1/07-12/31/09  
**Total Amount:** \$535,418  
**Amount Allocated:** \$96,229  
**Role:** Co-principal investigator responsible for development of software interface that incorporates all gaming elements to teach sustainable building design. Also responsible for creation of learning modules to teach basic structural design concepts to architecture students.
- 49) **Investigators:** Eliot Winer and Alex Stoytchev  
**Title:** Weld Validation and Training System  
**Granting Agency:** John Deere  
**Period:** 7/1/06-12/31/07  
**Total Amount:** \$266,449  
**Amount Allocated:** \$120,000  
**Role:** Principal investigator responsible for algorithms to create 3D weld

map showing correct positions of welds, determination of appropriate tracking technology to monitor positions of tools, and prototype of user interface software.

- 50) **Investigators:** Eliot Winer  
**Title:** VR Paint Training  
**Granting Agency:** John Deere  
**Period:** 7/1/06-12/31/07  
**Total Amount:** \$75,102  
**Amount Allocated:** \$75,102  
**Role:** Principal investigator responsible for all aspects of project.
- 51) **Investigators:** Jim Oliver, Eliot Winer, and Alex Stoytchev  
**Title:** Virtual Teleoperation of Unmanned Aerial Vehicles (UAVs) – Phase II  
**Granting Agency:** United States Air Force Office of Scientific Research  
**Period:** 5/1/06-4/30/09  
**Total Amount:** \$3,378,200  
**Amount Allocated:** \$445,000  
**Role:** Co-principal investigator responsible for development of optimization algorithms for 3D path planning, graphical interface for 3D path planning, overall architecture and maintenance of software, terrain visualization engine, and creation of augmented reality interface for command and control decision-making.
- 52) **Investigators:** Amy Kaleita-Forbes, J. Adin Mann, and Eliot Winer  
**Title:** Program for Space-borne and Earthbound System Sustainability (PSESS)  
**Granting Agency:** Iowa Space Grant Consortium (funded by NASA)  
**Period:** 4/1/06-3/31/10  
**Total Amount:** \$315,000  
**Amount Allocated:** \$75,000  
**Role:** Co-principal investigator responsible for developing design methods and optimization tools to make sustainable systems more efficient, accurate, and reliable. Also responsible for developing visualization and metamodeling methods to predict soil moisture patterns from satellite data.
- 53) **Investigators:** Eliot Winer and Jim Oliver  
**Title:** Advanced Systems Design Suite  
**Granting Agency:** John Deere  
**Period:** 1/1/06-12/31/07

- Total Amount:** \$296,969  
**Amount Allocated:** \$175,000  
**Role:** Principal investigator responsible for developing center of gravity and weight analyses through appropriate approximation techniques. Also responsible for development of prototype software interface.
- 54) **Investigators:** Eliot Winer  
**Title:** Evaluation of User-Interface Paradigms for Operator Operations on the Move  
**Granting Agency:** Fakespace Systems  
**Period:** 8/22/05-6/30/06  
**Total Amount:** \$135,178  
**Amount Allocated:** \$135,178  
**Role:** Principal investigator responsible for all aspects of project.
- 55) **Investigators:** Jim Oliver, Eliot Winer, Derrick Parkhurst, and Alex Stoytchev  
**Title:** Virtual Teleoperation of Unmanned Aerial Vehicles (UAVs) – Phase I  
**Granting Agency:** United States Air Force Office of Scientific Research  
**Period:** 5/1/05-4/30/07  
**Total Amount:** \$2,800,000  
**Amount Allocated:** \$250,000  
**Role:** Co-principal investigator responsible for modeling 3D path planning as an optimization problem and prototype terrain visualization capability.
- 56) **Investigators:** Judy Vance and Eliot Winer  
**Title:** Virtual Design Exploration and Optimization Environment  
**Granting Agency:** Proctor & Gamble  
**Period:** 10/1/04-9/30/05  
**Total Amount:** \$74,723  
**Amount Allocated:** \$35,000  
**Role:** Co-principal investigator responsible for developing optimization and metamodeling methods for incorporation in structural design process for manufactured products.
- 57) **Investigators:** Eliot Winer  
**Title:** Web-Based Analysis and Visualization as an Aid in Medical Diagnosis and Treatment Decision-Making  
**Granting Agency:** Iowa State University, Office of the Vice President for Research and Economic Development  
**Period:** 7/15/04-6/30/05

**Total Amount:** \$16,000  
**Amount Allocated:** \$16,000  
**Role:** Principal investigator responsible for all aspects of project.

***D. Pending Grants and Contracts***

- 1) **Investigators:** Stephen Gilbert and Eliot Winer  
**Title:** REU Site: Summer Program for Interdisciplinary Research and Education-Emerging Interface  
**Granting Agency:** NSF  
**Period:** 5/1/18-6/30/21  
**Total Amount:** \$359,530  
**Amount Allocated:** \$28,472  
**Role:** Co-principal investigator responsible for screening and selecting applicants, helping ISU faculty to define and run projects, and day-to-day operations while the program is ongoing.

***E. Grants and Contracts Submitted but Declined (submitted in the last three years)***

- 1) **Investigators:** Eliot Winer  
**Title:** Blended Reality Solution for Live, Virtual, and Constructive Field Training  
**Granting Agency:** Charles River Analytics  
**Period:** 7/1/17-3/31/18  
**Total Amount:** \$54,974  
**Amount Allocated:** \$54,974  
**Role:** Principal investigator responsible for all aspects of project.
  
