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Virtual Reality Applications Center
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Educational Background

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

Academic Work Experience

7/13 – present, Courtesy Professor, Department of Electrical and Computer Engineering, Iowa State University, Ames, Iowa.

1/09 – present, Associate Director, Virtual Reality Applications Center (VRAC), Iowa State University, Ames, Iowa.

11/03 – present, Associate 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.

Industrial Work Experience

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

Journal Publications

- 30) Zou R., Kalivarapu V., Winer E., Oliver J., and Bhattacharya S., "Particle Swarm Based Source Seeking in Complex and Noisy Environment", IEEE Transactions on Automation Science and Engineering, accepted for publication (2015)
- 29) Noon, C., Holub, J., and Winer, E., "Real-time volume rendering of digital medical images on an iOS device", SPIE Journal of Medical Imaging, under review (2014)
- 28) Kopecky, K., de la Cruz, J., and Winer, E., "MetaTracker: Unifying and abstracting 3D motion tracking data from multiple heterogenous hardware systems", IEEE Access, under second review (2014)
- 27) Civitate, A., Smith, A., Thompson, F., Kopecky, K., Kelly, J., Gilbert, S., and Winer, E., "Evaluation of a Spatial Vibro-Tactile Alert System Compared to an Audio Alert System in High Cognitive Load Training Scenarios", Human Factors, under review (2014)
- 26) MacAllister A., Tsung-Pin, Y., Degenhardt, G., Seal, D., and Winer, E., "Assessing the Feasibility of Manipulating Engineering Geometry using a Microsoft Kinect™ and Computer-Aided Engineering Software, Journal of Computing and Information Science in Engineering, under review (2014)
- 25) Tourek, B., Hisley, K., Eliot, D., and Winer, E. "Comparing the Kinect™ and Mouse as Interaction Devices for Manipulating Tissue Density in Volume-Rendered Medical Images", Journal of Laparoendoscopic & Advanced Surgical Techniques, under review (2014)
- 24) Richardson, T., Holub, J., and Winer, E.H., "Extending Parallelization of the Self-Organizing Map by Combining Data and Network-Partitioned Methods", Computers in Industry, under second review (2014)
- 23) Holub, J., Swartzentruber, L., and Winer, E.H., "UAS Path Planning using Digital Pheromone PSO, Flight Mechanics, and Three-Dimensional Visualization", Aerospace Science and Technology, under second review (2014)
- 22) 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)
- 21) 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)
- 20) Richardson, T., Nekolny, B., Holub, J. and Winer, E., "Visualizing Design Spaces: A Brief History and Method Using 2D Contextual Self Organizing Maps", AIAA Journal – Special Section on Multidisciplinary Design Optimization, **52**(4), 725-738 (2014)
- 19) 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)
- 18) 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)
 - 17) 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)
 - 16) 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)
 - 15) 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)
 - 14) Foo, J.L., Miyano, G., Lobe, T., and Winer, E., "Tumor Segmentation from Computed Tomography (CT) Image Data using a Probabilistic Pixel Selection Approach," *Journal of Computers in Biology and Medicine*, **41**, 56-65 (2011)
 - 13) Kalivarapu, V., Foo, J.L., and Winer, E.H., "Synchronous Parallelization of Particle Swarm Optimization With Digital Pheromones", *Advances in Engineering Software Journal*, **40**(10), 975-985 (2009)
 - 12) 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)
 - 11) Foo, J.L., Knutzon, J., Kalivarapu, V., Oliver, J., and Winer, E.H., "Three-Dimensional Path Planning of UAVs in a Virtual Battlespace using B-Splines and Particle Swarm Optimization", *Journal of Aerospace Computing, Information, and Communication*, **6**(4), 271-290, (2009)
 - 10) 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)
 - 9) 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)
 - 8) 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 Procedures*, **19**(s1), s211-s217 (2009)
 - 7) 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 Procedures, **18**(5), 697-706 (2008)
- 6) Kalivarapu, V., and Winer, E.H., "Groundwater TRANsport 3D (GTRAN3D) - 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)
 - 5) 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)
 - 4) 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", *ASME Journal of Computer and Information Science in Engineering*, **6**(3), 288-299 (2006)
 - 3) Winer, E.H., 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)
 - 2) Winer, E.H., 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)
 - 1) Winer, E.H., Bloebaum, C.L., "Visual Design Steering for Optimization Solution Improvement", *Journal of Structural and Multidisciplinary Optimization*, **22**(3), 219-229 (2001)

Conference Proceedings

- 82) 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, 2015
- 81) Kalivarapu, V., Bhattacharya, B., Kong, S-C., and Winer, E., "Metamodeling and Visualization Methods to Determine the Commercial Feasibility of Bio-Oil Gasification to Synthesize Transportation Fuel", 16th AIAA/ISSMO Multidisciplinary Analysis and Optimization Conference, Dallas, TX, June 22-26, 2015
- 80) 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, 2015, AIAA-2015-0897
- 79) Kalivarapu, V., MacAllister, A., Hoover, M., Sridhar, S., Schlueter, J., Civitate, A., Thompkins, P., Smith, J., Hoyle, J., Oliver, J., Winer, E., Chernoff, G., "Game-day Football Visualization Experience on Dissimilar Virtual Reality Platforms", Accepted for publication at the IS&T/SPIE Electronic Imaging, San Francisco, CA, February 2015.

