CURRICULUM VITA February 2025

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EDUCATION

1986 **Ph.D.** in Mechanical Engineering, Michigan State University, East Lansing, Michigan
1981 **M.S.** in Mechanical Engineering, Michigan State University, East Lansing, Michigan
1979 **B.S.** in Mechanical Engineering, Union College, Schenectady, New York

PROFESSIONAL EXPERIENCE

1/19 – Present **Pithan Executive Director**, *Student Innovation Center*, Iowa State University, Ames, Iowa
- Leading unique university facility fostering innovation in all aspects of its land-grant mission

8/12 – Present **University Professor**, Iowa State University, Ames, Iowa
- Honorary title acknowledging lasting impact on the entire university

8/09 – Present **Larry and Pam Pithan Professor of Mechanical Engineering**, College of Engineering, Iowa State University, Ames, Iowa

9/07 – Present **Co-Founder,** *BodyViz*, (unit of Visual Medical Solutions, LLC) Clive, Iowa
- High technology start-up focused on low-cost, easy-to-use medical visualization
  - Prometheus Award, "Start-up Company of the Year," Technology Association of Iowa, 2008
  - Winner, John Pappajohn Iowa Business Plan Competition, 2009
  - Sales in medical, education, veterinary, and legal markets

1/04 – 1/19 **Director**, *Virtual Reality Application Center*, Office of the Vice President for Research, Iowa State University
- Led interdisciplinary research center supporting more than 35 faculty, 120 graduate, and 105 undergraduate student research assistants
- Managed long-term research relationships with industry partners
- Center more than doubled annual research expenditures under my leadership
- Secured funding for and managed $7.5M in major research infrastructure enhancements

9/03 – 1/19 **Director**, Interdepartmental Graduate Major in *Human Computer Interaction* (HCI), Graduate College, Iowa State University
- Led program development to enrollment of 42 PhD, 98 MS, and 18 Professional Certificate students (total enrollment: 158)
- Led hiring of 7 faculty positions with half-time appointments in HCI; mentored 4 through tenure; 3 departed voluntarily
- 81 PhD, 258 MS, and 52 Certificate HCI graduates (391 total), all appropriately employed

5/07 – Present **Professor**, Department of Industrial and Manufacturing Systems Engineering, Courtesy appointment, Iowa State University

6/05 – Present **Professor**, Department of Electrical and Computer Engineering, Courtesy appointment, Iowa State University

3/05 – Present **Professor**, Department of Aerospace Engineering, Courtesy appointment, Iowa State University

4/04 – 8/12 **Professor**, Department of Mechanical Engineering, Iowa State University, Primary Appointment

5/10 – 7/11 **Visiting Professor**, *Image Institute*, Ecole Nationale Supérieure d'Arts et Métiers, ParisTech, Chalon-sur-Saône, France

5/07 – 6/10 **Director**, *CyberInnovation Institute*, Iowa State University

- Led ISU's information technology-focused research centers to:
  - Enhance research competitiveness in IT
  - Empower interdisciplinary teams with appropriate cyberinfrastructure
  - Accelerate the commercialization of IT-based research

9/01 – 4/04 **Associate Professor**, Department of Mechanical Engineering Iowa State University
4/93 – 7/00 (On unpaid leave 7/97-7/00. Resigned 7/00, and rehired 9/01 at same rank.)

- Re-designed sophomore-level cornerstone design course to emphasize design process. Focus on mechanical design as part of the entire product development process.
- Co-developed "Week in Residence" program for the Executive Engineer Dual Master's Degree Program. Major Professor for 25 Master of Engineering candidates in the program
- Led successful proposal for ISU's Presidential Initiative in Human Computer Interaction (Director of HCI Graduate Program and Chair of HCI faculty search committees)
- Initiated, negotiated, and secured a $282M software grant from UGS, largest in university history

10/00 – 9/01 **Vice President of Product Development**, *Cognicity Inc.*, Minneapolis, Minnesota (venture-funded start-up focused on internet-based entertainment marketing)

- Responsible for all product development activities, including architecture, design, development, quality assurance, documentation, product management, and customer support
- Recruited software developers and technical managers
- Managed and directed strategic R&D team
- Managed internal corporate IT infrastructure
- Defined and deployed product development processes
- Designed, built, and analyzed hosted product infrastructure
- Supported partnership and business development activities

7/97 – 10/00 **Senior Director of Product Development** (7/99–10/00), *Engineering Animation Inc.* (NASDAQ: EAII), Ames, Iowa