- 2) **Investigators:** Eliot Winer  
**Title:** Pedagogy Models For Training in Mixed Reality Learning Environments  
**Granting Agency:** FTL Labs Corporation  
**Period:** 8/8/17-8/7/18  
**Total Amount:** \$27,500  
**Amount Allocated:** \$27,500  
**Role:** Principal investigator responsible for all aspects of project.



- 3) **Investigators:** Eliot Winer  
**Title:** Training in Mixed Reality Learning Environments  
**Granting Agency:** DAQRI  
**Period:** 8/1/17-7/31/18  
**Total Amount:** \$44,550  
**Amount Allocated:** \$44,550  
**Role:** Principal investigator responsible for all aspects of project.
  
- 4) **Investigators:** Eliot Winer and Stephen Gilbert  
**Title:** A Novel Method for Studying Pedagogy in Mixed Reality Learning Environments  
**Granting Agency:** Eduworks  
**Period:** 7/1/17-6/30/18  
**Total Amount:** \$44,536  
**Amount Allocated:** \$15,000  
**Role:** Principal investigator responsible for all aspects of project.
  
- 5) **Investigators:** Elizabeth Stegemoller, Mack Shelley, Ann Smiley-Oyen, and Eliot Winer  
**Title:** Exploring the Use of Music to Modulate Motor Cortical Activity in Persons With Parkinson's Disease  
**Granting Agency:** NIH  
**Period:** 4/1/18-3/31/20  
**Total Amount:** \$366,687  
**Amount Allocated:** \$68,000  
**Role:** Co-principal investigator responsible for data analysis and visualization.
  
- 6) **Investigators:** Eliot Winer and Michelle Soupir  
**Title:** Smartpath: Grower-Directed Convergence of Nanotechnology and Smart Decision Analytics for Irrigation Water Quality Management Related to Pathogens  
**Granting Agency:** NSF  
**Period:** 8/1/18-7/31/23  
**Total Amount:** \$655,000  
**Amount Allocated:** \$125,000  
**Role:** Principal investigator responsible for data analysis and visualization.
  
- 7) **Investigators:** Jonathan Claussen and Eliot Winer  
**Title:** Connecting Community College Students with University Research Through Soil Biosensor Development and Soil Management

- Education
- Granting Agency:** USDA  
**Period:** 6/1/17-5/31/21  
**Total Amount:** \$300,000  
**Amount Allocated:** \$20,000  
**Role:** Co-principal investigator responsible for setting up program and curriculum for community college students.
- 8) **Investigators:** Nir Keren and Eliot Winer  
**Title:** Novice-To-Expert (N2E): Utilizing Virtual Reality to Advance Firefighters Expertise and Recovery of False Experts  
**Granting Agency:** Texas State University  
**Period:** 7/1/16-6/30/19  
**Total Amount:** \$697,657  
**Amount Allocated:** \$175,000  
**Role:** Co-principal investigator responsible for developing data acquisition methods and visualization in immersive virtual reality environment.
- 9) **Investigators:** Larysa Nadolny, Stephen Gilbert, and Eliot Winer  
**Title:** Full-Scale Development of SciEthics Interactive: Integrating informal science and ethics education through 3D gaming  
**Granting Agency:** NSF  
**Period:** 7/1/15-6/30/19  
**Total Amount:** \$2,572,400  
**Amount Allocated:** \$220,000  
**Role:** Co-principal investigator responsible for developing software framework for massive multiplayer game.
- 10) **Investigators:** Atul Kelkar, Stephen Gilbert, and Eliot Winer  
**Title:** Rapid Prototyping Engineering Modeling Analysis and Design Environment (Remade) For K-12  
**Granting Agency:** VSI Aerospace (STTR to NSF)  
**Period:** 7/1/15-6/30/16  
**Total Amount:** \$100,919  
**Amount Allocated:** \$26,000  
**Role:** Co-principal investigator responsible for developing software framework for 3D learning environment.
- 11) **Investigators:** Rich Wlezien, Christina Bloebaum, and Eliot Winer  
**Title:** IUUSE/PFE: RED: PORTAL: Practice-Oriented Reinvention of Teaching and Active Learning

**Granting Agency:** NSF  
**Period:** 6/1/15-5/30/20  
**Total Amount:** \$2,000,000  
**Amount Allocated:** \$109,000  
**Role:** Co-principal investigator responsible for visualization (software and hardware) interface for collaborating laboratories.

### III. TEACHING / EDUCATION ACTIVITIES

#### *A. Instruction for ISU*

Term	Class Title	Credit Hours	Enrollment	Lab	TA
Fall 17	ME 412 – Ethical Responsibilities of a Practicing Engineer	3	49	No	No
Fall 17	ME 425/525x – Mechanical Systems Optimization	3	53	No	No
Fall 16	ME 412 – Ethical Responsibilities of a Practicing Engineer	3	46	No	No
Fall 15	ME 170 – Engineering Graphics and Introductory Design	3	31	Yes	No
Fall 15	ME 412 – Ethical Responsibilities of a Practicing Engineer	3	40	No	No
Fall 14	ME 170 – Engineering Graphics and Introductory Design	3	25	Yes	No
Fall 14	ME 412 – Ethical Responsibilities of a Practicing Engineer	3	37	No	No
Fall 13	ME 170 – Engineering Graphics and Introductory Design	3	34	Yes	No
Fall 13	ME 412 – Ethical Responsibilities of a Practicing Engineer	3	39	No	No
Fall 12	ME 170 – Engineering Graphics and Introductory Design	3	28	Yes	No
Fall 12	ME 412 – Ethical Responsibilities of a Practicing Engineer	3	44	No	No
Fall 11	ENGR 170 – Engineering Graphics and Introductory Design	3	34	Yes	No
Fall 11	ME 412 – Ethical Responsibilities of a Practicing Engineer	3	37	No	No
Fall 10	ENGR 170 – Engineering Graphics and Introductory Design	3	32	Yes	No
Fall 10	ME 412 – Ethical Responsibilities of a	3	30	No	No