- 78) 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, 2014, Paper no. 14158
- 77) 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, 2014, Paper no. 14252
- 76) 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, 2014
- 75) MacAllister, A., Yeh, T-P, Seal, D., Degenhardt, G., and Winer, E., "A Natural User Interface for Immersive Design Review", Proceedings of the ASME 2014 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference (IDETC/CIE 2014), Buffalo, NY, August 17-20, 2014, DETC2014-34633
- 74) 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", Proceedings of the ASME 2014 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference (IDETC/CIE 2014), Buffalo, NY, August 17-20, 2014, DETC2014-34503
- 73) 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, Army Research Laboratory, June 12-13, Pittsburgh, PA, 2014
- 72) 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, Army Research Laboratory, June 12-13, Pittsburgh, PA, 2014
- 71) Richardson, T., Holub, J., 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, 2014, AIAA 2014-2728
- 70) 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, 2014, AIAA 2014-2431

- 69) Tibor, E., Miller, S., Stump, G., Bloebaum, C.L., Mesmer, B., Simpson, T.W., Winer, E., and Yukish, M., "Visualization of System Decomposition in a Value-Based Framework", 15th AIAA/ISSMO Multidisciplinary Analysis and Optimization Conference at the AIAA Aviation Forum, Atlanta, GA, June 16-20, 2014, AIAA 2014-2181
- 68) Kopecky, K. and Winer, E., "MetaTracker: integration and abstraction of 3D motion tracking data from multiple hardware systems", SPIE Defense+Security, May 5-9, 2014, Baltimore, MD, Paper no. 9095-6
- 67) Gilbert, S., Civitate, A., Kelly, J.W., Thompson, F., Smith, A., Kopecky, K., de la Cruz, J., and Winer, E., "Comparing Training Performance With Vibrotactile Hit Alerts vs. Audio Alerts", The Interservice/Industry Training, Simulation & Education Conference (I/ITSEC), Orlando, FL, December 2-5, 2013
- 66) Kelly, J.W., Curtis, M., Rubio, E., Holub, J., Kopecky, K., Gilbert, S., de la Cruz, J., and Winer, E., "Assessing Multiple Participant View Positioning in Virtual Reality-Based Training", The Interservice/Industry Training, Simulation & Education Conference (I/ITSEC), Orlando, FL, December 2-5, 2013
- 65) Kopecky, K., Civitate, A., Gilbert, S., de la Cruz, J., and Winer, E., "A Software Approach to Manage and Maintain Warfighter Training Systems", The Interservice/Industry Training, Simulation & Education Conference (I/ITSEC), Orlando, FL, December 2-5, 2013
- 64) Juhnke, B., Berron, M., Philip, A., Williams, J., Holub, J., and Winer, E., "Comparing the Microsoft Kinect to a Tractional 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 2013
- 63) 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 2013
- 62) 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 2013
- 61) 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, 2012
- 60) 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, 2012

- 59) Richardson T., Holub, J., 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, 2012
- 58) 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, 2012
- 57) 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, USA, March 4-8, 2012
- 56) Noon, C., Foo, E., and Winer, E., "Interactive GPU Volume Raycasting in a Clustered Graphics Environment", Proceedings of SPIE Medical Imaging 2012, San Diego, CA, February 19-24, 2012
- 55) Burton, M., Pollock, B., Kelly, J., Gilbert, S., Winer, E., and de la Cruz, J., "Diagnosing perceptual distortion present in group stereoscope viewing," Proc. of Human Vision and Electronic Imaging XVII, IS&T/SPIE Electronic Imaging, San Francisco, CA, January 22-26, 2012
- 54) Pollock, B., Winer, E., Gilbert, S., de la Cruz, J., and Gonzalez, H.J., "LVC interaction within a mixed reality training system," Proc. of The Engineering Reality of Virtual Reality, IS&T/SPIE Electronic Imaging, San Francisco, CA, January 22-26, 2012, (Acceptance Rate unknown).
- 53) Richardson, T. and Winer, E., "Visually Exploring a Design Space Through the Use of Multiple Contextual Self-Organizing Maps", Proceedings of the 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
- 52) 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, 2011, WINVR2011-5583
- 51) Martinez, M., Foo, J.L., Peloquin, C., Juhnke, B., 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, 2011.
- 50) Nekolny, 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, 2010, AIAA-