- Conceptualized, planned, and led the development of e-Vis, a secure Internet-enabled visual collaboration solution for supply chain integration (now part of Siemens PLM Software's *TeamCenter* product suite). Featuring:
  - Real-time 2D/3D visual conferencing and application sharing through firewalls
  - High-performance CAD-independent 3D viewing, measurement, and markup
  - Syndication framework enabling "Powered by e-Vis" business relationships
  - Efficient back-end integration with enterprise PDM, ERP, and legacy DB systems
- Built a distributed R&D team of 30 managers, developers, and QA personnel
- Led key partnership and business development activities
- Helped design and deploy scalable, high-availability commercially hosted data center
- Contributed to innovative three-channel marketing strategy

Director of Product Development (7/97 – 7/99), *Engineering Animation Incorporated*, Ames, Iowa

- Led team of 25 developers and managers focused on core technology, including the DirectModel scene graph (.jt format), CAD integration, and network products

4/93 – 7/97 **Associate Director**, *Iowa Center for Emerging Manufacturing Technology* (renamed: Virtual Reality Applications Center, 1999), Institute for Physical Research and Technology, Iowa State University

- Helped build a world-renowned research center for applied VR
- Led fundraising, strategic planning, and recruiting initiatives
- Managed day-to-day operations of a university-wide research facility with a $2M annual budget

8/91 – 4/93 **Assistant Professor**, Department of Mechanical Engineering, Iowa State University

8/88 – 8/91 **Assistant Professor**, Department of Mechanical and Aerospace Engineering, State University of New York (SUNY) at Buffalo, Buffalo, New York

4/87 – 8/88 **Software Research Engineer**, *International TechneGroup Inc.*, Milford, OH. Conducted software research and development of a feature-driven concurrent product/process modeler, tolerance analysis tools, and a geometric data translation package. Also provided engineering consulting in design process enhancement for the automotive industry.

1/87 – 4/87 **Instructor**, Department of Mechanical Engineering, Michigan State University. Taught senior-level elective in computer-aided design, emphasizing geometric modeling and interactive graphics.

9/85 – 12/86 **Research Assistant**, *Case Center for Computer-Aided Engineering and Manufacturing*, Michigan State University. Graphics research group leader. Conducted research in CAD/CAM solutions to NC milling problems.

9/82 – 9/85 **System Manager**, Case Center for Computer-Aided Engineering and Manufacturing, Michigan State University. Managed daily operation of CAD center supporting graduate and undergraduate class work and faculty and graduate research for the College of Engineering.

1/82 – 9/82 **Teaching Assistant**, Department of Mechanical Engineering, Michigan State University. Taught senior-level course in computer-aided design.

4/81 – 12/81 **Mechanical Engineer**, *Fluor Engineers and Constructors Inc.*, Irvine, CA. Responsible for monitoring cost and scheduling performance for the mechanical engineering group involved in constructing a large plastics plant.

9/79 – 4/81 **User Consultant**, *Case Center for Computer-Aided Engineering and Manufacturing*, Michigan State University. Provided assistance for faculty and student users in system operation, programming, and executing commercial and in-house software.

5/79 – 9/79 **Analytical Engineer**, *Mechanical Technology Inc.*, Latham, NY.

12/76 – 5/79 **Engineering Aide**, *Mechanical Technology Inc.*, Latham, NY (20 hours/week during school, full time during breaks and summers). Performed computer-aided dynamic analyses of rotor-bearing systems, finite element stress, and thermal analyses of machine components.

HONORS AND AWARDS

Appointed Pithan Executive Director of Innovation, Iowa State University, 2021
Invited Panelist, *Belarusian-American Workshop on Scientific and Technical Cooperation*, hosted by US National Academy of Sciences, Engineering and Medicine, Minsk, Belarus, 2015
Appointed University Professor, Iowa State University, 2012
Appointed Larry and Pam Pithan Professor, College of Engineering, Iowa State University, 2009

Invited Visiting Professor, Image Institute, ParisTech, Ecole Nationale Supérieure d'Arts et Métiers, Chalon-sur-Saône, France:

- May – June 2014
- May 2010 – July 2011 (sabbatical)
- May – July 2008

Best Paper Award, ACHI, 6th International Conference on Advances in Computer-Human Interaction, Nice, France, 2013
Best Paper Award, ASME 27th Computers in Engineering Conference, 2007
Fellow, ASME International, 2006
Best Paper Award, Interservice/Industry Training, Simulation, and Education Conference, 2005
Outstanding Faculty Award, Iowa State University Interfraternity Council, 2005
Sigma Xi – Scientific Research Society, accepted nomination as a full member, 2003
Gustus L. Larson Memorial Award, ASME International, 1999
Young Engineering Faculty Research Award, Iowa State University, 1996
Boeing A.D. Welliver Faculty Summer Fellow, 1996
Computer-Aided Design (Journal) Referee Award, 1993
National Science Foundation (NSF) Young Investigator Award, 1992
Rockwell Excellence Award, Department of Mechanical Engineering, ISU, 1992
Carver Faculty Fellow, Iowa Center for Emerging Manufacturing Technology, 1991
SAE Ralph R. Teetor Educational Award, 1990
DuPont Fellow, Michigan State University, 1979-1980
Graduated Magna Cum Laude, Union College, 1979
Tau Beta Pi - National Engineering Honor Society, 1978
Dean's List, Union College, 1977-1979