	Practicing Engineer				
Fall 09	ENGR 170 – Engineering Graphics and Introductory Design	3	34	Yes	No
Fall 09	ME 412 – Ethical Responsibilities of a Practicing Engineer	3	39	No	No
Fall 08	ME 270 - Introduction to Mechanical Engineering Design, Section A	3	25	Yes	No
Fall 08	ME 412 – Ethical Responsibilities of a Practicing Engineer	3	29	No	No
Spring 08	ME 425/525x – Mechanical Systems Optimization	3	23	No	No
Fall 07	ME 412 – Legal and Environmental Considerations in Design	3	12	No	No
Spring 07	ME 415 – Mechanical Systems Design, Section B	3	22	Yes	No
Spring 07	ME 425/525x – Mechanical Systems Optimization	3	30	No	No
Fall 06	ME 415 – Mechanical Systems Design, Section A	3	28	Yes	No
Spring 06	ME 415 – Mechanical Systems Design, Section B	3	22	Yes	No
Spring 06	ME 425 – Mechanical Systems Optimization	3	15	No	No
Fall 05	ME 270 – Introduction to Mechanical Engineering Design, Section B	3	34	Yes	Yes
Spring 05	ME 425 – Mechanical Systems Optimization	3	6	No	No
Spring 05	ME 270 – Introduction to Mechanical Engineering Design, Section A	3	35	Yes	Yes
Fall 04	ME 270 – Introduction to Mechanical Engineering Design, Section D	3	21	Yes	Yes
Spring 04	ME 270 – Introduction to Mechanical Engineering Design, Section A	3	21	Yes	Yes

### ***B. Curriculum Development Activity for ISU***

ME 170 – Engineering Graphics and Introductory Design: Redesigned curriculum to build critical graphics, design, and team building skills for first and second year students. Students were taught basic to advanced CAD modeling techniques along with basic theories and methods in graphics, dimensioning, tolerancing, and programming via MATLAB. Students also worked in teams on three major projects on advanced modeling, design and modeling of a basics Cam-follower device, and manufacturing processes via Computer Numerical Control (CNC). In Fall 2014, developed a new version of ME 170 to aid in large enrollments in class and department.

This section required all students to have their own laptops and was not taught in a computer lab. In addition, this class was taught in a team-based approach. This involved multiple group projects and a flipped model for presenting class material. This model will be adopted for all 170 sections starting Fall 2015.

ME 270 – Introduction to Mechanical Engineering Design: Redesigned curriculum to encompass a product design process from concept to manufacturing of a physical prototype. Students were required to create basic financial and marketing plans to justify that their product would meet customers' needs. Students were "employees" of a struggling virtual toy company and put on product design teams. The teams were in competition with each other to determine which toy concept would move to the next stage of production within the company. The final presentations given at the end of the semester were to a panel of professors, practicing engineers, and business professionals who judged each team on a range of technical and business topics.

ME 415 – Mechanical Systems Design: Negotiated agreement with Altec Industries to become the sponsor/partner for this course. Students worked on actual problems and supporting data for various systems that Altec currently has in production. The students worked in design teams to investigate problems ranging from new vehicle conceptual designs to specific issues involved in manufacturing processes. Students met and presented regularly with Altec engineers. At the end of the semester, students presented their design concepts, technical evaluations, manufacturing plans, and appropriate costing data to ensure that the design meets specific requirements as set forth by Altec.

ME/HCI 425/525 – Optimization Methods for Complex Designs: Updated curriculum to include the most modern optimization techniques. Obtained test cases and algorithms from colleagues at various universities in the United States and abroad to demonstrate to the students the wide array of applications to which optimization can be applied. The test cases and assignments included problems ranging from traditional mechanical systems to bio-inspired problems such as the design of an artificial heart and use of optimization in medical imaging for surgical planning. Added a graduate component to this course (ME 525) and cross-listed it in the Human Computer Interaction (HCI) graduate program.

ME 412 - Ethical Responsibilities of a Practicing Engineer: Created a new curriculum for the course centered around a decision framework students could use to approach ethical decisions. This framework stresses that ethical decisions depend on floating factors such as timing, economics, or morality, but that engineers must approach them in a similar manner to other engineering design decisions. Assignments consisted of real and created case studies, in which students had to write position papers defending what decision they would make if in that situation. Students also had to debate positions on cases in a formal debate setting. Lastly, group discussions were held to discuss past case studies, topics or debates.