2010-9326

- 49) Kalivarapu V. K., 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, 2010, AIAA 2010-9270
- 48) Zhang, R., Winer, E., and Oliver, J., "Subdivision-based 3D Remeshing with a Fast Spherical Parameterization Method", Proceedings of the ASME 2010 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference (IDETC/CIE 2010), Montreal, Quebec, Canada, August 15-18, 2010, Paper No. DETC2010-28904
- 47) Oliver J., Gilbert S., Winer E., Marsh E., Swartzentruber L., and Holub J., 2010, "Interfaces for 3D Flight Path Visualization", ASME 2nd World Conference on Innovative Virtual Reality, WINVR10, Ames, IA
- 46) 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, 2010, WINVR2010-3755
- 45) 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, 2010, WINVR2010-3713
- 44) 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, 2010, WINVR2010-3721
- 43) Swartzentruber L., Foo J., and Winer E., 2010, "Multi-Objective UAV Path Planning with Refined Reconnaissance and Threat Formulations," Proceedings of 6th AIAA Multidisciplinary Design Optimization Specialist Conference, Orlando, FL, April 12-15, 2010, AIAA-2010-2758
- 42) Kalivarapu, V., and Winer, E., "Diversity and Frame Invariance Characteristics in PSO With and Without Digital Pheromones", Proceedings of 6th AIAA Multidisciplinary Design Optimization Specialist Conference, Orlando, FL, April 12-15, 2010, AIAA-2010-3080
- 41) Noon C., Newendorp B., Zhang R., Winer E., Oliver J., Duncan J., and Gilmore B., 2010, "Intuitive Measurement Interface for Simplified Mesh Models for Rapid Conceptual Design," ASME 2nd World Conference on Innovative Virtual Reality, WINVR10, Ames, IA
- 40) Noon, C. and Winer, E., "A Study of Different Metamodeling Techniques for Conceptual Design," Proceedings of the ASME 2009 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference, IDETC/CIE 2009, San Diego, CA, USA, August 30-September 2, 2009, Paper No. DETC2009-86496

- 39) 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, Lisbon, Portugal, June 1-5, 2009
- 38) 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, 2009, AIAA 2009-9192
- 37) Swartzentruber, L., Foo, J.L., 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, 2009, Paper no. AIAA-2009-2222
- 36) 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," Proceedings of the ASME World Conference on Innovative VR, WINVR09, Chalon-sur-Saône, France, February 25-26, 2009, Paper No. WINVR09-712
- 35) Newendorp, B., Noon, C., Chan, C., Winer, E., Oliver, J., "Development Methods and a Scenegrph Animation API for Cluster Driven Immersive Applications," Proceedings of the World Conference on Innovative VR 2009, Chalon-sur-Saône, France, February 25-26, 2009, Paper no. WINVR09-736
- 34) Koehring, A. and Winer, E., "An Augmented Reality Tool for Conceptual Design", Proceedings of the World Conference on Innovative VR 2009, Chalon-sur-Saône, France, February 25-26, 2009, Paper No. WINVR09-739
- 33) Foo, J.L., Lobe, T., and Winer, E., "Automated Probabilistic Segmentation of Tumors from CT Data using Spatial and Intensity Properties," Proceedings of SPIE Medical Imaging, Lake Buena Vista, FL, February 8-10, 2009
- 32) 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, 2009
- 31) Swartzentruber, L., Foo, J.L., 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, 2008, Paper no. AIAA-2008-5830
- 30) Koehring, A., Noon, C., 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, 2008, Paper no. AIAA-2008-5973
- 29) 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, 2008, Paper no. AIAA-2008-6021

- 28) 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, 2008, Paper No. DETC2008-49444
- 27) 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, 2008, Paper No. DETC2008-49805
- 26) 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) Conference, January 29, 2008, Long Beach, CA, vol. 132, pp. 120-122
- 25) 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 International Design Engineering Technical Conferences, 27th Computers and Information in Engineering Conference, Las Vegas, NV, September 4-7, 2007, Paper no. DETC2007-35413
- 24) Zhang, R., Noon, C., Oliver, J., Winer, E., Gilmore, B., and Duncan, J., "Immersive Product Configurator for Conceptual Design", ASME International Design Engineering Technical Conferences 33rd Design Automation Conference, Las Vegas, NV, September 4-7, 2007, Paper no. DETC2007-35390
- 23) Zhang, R., Noon, C., Oliver, J., Winer, E., Gilmore, B., and Duncan, J., "Development of a Software Framework for Conceptual Design of Complex Systems", 3rd Annual AIAA Multidisciplinary Design Optimization Specialists Conference, Waikiki, HI, April 23-26, 2007, Paper no. AIAA-2007-1931
- 22) 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, 2007, Paper no. AIAA-2007-1882
- 21) 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, 2007, Paper no. AIAA-2007-1881
- 20) 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 2006, Paper No. AIAA-2006-6963