ACADEMIC COURSES TAUGHT

Iowa State University

ME557	Computer Graphics and Geometric Modeling (developed as a new course)
ME/HCI 580	Virtual Environments, Virtual Worlds and Applications
ME625	Surface Modeling (developed as a new course)
ME/WLC 484/584	Technology, Globalization and Culture
ME415	Mechanical Systems Design
ME310	Mechanisms
ME270	Introduction to Mechanical Engineering Design
HCI592X	Entrepreneurship Workshop

ISU Course Development:

2002: Completely revised ME270 with a strong market emphasis in which student teams must conceive, design, prototype, and develop a business model for an "appropriate technology" product aimed at emerging third-world economies.

1998: ME420 elevated to a graduate-level course (ME557) to reflect enhanced content and graduate student enrollment

1996: Taught ME525X (now ME625) through a distance learning program (via videotape) for students at several General Motors sites.

1994: Revised ME420 to take advantage of OpenGL graphics language, supported and supervised a graduate student to write *Class Tool Kit* (CTK), a library to simplify the development of Xt/Motif user interfaces linked with OpenGL graphics.

1993: Developed ME 525X as a new course featuring contemporary NURBS curve and surface technology. Adopted as a permanent course (ME625) in the 1997 course catalog.

1992: Revised ME420 to take advantage of new Silicon Graphics workstations. Computer projects revised for Iris GL graphics language.

1991: Completely revised ME420, including new text and computer projects based on DEC Unix workstations and HOOPS graphics package in place of VAX system using Tektronics graphics.

State University of New York at Buffalo

MAE 473/573	Graphics in Computer-Aided Design
MAE 477/577	Computer-Aided Design Applications
MAE 459	Design Project
MAE 414	Engineering Internship
SYS 336	System Modeling and Analysis
EAS 103	Introduction to Engineering

Michigan State University

ME 463	Computer-Aided Design
ME 446	Instrumentation and Data Acquisition

SHORT COURSES TAUGHT

"Introduction to Immersive Virtual Reality," presented at:

- Specialized Masters Program, Ecole Nationale Supérieure d'Arts et Métiers, ParisTech, Chalon-sur-Saône, France, October 2010
- KIMP Masters Program, Ecole Nationale Supérieure d'Arts et Métiers, ParisTech, Paris, France, November 2010
- Research Masters Program, Ecole Nationale Supérieure d'Arts et Métiers, ParisTech, Chalon-sur-Saône, France, January 2011

"Introduction to 3D User Interfaces," Research Masters Program, Ecole Nationale Supérieure d'Arts et Métiers, ParisTech, Chalon-sur-Saône, France, January 2011 (six hours)

"Virtual Reality and Collaborative Immersive Environments for Distributed Mission Training," I/ITSEC Conference, Orlando, FL, December 2002 (attended by more than 100, CEU accredited)

"Bringing Ideas to Market: Injecting the Entrepreneurial Spirit into Your Enterprise," Executive Engineer Dual Master's Degree Program, Week in Residence, Cooperative program between Iowa State University's College of Engineering and University of Iowa's College of Business, co-developed and taught with A. Sannier, August 2002

"Modeling for Virtual Prototyping," Workshop presented at the 1st Global Virtual Manufacturing Conference, Detroit, MI, March 20 1997

"NURBS Curve and Surface Modeling: Theory and Application," NASA Lewis Research Center, Cleveland, OH, August 1994

"Computer-Integrated Manufacturing," School of Engineering and Applied Sciences, State University of New York at Buffalo, July 23 - August 1990, for Japan Productivity Council

GRADUATE STUDENT SUPERVISION

Degrees Granted:

Ph.D.