### ***C. Service as Major Professor on Graduate Student Committees***

#### *PhD Candidates*

- 1) Joseph Holub, PhD, August 2012 – December 2016, “Dynamic Volume Rendering of Functional Medical Data on Dissimilar Hardware Platforms,” now at Visual Medical Solutions, LLC.
- 2) Bhaskar Bhattacharya, PhD, August 2013 – December 2016, “Automatic Generation of Augmented Reality Guided Assembly Instructions Using Expert Demonstration,” now at Microsoft.
- 3) Marisol Martinez-Escobar, PhD, August 2009 – December 2014, “Human Factors and Performance Considerations of Visual-Spatial Skills in Medical Context Tasks,” now at Facebook.
- 4) Kenneth Kopecky, PhD, December 2008 – December 2014, “A Software Framework for Initializing, Running, and Maintaining Mixed Reality Environments,” co-founder and now at Hexels.
- 5) Christian Noon, PhD, (James Oliver, co-advisor), August 2008 – February 2012, “A Volume Rendering Engine for Desktops, Laptops, Mobile Devices and Immersive Virtual Reality Systems Using GPU-Based Volume Raycasting,” now at Nike.
- 6) Ruqin Zhang, PhD, (James Oliver, co-advisor), August 2006 – March 2011, “3D mesh metamorphosis from spherical parameterization for conceptual design,” now at Siemens PLM.
- 7) Vijay Kalivarapu, PhD, January 2004 – July 2008, “Improving Solution Characteristics of Particle Swarm Optimization through the Use of Digital Pheromones, Parallelization, and Graphical Processing Units (GPUs),” now a professional scientist at the Virtual Reality Applications Center, Iowa State University.
- 8) Jung-Leng Foo, PhD, June 2004 – July 2008, “A Framework for Tumor Segmentation and Interactive Immersive Visualization of Medical Image Data for Surgical Planning,” current employment unknown.

#### *Masters Candidates*

- 1) Adam Kohl, MS, August 2015 – December 2017, “Visualizing Engineering Design Data Using a Modified Two-Level Self-Organizing Map Clustering Approach,” now a PhD student
- 2) Anastacia MacAllister, MS, January 2013 – December 2015, “Natural User Interfaces for Interdisciplinary Design Review Using the Microsoft Kinect,” now a PhD student.
- 3) Frederick Thompson, MS, August 2013 – December 2015, “Evaluation of a Commodity VR Interaction Device for Gestural Object Manipulation in a Three Dimensional Work Environment,” current employment unknown.
- 4) Trevor Richardson, MS, August 2011 – December 2013, “A Software Environment for Visualizing High-Dimensional Data Using Contextual Self-Organizing Maps Linked with Immersive Virtual Reality,” currently employed at Software Associates.
- 5) Bethany Juhnke, MS, August 2011 – December 2013, “Evaluating the Microsoft Kinect™ Compared to the Mouse as an Effective Interaction Device for Medical Imaging Manipulations,” currently a PhD student at the University of Minnesota.

- 6) David Prater (Stephen Gilbert, co-advisor), MS, January 2011 – May 2013, “A Tactile Garment for Use in a Mixed Reality Military Training Simulator,” current employment unknown.
- 7) Brice Pollock, MS, August 2010 – February 2012, “Creating a Flexible LVC Architecture for Mixed Reality Training of the Dismounted Warfighter,” now at Apple.
- 8) Joseph Holub, MS, January 2009 – December 2010, “Improving Particle Swarm Optimization Path Planning through Inclusion of Flight Mechanics,” now a PhD student.
- 9) Brett Nokolny, MS, August 2008 – May 2010, “Contextual Self-Organizing Maps for Visual Design Space Exploration,” now working at Imaginestics
- 10) Tyrone Moore, MS, August 2009 – May 2011, “An Evaluation of Perceived Urgency Applied to Amplitude Modulated Stimulus for Military Applications,” now at Chevron-Philips.
- 11) Catherine Peloquin, MS, May 2007 – December 2009, “Determination of Critical Factors for Fast and Accurate 2D Medical Image Deformation,” now at Intel.
- 12) Brandon Newendorp, MS, September 2007 – August 2009, “Real-Time Scenograph Creation and Manipulation in an Immersive Environment using an iPhone,” now at Apple.
- 13) Levi Swartzentruber, MS, September 2007 – August 2009, “Improving Path Planning of Unmanned Aerial Vehicles in an Immersive Environment using Meta-Paths and Terrain Information,” now at Aviators.
- 14) Christian Noon, MS, August 2006 – December 2008, “Metamodeling for the Quantitative Assessment of Conceptual Designs in an Immersive Virtual Reality Environment,” now at Nike.
- 15) Andrew Koehring, MS, May 2006 – December 2008, “The Application of Polynomial Response Surface and Polynomial Chaos Expansion Metamodels within an Augmented Reality Conceptual Design Environment,” now at Bells Brewery.
- 16) Eric Anderson, MS, August 2005 – November 2007, “PSO Population Initialization Study,” now at John Deere.
- 17) Marisol Martinez, MS, August 2006 – December 2008, “An Interactive Segmentation Approach using Selective Colorization,” now at Intel.
- 18) Alex Renner, MS, (Matthew Frank, co-advisor), August 2006 - May 2008, “Computer Aided Process Planning for Rapid Prototyping Using a Genetic Algorithm,” now a PhD student.
- 19) Kenneth Kopecky, MS, June 2004 – January 2007, “Real-Time Water Simulation and Rendering using Features of the Latest OpenGL-Capable Graphics Hardware,” co-founder and now at Hexels.
- 20) Jung Leng Foo, MS, January 2003 – April 2004, “Development of Image Enhancement and Segmentation Techniques to Improve Visualization of Digital Medical Data,” current employment unknown.