- 19) 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 2006, Paper No. AIAA-2006-6995
- 18) 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 2006, Paper No. AIAA-2006-6908
- 17) Kalivarapu, V., Foo, J.L., and Winer, E., "Implementation of Digital Pheromones for use In Particle Swarm Optimization", 2nd Annual AIAA Multidisciplinary Design Optimization Specialist Conference, Newport, RI, May 1-4, 2006, Paper No. AIAA-2006-1917
- 16) 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, 2005, pp 581-590
- 15) 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, 2005, Paper no. AIAA-2005-1814.
- 14) 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, 2005, Paper No. AIAA-2005-0124
- 13) Vaze, A., Kalivarapu, V., and Winer, E.H., "Data Modeling and Handling for Analysis and Visualization in a Collaborative Setting", 10th AIAA Symposium on Multidisciplinary Analysis and Optimization (MA&O), Albany, New York, August 26-September 2, 2004, Paper No. AIAA-2004-4603
- 12) 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 2004, Paper No. AIAA-2004-0115
- 11) Malik, T., Winer, E. H., "An Analytical Curve Based Approach for Multi-Modal Optimization", 9th AIAA/ISSMO Symposium on Multidisciplinary Analysis and Optimization, Atlanta, GA, September 2002, Paper No. AIAA-2002-5520
- 10) Samant, A., Shah, P., Winer, E. H., "Visual Design Steering to Aid Decision-Making in Optimal Design", 9th AIAA/ISSMO Symposium on Multidisciplinary Analysis and Optimization, Atlanta, GA, September 2002, Paper no. AIAA-2002-5623
- 9) Sheridan, M.F., Bloebaum, C.L., Kesavadas, T., Patra, A.K, and Winer, E., 2002, "Visualization and Communication in Risk Management of Landslides" In C.A.

Brebbia (editor), Risk Analysis III, WIT Press, Southampton, pp. 691-701

- 8) English, K., Winer, E.H., 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 2001
- 7) Winer, E.H., Bloebaum, C.L., "Visual Design Steering For Optimization Solution Improvement", proceedings of 8th AIAA/USAF/NASA/ISSMO Symposium on Multidisciplinary Analysis and Optimization, Long Beach, CA, September 2000
- 6) Winer, E.H., Bloebaum, C.L., "Using the World Wide Web to Employ Concurrent Design Methodologies", 3rd World Congress of Structural and Multidisciplinary Optimization (WCSMO-3), Amherst, NY, May 17-21, 1999
- 5) Abdul Jalil, M. K., Winer, E. H., and Bloebaum, C. L., "Development of a Geographic Independent Virtual Design Environment for Large-Scale Design", 7th AIAA/ASME/ASCE/AHS/ASC Symposium on Multidisciplinary Analysis and Optimization, St. Louis, MO, Sept. 1998
- 4) Winer, E.H., Bloebaum, C.L., "Interactive 3-D Visualization for Large-Scale Multidisciplinary Design Optimization", Conference Proceedings of Second International Conference on Engineering Design and Automation (EDA '98), Maui, HI, 1998
- 3) 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 1998
- 2) Winer, E.H., Bloebaum, C.L., "N-Dimensional Design Visualization via Graph Morphing for Large-Scale Optimization", 2nd World Congress of Structural and Multidisciplinary Optimization (WCSMO-2), Zakopane, Poland, 1997, pp. 911-916
- 1) Winer, E.H., Bloebaum, C.L., "Design Visualization by Graph Morphing for Multidisciplinary Design Optimization", Conference Proceedings of First International Conference on Engineering Design and Automation (EDA '97), Bangkok, Thailand, 1997

Conference Proceedings (not reviewed)

- 8) 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, 2011. Poster presentation.
- 7) 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, May 10-12, 2011, Cologne, Germany. Oral Presentation

- 6) 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, May 10-12, 2011, Cologne, Germany. Oral Presentation
- 5) 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", 2009 American Society of Agricultural and Biological Engineers Annual International Meeting, Reno, NV, June 21-24, 2009, Paper no. 097207
- 4) Winer, E., "Multidisciplinary Design Optimization Year in Review", Aerospace America, December 2007, pp. 42
- 3) Winer, E., "Multidisciplinary Design Optimization Year in Review", Aerospace America, December 2006, pp. 41
- 2) 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 Proceedings, Dallas, TX, January 5-8, 2004.
- 1) 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.