Khawaji, Muath Alhussain, "Overcoming challenges in smartphone use among older adults in Saudi Arabia: Designing a senior-friendly interface for use in an Arab Muslim setting," Human Computer Interaction, December 2017

Bennett, Jeremy, "Massive Model Visualization: A Practical Solution," Co-major in Human Computer Interaction and Computer Engineering, Co-Major Professor with J. Zembreno, June 2016

Casallas, Juan Sebastian, "Prediction of User Action in Moving-Target Selection Tasks," multi-institution co-major (co-tutelle), Human Computer Interaction – Iowa State University and Informatique–traitement du signal – Ecole Nationale Supérieure d'Arts et Métiers, ParisTech, Co-major Professor with Frederic Merienne, June 2015

Karpinsky, Nikolaus, "Portal-s: High-resolution Real-time 3D Video Telepresence," Co-major in Human Computer Interaction and Computer Engineering, Co-Major Professor with S. Zhang, October 2013

Noon, Christian, "A Volume Rendering Engine for Desktops, Laptops, Mobile Devices and Immersive Virtual Reality Systems using GPU-Based Volume Raycasting," Co-major in Human Computer Interaction and Computer Engineering, Co-Major Professor with E. Winer, April 2012

Marsh, William, "Identifying and Mitigating the Cognitive Implications of Semi-natural Virtual Locomotion Techniques," Co-major in Human Computer Interaction and Computer Engineering, April 2012

Zhang, Ruqin, "3D Mesh Metamorphosis from Spherical Parameterization for Conceptual Design," Co-major in Human Computer Interaction and Mechanical Engineering, Co-Major Professor with E. Winer, April 2011

Kadavasal, Muthukkumar, "Virtual Reality Based Multi-Modal Teleoperation using Mixed Autonomy," Major: Human Computer Interaction, August 2009

Xu, Bo, "Multiresolution Editing for B-spline Curves and Surfaces," Major: Industrial Engineering, August 2008

Hill, Lewis, "Synesthetic Music Experience Communicator," Major: Human Computer Interaction, December 2006

Knutzon, Jared, "Managing Multiple Unmanned Aerial Vehicles From a 3D Virtual Environment," Co-Major in Human Computer Interaction and Computer Engineering, Co-major Professor with Adrian Sannier, August 2006

Walter, Bryan, "Virtual Environment UAV Swarm Management Using GPU Calculated Digital Pheromones," Co-major in Human Computer Interaction and Mechanical Engineering, Co-major Professor with Adrian Sannier, December 2005

Assadi, Armand, "CAD Model Robustness Assessment and Repair," Major: Mechanical Engineering, Iowa State University, May 2003

Miller, Perry, "Blade Geometry Description Using B-splines and General Surfaces of Revolution," Major: Mechanical Engineering, Iowa State University, December 2000

Chen, Shiang-Fong, "Collision-free Path Planning," Major: Mechanical Engineering, Iowa State University, May 1997

Renze, Kevin, "Unstructured Surface and Volume Decimation of Tessellated Domains," Major: Mechanical Engineering, Iowa State University, May 1995

Theruvakattil, Philip, "Automatic Constraint-based Synthesis of Non-uniform Rational B-spline Surfaces," Major: Mechanical Engineering, Iowa State University, December 1994

Huang, Yunching, "Dimensional Verification of Five-Axis Numerically Controlled Milling Tool Paths," Major: Mechanical Engineering, Iowa State University, December 1993

Haghpassand, Khorssand, "Computational Geometry in Orientation Planning," Major: Mechanical Engineering, State University of New York at Buffalo, December 1993

M.S. (On-campus, Thesis option)

Yip Hoi, Derek, 1989
Huang, Huai-Te, 1990
Malhotra, Alok, 1991
Rohatgi, Samir, 1991
Menon, Radhakrishnan, 1992
Chen, Shiang-Fong, 1993
Hines, Brian, 1994
Kuehne, Robert, 1995
Song, Ying, 1995
Wu, Yanfang, 1995
Pinheiro, Helder, 1996
Shanahan, Daniel, 1996
Zhang, Sen, 1997
Schmidt, Eric, 2002
Kumar, Shailesh, 2005
Streeter, Tyler, 2005
Erlemeier, Thomas, 2006
Van Waardhuizen, Michael, 2010
Husske, Tylor, 2012
Vander Broek, Philip, 2014
Basu, Arko, 2017
Mazurick, Adam, 2021
Harangozo, Martin, 1990
Huang, Yunching, 1991
Narvekar, Ashish, 1991
Qian, Ke-Ji, 1991
Nair, Nirmal, 1993
Raja, Vijay, 1993
Mokhtar, Jawad, 1994
Miller, Perry, 1995
Walker, John, 1995
Assadi, Armand, 1996
Rickert, David, 1996
Giannakorous, Maria, 1997
Menendez, Ricardo, 1999
Wu, Liangshou, 2004
Heying, Matt, 2005
Batkiewicz, Thomas, 2006
Faidley, Galen, 2006
Prater, David, 2012
Herrema, Jordan, 2013
Garrett, Timothy, 2015
Nicholas Wilson, 2020
Vardhan, Yash, 2022