- 21) Aditya Vaze, MS, August 2001 - December 2003, "Development of Data Model for Real-Time Visualization of Large-Scale Engineering Analysis over the Internet," current employment unknown..
- 22) Vijay Kalivarapu, MS, August 2001 - December 2003, "An Approach to Convert Vertex-Based 3D Representations to Combinatorial B-Splines for Real-Time Visual Collaboration," now a professional scientist at the Virtual Reality Applications Center, Iowa State University.
- 23) Eu Jin Ang, MS, August 2001 - November 2003, "Development of an Automatic Grid-based Driving Simulation Scene Generator for Virtual Reality Exposure Therapy," current employment unknown.
- 24) Deepti Kanukolanu, MS, August 2001 - June 2003, "Robust Design of Coupled Sub-Systems using Visualization," now at PTC.
- 25) Pradeep Pinto, MS, August 2000 - January 2003, "OpenGL Based Version of Graph Morphing," current employment unknown.
- 26) Richard Porcari, MS, August 2000 - February 2003, "Web Based Design of a Portable Vertical Shaft Impactor Plant," current employment unknown.
- 27) Tabrez Malik, MS, August 2000 - June 2002, "An Analytical Curve-Based Approach for Multimodal Optimization," now at GE.
- 28) Anna Flemming, MS, August 2000 - September 2001, "A Dynamics Model Suitable for Multi-Purpose Vehicle Simulation," current employment unknown.
- 29) Rajesh Jay, MS, August 1998 - May 2000, "Automatic Response Surface Generation in Graph Morphing," current employment unknown.
- 30) Pranay Shah, MS, August 1998 - May 2000, "Benchmarking of Design Variable Ranking for Graph Morphing," current employment unknown.
- 31) Amit Samant, MS, August 1998 - May 2000, "Constraint Representation in Graph Morphing," current employment unknown.

#### ***D. Service on other Graduate Student Committees***

*Committee Member for all students listed below*

- 1) Tim Morgan, Advisors Profs. Judy Vance / Ted Heindel, 2017, PhD, Mechanical Engineering, committee member.
- 2) Benjamin Kwasu, Advisor Prof. Christina Bloebaum, 2017, PhD, Aerospace Engineering, committee member.
- 3) Tenkasi Subramanian, Advisor Prof. Christina Bloebaum, 2017, MS, Aerospace Engineering, committee member.
- 4) Suresh Murugaiyan, Advisor Prof. Christina Bloebaum, 2017, MS, Aerospace Engineering, committee member.



- 5) Gentry Sleets, Advisor Prof. Stephen Gilbert, 2017, MS, Human Computer Interaction, committee member.
- 6) Allison Cargill, Advisor Prof. J. Claussen, 2016, MS, Mechanical Engineering, committee member.
- 7) Viksit Kumar, Advisor Prof. T. Bigelow, 2015, PhD, Electrical and Computer Engineering, committee member.
- 8) Elliott Tibor, Advisor Prof. C. Bloebaum, 2014, MS, Aerospace Engineering, committee member.
- 9) Mohamad Aslani, Advisor Prof. J. Oliver, 2014, MS, Mechanical Engineering, committee member.
- 10) Jordan Herrema, Advisor Prof. J. Oliver, 2013, MS, Mechanical Engineering, committee member.
- 11) Yajun Wang, Advisor Prof. S. Zhang, 2013, PhD, Mechanical Engineering, committee member.
- 12) Rachel Dudley, Advisor Prof. A. Kelkar, 2013, MS, Mechanical Engineering, committee member.
- 13) Shuangyan Lei, Advisor Prof. S. Zhang, 2012, PhD, Mechanical Engineering, committee member.
- 14) Shawn Spencer, Advisor Prof. M. Frank, 2012, MS, Industrial and Manufacturing Systems Engineering, committee member.
- 15) Nikolas Karpinsky, Advisor Prof. S. Zhang, 2012, PhD, Mechanical Engineering, committee member.
- 16) Cuong Van Huynh, Advisor Prof.. S-C. Kong, 2011, MS, Mechanical Engineering, committee member.
- 17) Matthias Veltman, Advisor Prof. S-C Kong, 2011, PhD, Mechanical Engineering, committee member.
- 18) Le Chen, Advisor Prof. E. MacDonald, 2011, PhD, Mechanical Engineering, committee member.
- 19) Shuangyan Lei, Advisor Prof. S. Zhang, 2009, MS, Mechanical Engineering, committee member.
- 20) Ashish Joshi, Advisor Prof. M. Frank, 2008, MS, Industrial and Manufacturing Systems Engineering, committee member.
- 21) Matthias Veltman, Advisor Prof. S-C Kong, 2008, PhD, Mechanical Engineering, committee member.
- 22) Matthew Newcomb, Advisor Prof. C. Harding, 2007, PhD, Geological and Atmospheric Sciences, committee member.
- 23) Dave Muth, Advisor Prof. K. M. Bryden, 2007, PhD, Mechanical Engineering, committee member.

- 24) Wutthigrai Boonsuk, Advisor Prof. M. Frank, 2007, PhD, Industrial and Manufacturing Systems Engineering, committee member.
- 25) Abhishek Seth, Advisor Prof. J. Vance, 2006, PhD, Mechanical Engineering, committee member.
- 26) Doug McCorkle, Advisor Prof. K. M. Bryden, 2006, PhD, Mechanical Engineering, committee member.
- 27) Jared Abodeely, Advisor Prof. K. M. Bryden, 2006, MS, Mechanical Engineering, committee member.
- 28) Steve Corns, Advisor Prof. K. M. Bryden, 2005, PhD, Mechanical Engineering, committee member.
- 29) Stephen Gent, Advisor Prof. K. M. Bryden, 2004, PhD, Mechanical Engineering, committee member.