Honors and Awards

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

Invited Presentations

- 1) 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
- 2) 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
- 3) 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
- 4) Winer, E., “Employing Augmented Reality Technologies in Digital Work Instructions”, Invited Keynote - Navy’s Manufacturing Technology (ManTech) program 2013 workshop, Baltimore, MD, June 2013
- 5) 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
- 6) 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
- 7) Winer, E., “The Application of VR Techniques to Medical Education”, Touro University Seminar Series, Vallejo, CA, March 2012
- 8) 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
- 9) 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
- 10) Winer, E., “Accidental Entrepreneurship: The Luck and Skill Needed to Recognize Opportunity”, Pappajohn Entrepreneurship Seminar Series, Iowa State University, Ames, IA, February 2010
- 11) Winer, E., “Commercialization of 3D Interactive Digital Medical Software for Surgical Planning and Training”, President’s Council, Iowa State University, Ames, IA, October 2009
- 12) Winer, E., “Tumor Segmentation and Visualization Methods for Endoscopic Surgical Planning”, Seminar Series, Johns Hopkins University, Baltimore, MD, April 2009

- 13) 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
- 14) 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
- 15) 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
- 16) Winer, E., "Virtual Reality and Engineering: the Future", Central Iowa Section of the American Society of Mechanical Engineers, October 2006
- 17) Winer, E. and Oliver, J., "Technological Evolution of Virtual Reality and Human Computer Interaction", Rotary Club, Rochester, MN, June, 2005
- 18) Winer, E., and Oliver, J., "Technological Evolution of Virtual Reality and Human Computer Interaction", IBM, Rochester, MN, June, 2005
- 19) English, K., Winer, E.H., and Bloebaum, C.L., "Visual Design Steering (VDS) as a New Paradigm for Engineering Design", proceedings of 2002 Engineering Design Conference (EDC'02), King's College, London, UK. Invited keynote address and paper, November 2002

Grants and Contracts Received

- 1) **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
Amount Granted: \$16,000
Role: Principal investigator responsible for all aspects of project.

- 2) **Investigators:** Judy Vance and Eliot Winer
Title: Virtual Design Exploration and Optimization Environment
Granting Agency: Proctor & Gamble
Period: 10/1/04-9/30/05
Amount Granted: \$74,723

- Role:** Co-principal investigator responsible for developing optimization and metamodeling methods for incorporation in structural design process for manufactured products.
- 3) **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
Amount Granted: \$2,800,000
Role: Co-principal investigator responsible for modeling 3D path planning as an optimization problem and prototype terrain visualization capability.
- 4) **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
Amount Granted: \$135,178
Role: Principal investigator responsible for all aspects of project.
- 5) **Investigators:** Eliot Winer and Jim Oliver
Title: Advanced Systems Design Suite
Granting Agency: John Deere
Period: 1/1/06-12/31/07
Amount Granted: \$296,969
Role: Principal investigator responsible for developing center of gravity and weight analyses through appropriate approximation techniques. Also responsible for development of prototype software interface.
- 6) **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
Amount Granted: \$315,000
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.

- 7) **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
Amount Granted: \$3,378,200
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.

- 8) **Investigators:** Eliot Winer
Title: VR Paint Training
Granting Agency: John Deere
Period: 7/1/06-12/31/07
Amount Granted: \$75,102
Role: Principal investigator responsible for all aspects of project.

- 9) **Investigators:** Eliot Winer and Alex Stoytchev
Title: Weld Validation and Training System
Granting Agency: John Deere
Period: 7/1/06-12/31/07
Amount Granted: \$266,449
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.

- 10) **Investigators:** Shahin Vassigh (Florida International University), Eliot Winer, Omar Khan (University at Buffalo), and Ken McKay (University at Buffalo)
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
Amount Granted: \$535,418
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.
- 11) **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
Amount Granted: \$4,302,900
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.
- 12) **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
Amount Granted: \$109,533
Role: Principal investigator responsible for all aspects of project.
- 13) **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
Amount Granted: \$373,125
Role: Co-principal investigator responsible for tracking system implementation for real-time position information of tools and development of user interface for software product.
- 14) **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
Amount Granted: \$463,779
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.
- 15) **Investigators:** Eliot Winer
Title: Development of a VR Simulator for 3D Painter Training
Granting Agency: John Deere
Period: 1/1/08-12/31/10
Amount Granted: \$273,158
Role: Principal investigator responsible for all aspects of project.
- 16) **Investigators:** Eliot Winer
Title: Real-Time Virtual Collaborative Product Development Environment
Granting Agency: John Deere
Period: 1/1/08-12/31/08
Amount Granted: \$50,000
Role: Principal investigator responsible for all aspects of project.
- 17) **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
Amount Granted: \$300,000
Role: Co-principal investigator responsible for screening and selecting applicants and helping ISU faculty to define and run projects.
- 18) **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
Amount Granted: \$1,550,000
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.

- 19) **Investigators:** Jim Oliver and Eliot Winer
Title: Virtual Reality Implementation Study
Granting Agency: Boeing
Period: 7/1/09-3/1/10
Amount Granted: \$75,000
Role: Co-principal investigator responsible for studying feasibility of using virtual reality capabilities in a product design process.