MS (On-line HCI – Creative Component)
66 graduates to date

Executive Engineer Dual Master's Degree Program - (Cooperative program between Iowa State University's College of Engineering and University of Iowa's College of Business)

Master of Engineering, December 2008
Alan Kritzman
Lance LeTellier
Jonathan Lightner
Debra Maness
Darin Massner
Michael McCarty
Chris McCoy
Kari McGregor
Robert Moore
Ryan Murphy
Harvey Nannenga

Master of Engineering, December 2005

Mark Hindman	Greg Barnett
Sara Brown	Ashley Poch
David Rowe	Jeremy Van Essen

Master of Engineering, December 2002

Robert Buschette	James Cahill
Jennifer Dray	Daniel Gienger
Christopher Hansen	Eugene Johnston
Timothy Roszhart	Steven Schoeder

Current Advisees

Graduate Students

Shayegan Mortizavi, PhD — Projected completion: May 2026

GRANTS AND CONTRACTS RECEIVED

Title	Source	Duration	Amount
SCOTTIE - Systematic Communication Objectives and Teleportation Technology Investigations and Evaluation, co-PI, with PIs Stephen Gilbert (ISU) and Peggy Wu (UTRC)	ARPA-E	4/1/2019-6/30/2023	$426,357
Engineering Research Center for Aging-centric Engineering Technologies (*AgETech*), Co-PI with Balaji Narasimhan (PI), Jennifer Margrett, Carl Chang and Mack Shelley (co-PIs)	National Science Foundation	9/1/2018-8/31/2019	$100,000
Virtual Natural Landscape in Cage-Free Facility to Improve Chicken Welfare and Health, Co-PI with Melha Mellata (PI), Mark Lyte and Suzanne Millman	ISU – Presidential Interdisciplinary Research Seed (PIRS) Grant	1/1/2019-12/31/2021	$50,000
INFEWS/T2: Cyber-based Decision Support Strategies to Achieve Consensus for FEW System Sustainability using Incentive and Policy Structures, co-PI with PI Leifur Leisson, PI and co-PIs Christina Bloebaum, Ali Abbas (USC), Amy Kaleita and Clark Wolf	National Science Foundation	8/1/2017-7/31/2023	$2,399,279
Development of a Virtual Reality Training Platform for Battery Manufacturing Activities, Co-PI with E. Winer (PI)	East Penn Manufacturing	8/15/2017-8/14/2018	$228,169
Augmented Reality Hardware and Software Evaluation for Shop Floor Assembly Application, Co-PI with E. Winer, PI and S. Gilbert and R. Radkowski, Co-PIs	Boeing	01/01/2017-12/31/2017	$275,000
Authoring Augmented Reality Work Instructions by Expert Demonstration, Co-PI with E. Winer, PI and S. Gilbert and R. Radkowski, Co-PIs	Digital Manufacturing and Design Innovation Institute (DMDII)	3/15/2016-9/15/2017	$2,013,824
Mixed-Reality Work Guidance, Authoring and Wearables, Co-PI with E. Winer, PI and S. Gilbert and R. Radkowski, Co-PIs	Boeing	4/1/2015-3/31/2016	$300,000
Jack Trice Stadium Game-Day Virtual Reality Experience, PI with E. Winer and V. Kalivarapu, Co-PIs	ISU Athletics Department	4/30/14-12/31/14	$48,687