#### ***E. Supervision of Post-Doctoral Students and Professional Staff***

- 1) Glen Galvin, P&S staff, April 2009 – present, currently working as IT manager for Virtual Reality Applications Center.
- 2) Vijay Kalivarapu, PhD, P&S Staff, August 2008 – present, worked on several projects funded by John Deere, the Iowa Energy Council and Iowa State University, now a professional scientist at the Virtual Reality Applications Center, Iowa State University.
- 3) Jung-Leng Foo, PhD, August 2008 – October 2012, worked on several research projects funded by the DoD, current employment unknown.

#### ***F. Supervision of Undergraduate Research and Independent Study***

##### *Undergraduate Research Assistants (various projects)*

- 1) Austin Garcia, Mechanical Engineering, September 2017 – present
- 2) Brenda Liew, Mechanical Engineering, May 2017 – present
- 3) Emily Pikul, Mechanical Engineering, December 2015 – present
- 4) Samantha Kokjohn, Mechanical Engineering, December 2015 – January 2018
- 5) Holly Baiotto, Mechanical Engineering, June 2015 – May 2017
- 6) Austin Rudolph, Mechanical Engineering, August 2014 – December 2016
- 7) Jack Miller, Mechanical Engineering, August 2014 – December 2016
- 8) Gabriel Evans, Mechanical Engineering, August 2013 – August 2016
- 9) Meng Pah, Mechanical Engineering, August 2013 – May 2016
- 10) Melynda Hoover, Mechanical Engineering, January 2012 – December 2015
- 11) Jonathan Schlueter, Electrical and Computer Engineering, January 2012 – December 2015
- 12) Monica Kozbial, Mechanical Engineering, August 2014 – December 2015
- 13) Clarence Boright, Mechanical Engineering, May 2012 – December 2012

- 14) Thomas Schnieders, Mechanical Engineering, January 2012 – May 2014
- 15) Shawn LaGrotta, Computer Science, January 2012 – present
- 16) Anthony Civitate, Mechanical Engineering, January 2012 – present
- 17) Shubang Sridhar, Mechanical Engineering, January 2013 – May 2014
- 18) Matthew Dryden, Mechanical Engineering, January 2012 – May 2014
- 19) Adam Kohl, Mechanical Engineering, January 2012 – May 2014
- 20) Katie Goebel, Mechanical Engineering, January 2011 – December 2012
- 21) Cody Lindemann, Mechanical Engineering, August 2010 – April 2011
- 22) Cody Huedepohl, Mechanical Engineering, January 2010 – December 2010
- 23) Anastacia MacAllister, Mechanical Engineering, January 2010 – August 2012
- 24) Kurt Willms, Mechanical Engineering, September 2009 – December 2011
- 25) Sonia Jose, Mechanical Engineering, January 2009 – May 2012
- 26) Brice Pollock, Mechanical Engineering, January 2009 – May 2011
- 27) Trevor Richardson, Mechanical Engineering, January 2009 – May 2011
- 28) Joanna Peddicord, Mechanical Engineering, January 2009 – May 2011
- 29) Bethany Juhnke, Mechanical Engineering, January 2009 – May 2011
- 30) Joseph Goering, Mechanical Engineering, January 2008 – May 2009
- 31) Brett Nekolny, Mechanical Engineering, August 2007 – August 2008
- 32) Kristin Crawford, Aerospace Engineering, August 2007 – May 2010
- 33) Catherine Peloquin, Mechanical Engineering, January 2007 – August 2007
- 34) Ana Valdez, Mechanical Engineering, January 2007 – July 2008
- 35) Christian Noon, Mechanical Engineering, January 2006 – August 2006
- 36) Andrew Koehring, Mechanical Engineering, January 2006 – May 2006
- 37) Marisol Martinez, Mechanical Engineering, January 2006 – August 2006

### ***G. Non-ISU Instruction (e.g., Short Courses, Workshops, Training)***

- 1) Winer, E., “Introduction to Meta-Modeling,” short course given at 1<sup>st</sup> Annual AIAA Multidisciplinary Design Optimization Specialist Conference, Austin, TX, April 18-21, 2005
- 2) Krovi, V., English, K., and Winer, E., “Introduction of state-of-the-art visual techniques and beginning robotic construction and operation to high school students,” High School Workshop on Visualization and Robotics, University at Buffalo, the State University of New York, July 2004
- 3) Winer, E., and Jankovic, I., “Introduction to the use of state-of-the-art technologies to research engineering problems,” High School Workshop on Modeling and Simulation, University at Buffalo, the State University of New York, December 2004
- 4) Winer, E., English, K., Hulme, K., Chugh, K., and Bloebaum, C.L., “Introduction of state-of-the-art visual techniques and applications to high school students,” High School Workshop on Scientific Visualization and Virtual Reality, University at Buffalo, the State University of New York, July 2001, July 2002, August 2002, and July 2003

### ***H. Other Teaching Contributions***

- 1) Faculty Advisor, ASME Student Chapter, Iowa State University, 2006-2010
- 2) Masters degree group projects advisor, Department of Mechanical and Aerospace Engineering, University at Buffalo, September 2001-2003
- 3) Faculty Mentor to Engineering MAE and ASE Freshmen, University at Buffalo, Fall 2000-2003