- 20) **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
Amount Granted: \$77,936
Role: Principal investigator responsible for developing conceptual design capabilities specific to a new machine form.

- 21) **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
Amount Granted: \$130,000
Role: Principal investigator responsible for studying feasibility of using mobile devices for command and control functions for soldiers in the field.

- 22) **Investigators:** Jim Oliver and Eliot Winer
Title: Development of a Collaborative Design Environment
Granting Agency: Boeing
Period: 4/1/10-12/30/10
Amount Granted: \$186,525
Role: Co-principal investigator responsible for software development, building of analysis models and user testing.

- 23) **Investigators:** Jim Oliver and Eliot Winer
Title: Visualization of Multidisciplinary Design Data

- Granting Agency:** Boeing
Period: 4/1/10-12/30/10
Amount Granted: \$117,208
Role: Co-principal investigator responsible for software development, data processing, and user interaction features.
- 24) **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
Amount Granted: \$150,000
Role: Principal investigator responsible for development of visualization and segmentation methods for volume datasets.
- 25) **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
Amount Granted: \$2,686,000
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.
- 26) **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
Amount Granted: \$16,988
Role: Principal investigator responsible for developing prototype software to demonstrate feasibility of using virtual tools to train aircraft maintenance.
- 27) **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

- Amount Granted:** \$487,228
Role: Co-principal investigator responsible for developing visualization and modeling capabilities from experimental data to create simulation for debris in a farmfield.
- 28) **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
Amount Granted: \$508,695
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
Amount Granted: \$149,999
Role: Principal investigator responsible for all aspects of project.
- 30) **Investigators:** Eliot Winer and Stephen Gilbert
Title: Tanker Receiver Simulation
Granting Agency: Boeing
Period: 10/17/11-12/31/12
Amount Granted: \$200,000
Role: Principal investigator responsible for all aspects of project.
- 31) **Investigators:** Eliot Winer
Title: Preflight Augmented Reality Inspection Program
Granting Agency: Boeing
Period: 10/1/11-12/31/11
Amount Granted: \$42,852
Role: Principal investigator responsible for all aspects of project.
- 32) **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

- Amount Granted:** \$66,819
Role: Co-principal investigator responsible development of client architecture to communicate DIS packets to overall simulation framework.
- 33) **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
Amount Granted: \$358,135
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.
- 34) **Investigators:** Eliot Winer and Jim Oliver
Title: Immersive Development Self-Organizing Map Enhancement
Granting Agency: Boeing
Period: 6/14/12-12/31/12
Amount Granted: \$60,314
Role: Principal investigator responsible for all aspects of project.
- 35) **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
Amount Granted: \$156,042
Role: Principal investigator responsible for all aspects of project.
- 36) **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
Amount Granted: \$50,000
Role: Principal investigator responsible for all aspects of project.

- 37) **Investigators:** Eliot Winer and Jim Oliver
Title: Factory of the Future
Granting Agency: Boeing
Period: 1/1/13-12/31/13
Amount Granted: \$300,000
Role: Principal investigator responsible for all aspects of project.
- 38) **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
Amount Granted: \$50,000
Role: Principal investigator responsible for all aspects of project.
- 39) **Investigators:** Eliot Winer, Stephen Gilbert, and Jim Oliver
Title: Augmented Reality Prototyping
Granting Agency: Boeing
Period: 10/1/13-12/31/13
Amount Granted: \$65,000
Role: Principal investigator responsible for all aspects of project.
- 40) **Investigators:** Eliot Winer, Stephen Gilbert, and Jim Oliver
Title: Mixed Reality Work Guidance
Granting Agency: Boeing
Period: 1/1/14-12/31/14
Amount Granted: \$400,000
Role: Principal investigator responsible for all aspects of project.
- 41) **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
Amount Granted: \$30,324
Role: Principal investigator responsible for all aspects of project.
- 42) **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
Amount Granted: \$367,693
Role: Principal investigator responsible for developing image processing, visualization and modeling capabilities from real-time 3D captured data.
- 43) **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
Amount Granted: \$586,387
Role: Co-principal investigator responsible for developing mixed-reality simulations to study team tutoring methods.
- 44) **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
Amount Granted: \$403,248
Role: Co-principal investigator responsible for developing multidimensional data visualization representations for value driven design functions.
- 45) **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
Amount Granted: \$55,000
Role: Co-principal investigator responsible for developing training simulations and experimental design.
- 46) **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
Amount Granted: \$358,980

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.