Title	Source	Duration	Amount
Mixed-Reality Work Guidance, Co-PI with E. Winer, PI and S. Gilbert, Co-PI	Boeing	1/1/2014-3/31/2015	$400,000
Advanced Live, Virtual and Constructive Training Systems, Co-PI with S. Gilbert (PI), E. Winer, Co-PI	US Army RDECOM	10/1/2010-9/30/2014	$2,686,000
Augmented Reality Prototyping, CoPI with E. Winer, PI	Boeing	10/1/2013-12/31/2013	$65,000
Development of Advanced Collaboration and Modular Methods to Facilitate Transition between Concept and Detailed Design Stages, Co-PI with E. Winer, PI	Deere and Company	1/1/2011-12/31/2013	$508,695
Factory of the Future, Co-PI with E. Winer, PI and S. Gilbert, Co-PI	Boeing	3/25/13-12/31/13	$294,301
Markerless Tracking to Enable Augmented Reality on the Factory Floor, PI with E. Winer, Co-PI	Deere and Company	9/1/13-10/15/13	$40,000
Immersive Design Center Support and Multidisciplinary Design Analysis and Optimization, Co-PI with E. Winer, PI	Boeing	6/14/12-2/28/13	$156,042
Immersive Development Self-Organizing Map Enhancement, Co-PI with E. Winer, PI	Boeing	6/14/12-12/31/12	$60,314
Augmented Reality Interface to Facilitate Product Assembly, PI	Rockwell Collins	10/1/2010-9/30/2012	$150,000
Visualization of Multidisciplinary Design Data, PI, Co-PI with E. Winer	Boeing	4/1/10-12/23/11	$336,524
Development of a Collaborative Design Environment, Co-PI with E. Winer, PI	Boeing	4/1/10-12/30/10	$186,525
Advanced Live, Virtual and Constructive Training Systems, Co-PI with S. Gilbert (PI), E. Winer, Co-PI	US Army RDECOM	10/1/09-9/30/10	$1,550,000
Conceptual Design of a Eucalyptus Machine Form, Co-PI with E. Winer, PI	Deere and Company	6/1/09-12/1/09	$77,936
Virtual Implementation Study, PI with Co-PI E. Winer	Boeing	7/1/09-12/30/09	$52,951
REU Site: Summer Program for Interdisciplinary Research - Emerging Interface Technologies, PI with S. Gilbert and E. Winer, Co-PIs	National Science Foundation	1/1/09-8/30/11	$300,000
Improved Design Effectiveness Through Next Generation Visualization, PI	Air Force Research Laboratory	10/1/08-9/30/09	$112,000
A Virtual Reality Interface for Product/Analysis Data Visualization, PI	Rockwell Collins, Inc.	8/16/08-8/15/10	$300,000
Virtual Training, Assembly and Maintenance Methods, Co-PI with J. Vance, PI	Deere and Company	1/1/08-12/31/10	$372,942
Development of the Advanced Systems Design Suite, Co-PI with E. Winer, PI	Deere and Company	1/1/08-12/31/10	$463,779
Information Science and Technology Institute: Advancing Iowa's IT Research and Commercialization, PI, with Co-PI's V. Honavar, D. Jacobson, K. Rajan and A. Somani	State of Iowa	9/1/06-8/30/10	$1,000,000
REU Site: Summer Program for Interdisciplinary Research - Emerging Interface Technologies, PI	National Science Foundation	1/1/06-8/30/08	$284,228
Commercialization of 3D Interactive Digital Medical Software for Surgical Planning and Training, Co-PI with E. Winer, PI	State of Iowa	7/1/07-5/31/09	$109,533
Creation of an Advanced Systems Design Suite, Co-PI with E. Winer, PI	Deere and Company	1/1/06-12/31/07	$296,696

Title	Source	Duration	Amount
Template Application and Model Management, PI	Deere and Company	1/1/05-12/31/07	$386,763
Virtual Training, Assembly, and Maintenance Methods Environment II, Co-PI with J. Vance, PI	Deere and Company	1/1/05-12/31/07	$429,472
Real-time CAD-based Immersive Design Reviews, PI	Deere and Company	1/1/05-12/31/07	$216,308
Virtual Teleoperation of Unmanned Aerial Vehicles, PI with E. Winer and A. Stoytchev (Co-PIs)	U.S. Air Force Office of Scientific Research	5/15/05-5/14/11	$10,413,536
C4 ISR Enterprise System Engineering, Co-PI with A. Sannier (PI)	Fakespace Systems, US Army CECOM	4/1/03-3/31/04	$209,847
Visualization of the Joint Battlespace, Co-PI with J. Bernard (PI), A. Sannier, and C. Cruz-Neira	Air Force Research Laboratory	1/1/03-12/31/03	$129,750
Academic Initiative in Human Computer Interaction, PI with J. Bernard, C. Cruz-Neira, and A. Sannier (Co-PIs)	Iowa State University	8/16/02-8/15/05	$450,000
Synthetic Environments as Enabling Technology for Product Development: Project 1, Collaborative Virtual Environments, co-PI with C. Cruz-Neira (PI)	Deere and Company	12/11/01-12/10/04	$277,420
Introducing a Low-Cost VR Tool into the Introductory Design and Technical Graphics Curriculum, co-PI with S. Smith (PI), R. Smith, and S. Mickelson	Miller Foundation (ISU)	6/1/02-6/1/04	$24,774
Military Applications of Virtual Reality[1], co-PI with J.E. Bernard, A. Sannier (PI), and C. Cruz-Neira	Iowa Department of Public Defense	4/01/01-8/31/03	$1,200,000
Visualization of the Joint Battlespace[1], Co-PI with J. Bernard (PI), A. Sannier, and C. Cruz-Neira	Air Force Research Laboratory	8/21/00-12/31/02	$587,611
A Knowledge-Integrated Virtual Reality Machining Laboratory for Innovative Undergraduate Education, co-PI with D. Fang (PI), and J. Vance	National Science Foundation	6/1/96-5/30/99	$188,000
Synthetic Environments as Enabling Technology for Product Development, PI, co-PI's C. Cruz-Neira, G. Luecke and J. Vance	Deere and Company	6/1/96-5/31/98	$456,566
Algorithms for NURBS Surface Model Development, PI	NASA Lewis Research Center	1/6/92-11/16/97	$289,451
Generalized Geometric Modeling for Turbomachinery Applications, PI	NASA Lewis Research Center	9/1/95-11/16/97	$104,413
Young Investigator Award (base award), PI	National Science Foundation	9/1/92-9/1/97	$125,000
Young Investigator Award (matching funds), PI	National Science Foundation	9/2/96-9/1/97	$37,500
Model Vocational Education Program for New Manufacturing Technologies, co-PI with J. Bernard (PI), G. Luecke, and J. Vance	U.S. Department of Education	11/1/93-10/31/96	$652,011
A Virtual Environment for Manufacturing Systems[2], PI, co-PI's M. Vanderploeg and L. Chen	Office of Naval Research	10/1/92-9/30/96	$722,238
Young Investigator Award (matching funds), PI	National Science Foundation	9/2/95-9/1/96	$35,534