#### **IV. EXTENSION/PROFESSIONAL PRACTICE ACTIVITIES**

##### ***A. Editorial Service for Journals***

- 1) Guest Editor, Special Issue on Computer Vision, Journal of Software Engineering and Applications, May 2014
- 2) Member, Editorial board, Journal of Software Engineering and Applications, July 2013 – present
- 3) Member, Editorial board, Journal of Parallel and Cloud Computing, July 2013 – present

##### ***B. Offices Held in Professional Societies***

###### ***Offices Held***

- American Institute of Aeronautics and Astronautics (AIAA)
  - Chair, Conference sub-committee, 2012-2016
  - Chair, Multidisciplinary Design Optimization (MDO) Technical Committee, 2010-2012
  - Senior Member, 2008 - present
  - Member, Conference sub-committee, 2007-2016
  - Chair, publications sub-committee, 2008-2010
  - Author, MDO Year in Review Article, Aerospace America, March 2006, 2007
  - Member, Multidisciplinary Design Optimization (MDO) Technical Committee, 2003 – 2016
  - Member, 1999 – 2008
  - Student Member, 1985 – 1988, (Student Chapter Treasurer, 1986 – 1988)
- American Society of Mechanical Engineering (ASME)
  - Member, 1998 - present
- Society for Industrial and Applied Mathematics (SIAM)
  - Member, 1999 - 2002
- The International Society for Optics and Photonics (SPIE)
  - Member, 2010 - present
- International Pediatric Endosurgery Group (IPEG)
  - Member, 2009 – present

- National Defense Industrial Association
  - Member, 2012 - present

***Service to Disciplinary and Professional Societies or Associations***

*Reviewer*

- Journal of Research in Engineering Design, January 2008 – present
- American Society of Mechanical Engineers (ASME) International Design Engineering Technical Conferences and Computers and Information in Engineering Conference, 2006 – present
- American Society of Mechanical Engineers (ASME) Journal of Computing and Information Science in Engineering (JCISE), 2005 – present
- American Institute of Aeronautics and Astronautics (AIAA) Multidisciplinary Design Optimization Specialists Conference, 2005 - 2013
- American Institute of Aeronautics and Astronautics (AIAA) Journal, 2005 – present
- American Institute of Aeronautics and Astronautics (AIAA) Aviation Forum, Multidisciplinary Analysis and Optimization Conference, 2000 – present
- American Institute of Aeronautics and Astronautics (AIAA) Aerospace Sciences Meeting and Exhibit, 2005 - 2013
- American Society of Mechanical Engineers (ASME) Mechanical Design Competition, September 2002
- American Society of Mechanical Engineers (ASME) Journal of Mechanical Design (JMD), 2006
  - Oxford University Press, November 2001

*Workshop Presenter/Participant*

- Participant, Engineered Systems Workshop, National Science Foundation, Washington, DC, February 2010
- Participant, Cinegrid workshop, San Diego, CA, November 2006
- Presenter, Optimization Tutorial: Introduction to Meta-Modeling, presented at the 1st AIAA Multidisciplinary Design Optimization Specialist Conference, Austin, TX, April 2005
- Participant, Visualization Working Group, Office of Energy Assurance, United States Department of Energy, Invitation only workshop, September 2004
- Participant, Manufacturing Matters, Industrial Workshop, Buffalo, NY, 2002
- Participant, NASA Intelligent Synthesis Environment (ISE) Industry-Academia Workshop, Langley, Virginia, November 1999

- Participant, Center for Integrated Design (CID) Exploring Complex Systems and Emerging Technologies Seminar, Columbus, Ohio, June 1998

*Conference Session Chair*

- 2017 Interservice/Industry Training, Simulation & Education Conference (I/ITSEC), Orlando FL, December 2017
- 2016 Interservice/Industry Training, Simulation & Education Conference (I/ITSEC), Orlando FL, December 2016
- 2014 Interservice/Industry Training, Simulation & Education Conference (I/ITSEC), Orlando FL, December 2014
- 2013 Interservice/Industry Training, Simulation & Education Conference (I/ITSEC), Orlando FL, December 2013
- 2012 Interservice/Industry Training, Simulation & Education Conference (I/ITSEC), Orlando FL, December 2012
- 14<sup>th</sup> AIAA/ISSMO Symposium on Multidisciplinary Analysis and Optimization, Indianapolis, IN, August 2012
- 2011 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference (IDETC/CIE 2011), Washington, DC, August 2011
- 7th AIAA Multidisciplinary Design Optimization Specialists Conference, Palm Springs, CA, April 2011
- 13<sup>th</sup> AIAA/ISSMO Symposium on Multidisciplinary Analysis and Optimization, Ft. Worth, TX, August 2010
- 5th AIAA Multidisciplinary Design Optimization Specialists Conference, Palm Springs, CA, April 2009
- 12th AIAA/ISSMO Symposium on Multidisciplinary Analysis and Optimization, Victoria, British Columbia, August 2008
- 4th AIAA Multidisciplinary Design Optimization Specialists Conference, Schaumburg, IL, April 2008
- 3rd AIAA Multidisciplinary Design Optimization Specialists Conference, Waikiki, HI, April 2007
- 11th AIAA/ISSMO Symposium on Multidisciplinary Analysis and Optimization, Portsmouth, VA, August 2006
- 2nd AIAA Multidisciplinary Design Optimization Specialists Conference, Newport, RI, April 2006
- 44th AIAA Aerospace Sciences Meeting and Exhibit, Reno, NV, January 2006
- 1st AIAA Multidisciplinary Design Optimization Specialists Conference, Austin, TX, April 2005