Offices Held in Professional Societies

- American Institute of Aeronautics and Astronautics (AIAA)
 - Student Member, 1985 – 1988, (Student Chapter Treasurer, 1986 – 1988)
 - Member, 1999 – 2008
 - Senior Member, 2008 - present
 - Member, Multidisciplinary Design Optimization (MDO) Technical Committee, 2003 – present
 - Member, conferences sub-committee, 2007-present
 - Author, MDO Year in Review Article, Aerospace America, March 2006, 2007
 - Chair, publications sub-committee, 2008-2010
 - Chair, Multidisciplinary Design Optimization (MDO) Technical Committee, 2010-2012
 - Chair, Conference sub-committee, 2012-present
- 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

Editorships of Journals or Other Learned Publications

- 1) Guest Editor, Special Issue on Computer Vision, Journal of Software Engineering and Applications, to be published May 2014
- 2) Member, Editorial board, Journal of Software Engineering and Applications

- 3) Member, Editorial board, Journal of Parallel and Cloud Computing

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

Patents, Disclosures and Technology Transfer Activities

- 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) Founding partner, Visual Medical Solutions, LLC., company formed in July 2007
- 3) Invention Disclosure: Iowa State University Research Foundation #03540, "An Automated Method for Tumor Segmentation of Computed Tomography Data", 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

Graduate Student Supervision

PhD Candidates

- 1) Marisol Martinez-Escobar, PhD, August 2009 – December 2014, "Human Factors and Performance Considerations of Visual-Spatial Skills in Medical Context Tasks", granted December 2014, employed at Intel Corporation
- 2) Kenneth Kopecky, PhD, December 2008 – December 2014, "A Software Framework for Initializing, Running, and Maintaining Mixed Reality Environments", granted December 2014, co-founder and currently employed at Hexels.

- 3) 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”, granted May 2012, employed at BodyViz, LLC.
- 4) Ruqin Zhang, PhD, (James Oliver, co-advisor), August 2006 – March 2011, “3D mesh metamorphosis from spherical parameterization for conceptual design”, granted May 2011, employed at Siemens PLM.
- 5) 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)”, granted July 2008, now a post-doctoral researcher at the Virtual Reality Applications Center, Iowa State University.
- 6) Jung-Leng Foo, PhD, June 2004 – July 2008, “A Framework for Tumor Segmentation and Interactive Immersive Visualization of Medical Image Data for Surgical Planning”, granted July 2008, now a post-doctoral researcher at the Virtual Reality Applications Center, Iowa State University.

Masters Candidates

- 1) Anastacia MacAllister, MS, “Natural user interfaces for interdisciplinary design review using the Microsoft Kinect”, granted December 2014, now a PhD student.
- 2) Frederick Thompson, MS, “Evaluation of a commodity VR interaction device for gestural object manipulation in a three dimensional work environment”, granted December 2014, seeking employment.
- 3) Trevor Richardson, MS, “A software environment for visualizing high-dimensional data using contextual self-organizing maps linked with immersive virtual reality”, granted March 2013, now a PhD student.
- 4) Bethany Juhnke, MS, “Evaluating the Microsoft Kinect™ Compared to the Mouse as an Effective Interaction Device for Medical Imaging Manipulations”, granted March 2013, now a PhD student at the University of Minnesota.
- 5) David Prater (Stephen Gilbert, co-advisor), MS, “A Tactile Garment for Use in a Mixed Reality Military Training Simulator”, granted March 2012. Employment unknown.
- 6) Brice Pollock, MS, August 2010 – February 2012, “Creating a Flexible LVC Architecture for Mixed Reality Training of the Dismounted Warfighter”, granted May 2012. Employed at Apple Computer.
- 7) Joseph Holub, MS, January 2009 – December 2010, “Improving Particle Swarm Optimization Path Planning through Inclusion of Flight Mechanics”, granted December 2010, now a PhD student.

- 8) Brett Nokolny, MS, August 2008 – May 2010, “Contextual Self-Organizing Maps for Visual Design Space Exploration, granted May 2010, now working at Imaginestics
- 9) Tyrone Moore, MS, August 2009 – May 2011, “An Evaluation of Perceived Urgency Applied to Amplitude Modulated Stimulus for Military Applications”, granted May 2011, now working at Chevron-Philips.
- 10) Catherine Peloquin, MS, May 2007 – December 2009, “Determination of critical factors for fast and accurate 2D medical image deformation”, granted December 2009, now a PhD student.
- 11) Brandon Newendorp, MS, September 2007 – August 2009, “Real-time scenegraph creation and manipulation in an immersive environment using an iPhone”, granted August 2009, now a PhD student.
- 12) Levi Swartzentruber, MS, September 2007 – August 2009, “Improving Path Planning of Unmanned Aerial Vehicles in an Immersive Environment using Meta-Paths and Terrain Information”, granted August 2009, currently seeking employment.
- 13) Christian Noon, MS, August 2006 – December 2008, “Metamodeling for the Quantitative Assessment of Conceptual Designs in an Immersive Virtual Reality Environment”, granted November 2008, now a PhD student.
- 14) 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”, granted November 2008, now a PhD student.
- 15) Eric Anderson, MS, August 2005 – November 2007, “PSO Population Initialization Study”, granted December 2007, now working at John Deere.
- 16) Marisol Martinez, MS, August 2006 – December 2008, “An Interactive Segmentation Approach using Selective Colorization”, granted November 2008, now a PhD student.
- 17) Alex Renner, MS, (Matthew Frank, co-advisor), August 2006 - May 2008, "Computer Aided Process Planning for Rapid Prototyping Using a Genetic Algorithm", granted May 2008, currently seeking employment.
- 18) Kenneth Kopecky, MS, June 2004 – January 2007, “Real-time water simulation and rendering using features of the latest OpenGL-capable graphics hardware”, granted May 2007, now a PhD student.
- 19) Jung Leng Foo, MS, January 2003 – April 2004, “Development of Image Enhancement and Segmentation Techniques to Improve Visualization of Digital Medical Data”, granted April 2004.
- 20) Aditya Vaze, MS, December 2003, “Development of Data Model for Real-Time Visualization of Large-Scale Engineering Analysis over the Internet”, granted December 2003, current position unknown.