[1] Joined project in progress

[2] Re-budgeted $250,000 from salaries to equipment to support construction of the C2, ICEMT's (now VRAC's) first surround screen immersive projection technology device, September 1996.

Title	Source	Duration	Amount
Boeing A.D. Welliver Faculty Summer Fellowship, PI	Boeing	6/17/96-8/9/96	$20,165
NURBS-based Geometry for Integrated Structural Analysis, PI	NASA Lewis Research Center	4/15/93-7/12/96	$92,898
Young Investigator Award (matching funds), PI	National Science Foundation	9/2/94-9/1/95	$37,500
Design Interface for Assessment of Human Interaction with Multi-function Control Handles, PI	Deere and Company Technical Center	1/15/94-7/14/95	$47,131
Visualization of Tread and Mold Design Process, PI	Bandag, Inc.	1/15/94-1/14/95	$25,903
Young Investigator Award (matching funds), PI	National Science Foundation	9/2/93 9/1/94	$3,720
Sculptured Surface Model Synthesis, PI	National Science Foundation	8/15/91-1/31/94	$60,000
Research Experience for Undergraduates, PI (RIA grant supplement)	National Science Foundation	1/1/93 1/31/94	$5,000
Visualization of a Product Assembly Process, PI	3M Corporation	6/1/93-8/1/93	$3,720
Rockwell Excellence Award, PI	Rockwell International Foundation	3/25/92-12/31/92	$3,750
Constraint-Based Automated Surface Model Generation, PI	US Department of Commerce (CATD)	7/1/92-12/31/92	$49,900
Graduate Group for Applied Artificial Intelligence in Engineering, Renewal (Co-Director with S. Chen)	University at Buffalo Office of the Provost	7/1/90-6/30/91	$9,800
Strategic University Research Grant (software license)	Spatial Technology Inc.	3/1/91	$3,000
Knowledge-Based Identification of Expert System Applications, PI	Occidental Chemical	1/1/90-6/30/90	$19,522
Graduate Group for Applied Artificial Intelligence in Engineering (Co-Director with S. Chen)	University at Buffalo Office of the Provost	7/1/89-6/30/90	$2,500
Computer-Integrated Engineering Publishing Lab (Co-PI's B. Wang, S. Chen and C. Brunskill)	Sun Microsystems	5/15/90	$58,552
Automotive Design Process Enhancement, PI	International TechneGroup Inc.	4/10/89-8/31/89	$16,364

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K. Haghpassand, and J.H. Oliver, "Computational Geometry for Optimal Workpiece Orientation," *ASME Advances in Design Automation*, *Vol. 2*, DE-Vol. 32-2, G. Gabriele, ed., pp. 169-175, September 1991

M.J. Harangozo and J.H. Oliver, "Automated Assembly of Planar Closed Loop Mechanisms," *ASME Flexible Assembly Systems*, DE-Vol. 28, A.H. Soni, ed., pp. 71-78, September 1990

J.H. Oliver, "Efficient Intersection of Surface Normals with Milling Tool Swept Volumes for Discrete Three-Axis NC Verification," *ASME Advances in Design Automation, Vol. 1*, DE-Vol. 23-1, B. Ravani, ed., pp. 159-164, September 1990

A.P. Narvekar and J.H. Oliver, "Intersection of Vectors with General Five-Axis Swept Volumes," *Proc. of Manufacturing International'90, Vol. IV: Advances in Materials and Automation*, ASME Book No. H0580D, pp. 99-104, March 1990