- 43rd AIAA Aerospace Sciences Meeting and Exhibit, Reno, NV, January 2005
- 10th AIAA/ISSMO Symposium on Multidisciplinary Analysis and Optimization, Albany, NY, August 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

*Technical Organizer*

- 16th AIAA/ISSMO Multidisciplinary Analysis and Optimization Conference, June 5-10, 2015, Dallas, TX – General Chair
- 15th AIAA/ISSMO Multidisciplinary Analysis and Optimization Conference, June 16-20, 2014, Atlanta Georgia – General Chair
- Interservice/Industry Training, Simulation & Education Conference (I/ITSEC)
  - Member, Knowledge Management Subcommittee, 2018
  - Member, Simulation Subcommittee, 2017
  - Chair, Training Subcommittee, 2016
  - Deputy Chair, Training Subcommittee, 2015
  - Member, Training Subcommittee, 2012-2014
- 2011 ASME International Design Engineering Technical Conferences & Computers and Information in Engineering Conference (IDETC/CIE 2011), - Review Coordinator for Design Optimization Session
- 13th AIAA/ISSMO Symposium on Multidisciplinary Analysis and Optimization, Ft. Worth, TX, August 2010 – Technical Chair
- 5th AIAA Multidisciplinary Design Optimization Specialists Conference, April 2009 – General Chair
- 4th AIAA Multidisciplinary Design Optimization Specialists Conference, Schaumburg, IL, April 2008 – Technical Chair
- 2006 ASME International Design Engineering Technical Conferences & Computers and Information in Engineering Conference (IDETC/CIE 2006), – Review Coordinator
- 11th AIAA/ISSMO Symposium on Multidisciplinary Analysis and Optimization, New port News, VA, August 2006 – Technical Organizer for Optimization Methods track
- 44th AIAA Aerospace Sciences Meeting and Exhibit (MDO Papers), Reno, NV, January 2006 – Technical Chair for MDO Papers
- 43rd AIAA Aerospace Sciences Meeting and Exhibit (MDO Papers), Reno, NV, January 2005 – Technical Chair for MDO Papers

***C. Grant Review Panels***

- 1) NSF Panel Review, unsolicited proposals, Design and Manufacturing Innovation, Engineering Design, April 2012
- 2) NSF Panel Review, unsolicited proposals, Design and Manufacturing Innovation, Engineering Design, April 2011
- 3) NSF Panel Review, unsolicited proposals, CreativeIT, Engineering Design, February 2010
- 4) NSF Panel Review, unsolicited proposals, Design and Manufacturing Innovation, Engineering Design, February 2009
- 5) NSF Panel Review, unsolicited proposals, Design and Manufacturing Innovation, Engineering Design, February 2007

***D. Government, Educational, or Corporate Advisory Committees***

None

***E. Public Service Activities***

- USA Swimming nationally certified official for Stroke & Turn, Starter, Deck Referee, and Administrative Referee 2010 - present
- Ames Cyclone Aquatics Club meet director, 2010 - 2013
- Participant, Tour de Cure, 1998 – 2003, Bike ride to raise money for Diabetes research
- Volunteer, Brush Up Buffalo, 1998 – 2003, Paint home of lower income family

***F. Other Extension/Professional Practice Activities***

None

**V. INSTITUTIONAL SERVICE ACTIVITIES**

***A. University-Level Service***

- Faculty Senate, 2017 - present
- Associate Director, Virtual Reality Applications Center, 2009 - present
- Computing Activities Committee (CAC)
  - Chair, 2010 - 2015
  - Member, 2009 - 2017



- Research IT Advisory Committee, 2006-2009
- SUNY day featured exhibitor, March 2003
- Scientific expert on lobby team to NY state government, February 2001, 2002

### ***B. College-Level Service***

- Faculty Senator, Engineering Caucus, 2017 - present
- Participant, Engineering orientation parent's coffee meetings, 2005 - present
- Featured presenter, Engineering Scholar's Day, 2005-2014
- Entrepreneurship Leaders (E-Leaders) Committee, 2010-2013
- Academic Standards Committee, 2007-2008, 2009-2012
- Engineering Fee Task Force (EFTF), 2006-2011
- Research Grants Committee, 2007
- ENG 101, Lecture on Mechanical Engineering, Fall 2004
- Member, Advisory Board, The Center for Industrial Effectiveness (TCIE), 2003
- EAS 140, Lecture on disciplines, University at Buffalo, Fall 2000, 2001
- Dean's Council Presentation (NYSCEDII), University at Buffalo, Spring 2000, 2001
- Presentation, Undergraduate Engineers Introduction to Graduate School, University at Buffalo, October 1997, 1998, 2000

### ***C. Department-Level Service***

- Design and Professional Practice Curriculum Development Committee
  - Chair 2014 - 2016
- Undergraduate Education Committee, 2010-2014
- ME 270 Curriculum Committee, 2004-2006, 2009-2012
- Faculty Search Committee
  - Member, 2006-2007, 2013-2014
  - Chair, 2016-2017
- Laboratory and Computing Committee
  - Member 2004-2009
  - Chair 2010 - 2013
- ME 2025 Committee, 2007-2008
- Design Curriculum Committee, 2005-2014
- Design course review coordinator, ME Industrial Advisory Board, 2007
- Created Presentation for Graduate School Presidential Fellows, University at Buffalo, October 1998
- Created Presentation for SEAS Dean's Council, University at Buffalo, October 1998