- 21) Vijay Kalivarapu, MS, December 2003, "An approach to convert vertex-based 3D representations to combinatorial B-Splines for real-time visual collaboration", granted December 2003.
- 22) Eu Jin Ang, MS, November 2003, "Development of an Automatic Grid-based Driving Simulation Scene Generator for Virtual Reality Exposure Therapy", granted November 2003, current position unknown.
- 23) Deepti Kanukolanu, MS, June 2003, "Robust Design of Coupled Sub-Systems using Visualization", granted June 2003, now at PTC.
- 24) Pradeep Pinto, MS, January 2003, "OpenGL based version of Graph Morphing", granted January 2003, current position unknown.
- 25) Richard Porcari, MS, February 2003, "Web Based Design of a Portable Vertical Shaft Impactor Plant", granted February 2003, current position unknown.
- 26) Tabrez Malik, MS, June 2002, "An Analytical Curve-Based Approach for Multimodal Optimization", granted June 2002, now at GE Aircraft Engines.
- 27) Anna Flemming, MS, September 2001, "A Dynamics Model Suitable for Multi-Purpose Vehicle Simulation", granted September 2001, current position unknown.
- 28) Rajesh Jay, MS, May 2000, "Automatic Response Surface Generation in Graph Morphing", granted May 2000, current position unknown.
- 29) Pranay Shah, MS, May 2000, "Benchmarking of Design Variable Ranking for Graph Morphing", granted May 2000, current position unknown.
- 30) Amit Samant, MS, May 2000, "Constraint Representation in Graph Morphing", granted May 2000, current position unknown.

Service to Disciplinary and Professional Societies or Associations

Reviewer

- Oxford University Press, November 2001
- American Institute of Aeronautics and Astronautics (AIAA) Symposium on Multidisciplinary Analysis and Optimization, 2000 - present
- American Society of Mechanical Engineers (ASME) Mechanical Design Competition, September 2002
- American Institute of Aeronautics and Astronautics (AIAA) Journal, 2005 - present
- American Institute of Aeronautics and Astronautics (AIAA) Multidisciplinary Design Optimization Specialists Conference, 2005 - present
- American Institute of Aeronautics and Astronautics (AIAA) Aerospace Sciences Meeting and Exhibit, 2005 - present

- American Society of Mechanical Engineers (ASME) Journal of Computing and Information Science in Engineering (JCISE), 2005 - present
- American Society of Mechanical Engineers (ASME) Journal of Mechanical Design (JMD), 2006
- American Society of Mechanical Engineers (ASME) International Design Engineering Technical Conferences and Computers and Information in Engineering Conference, 2006 - present
- Journal of Research in Engineering Design, January 2008 - present

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

- 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
- 14th 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
- 13th 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, Training Subcommittee, 2012-2014
- Deputy Chair, Training Subcommittee, 2015
- 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

University Service

- Computing Activities Committee (CAC)
 - Member, 2009-present
 - Chair, 2010 - present
- Entrepreneurship Leaders (E-Leaders) Committee, 2010-2013
- Academic Standards Committee, 2007-2008, 2009-2011
- Engineering Fee Task Force (EFTF), 2006-2012
- Research Grants Committee, 2007
- Research IT Advisory Committee, 2006-2009
- Featured presenter, Engineering Scholar's Day, 2005-present
- Participant, Engineering orientation parent's coffee meetings, 2005-present
- ME 202, Lecture on Mechanical Engineering Research Opportunities, 2004, 2008-2013
- Member, Advisory Board, The Center for Industrial Effectiveness (TCIE), 2003
- SUNY day featured exhibitor, March 2003
- Scientific expert on lobby team to NY state government, February 2001, 2002
- EAS 140, Lecture on disciplines, Fall 2000, 2001

- Dean's Council Presentation (NYSCEDII), Spring 2000, 2001
- Presentation, Undergraduate Engineers Introduction to Graduate School, October 1997, 1998, 2000