D.A. Wysocki, J.H. Oliver, and E.D. Goodman, "Gouge Detection Algorithms for Sculptured Surface NC Generation," *ASME Computer-Aided Design and Manufacture of Cutting and Forming Tools*, PED-Vol 40, T.I. Liu, et al., eds., pp. 39-44, December 1989

J.H. Oliver and E.D. Goodman, "Graphical Verification of N/C Milling Programs for Sculptured Surface Parts," *ASME Integrated and Intelligent Manufacturing*, PED-Vol. 21, C.R. Liu and T.C. Chang, eds., pp. 247-264, December 1986

J.H. Oliver and E.D. Goodman, "Color Graphic Verification of N/C Milling Programs for Sculptured Surfaces," *Proc. of the 10th ACM/ESD Automotive Computer Graphics Conference*, pp. 79-94, Detroit, MI, December 1985

J.H. Oliver, D.A. Wysocki, and B.S. Thompson, "The Synthesis of Flexible Linkage Mechanisms by Quasi-Static Deflection Balancing," ASME paper No 83-WA/DSC-37, *ASME Winter Annual Meeting*, Boston, MA, November 1983

D.A. Wysocki, B.S. Thompson, J.H. Oliver, and J.E. Nametz, "The Computer-Aided Design of Machinery in the Classroom at Michigan State University," *Proc. Second ASME International Computers in Engineering Conference, Vol. 2, Robotics Theory and Application: Computers in Education*, pp. 217-222, Chicago, IL, August 1983

PUBLICATIONS - Conference Proceedings (non-reviewed)

R. E. Dianiska, P. Wu, C. Peasley, K. Ouverson, J. Stonewall, E. Oldham, B. Israelsen, S.B. Gilbert, and J.H. Oliver, "Communication Objectives Model (COM): A taxonomy of face-to-face communication objectives to inform telepresence technology adoption." (2021) https://psyarxiv.com/3q4u2

J.S. Knutzon, B.E. Walter, A.V. Sannier, and J.H. Oliver, "Command and Control in Distributed Mission Training - An Immersive Approach," *NATO Symposium on Critical Design Issues for the Human-Machine Interface*, Prague, Czech Republic, May 2003

J.H. Oliver, J. Vance, G. Luecke, and C. Cruz-Neira, "Virtual Prototyping for Concurrent Engineering," (In .vited paper) *Proc. 1st International Immersive Projection Technology Workshop*, Springer-Verlag Publisher, H.J. Bullinger and O. Riedel, Eds., Stuttgart, Germany, July 1997, pp. 51-57

P.L. Miller, J.H. Oliver, D.P. Miller, and D.L. Tweedt, "Using Stream Surfaces for Blade Design," *Mechanical Engineering*, Vol. 119, No. 4, pp. 66-68, April 1997

J.F. Walker, J.H. Oliver, and D.A. Ashlock, "Evolution of Sensor Placement in Simple Virtual Robots," *Proc. 1997 NSF Design and Manufacturing Grantees Conference*, Seattle, WA, pp.145-146, January 1997

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R.P. Kuehne and J.H. Oliver, "Assembly Planning and Evaluation in a Synthetic Environment," *Proc. of 24th Midwest Mechanics Conference*, Vol. 18, Ames, IA, pp. 181-183, October 1995

K.J. Renze and J.H. Oliver, "Generalized Surface and Volume Decimation for Unstructured Tessellated Domains," *First Workshop on Simulation and Interaction in Virtual Environments*, (Unofficial Proceedings) University of Iowa, Iowa City, IA, pp. 14-24, July 1995

K.J. Renze and J.H. Oliver, "A Decimation Scheme for Unstructured Tessellated Domains," *Proc. 1995 NSF Design and Manufacturing Grantees Conference*, pp. 49-50, San Diego, CA, January 1995

J.H. Oliver, "Research Progress in Surface Modeling Automation," *Proc. 1994 NSF Design and Manufacturing Systems Conference*, pp. 81-82, Cambridge, MA, January 1994

J.H. Oliver, P. Theruvakattil, and N. Nair, "Toward Automated Generation of Sculptured Surface Models," *Proc. 1993 NSF Design and Manufacturing Systems Conference*, Vol. 1, pp. 633-640, Charlotte, NC, January 1993

J.H. Oliver, "Recent Advances in Constrained B-Spline Synthesis, *Proc. 1992 NSF Design and Manufacturing Systems Conference*, Georgia Institute of Technology," Atlanta, GA, pp. 387-393, January 1992

J.H. Oliver, "A Vector/Solid Intersection Technique for Three-Axis NC Verification," Proc. of 3rd International Conference on CAD/CAM, Robotics and Factories of the Future, Vol. 1, CIM and Manufacturing Automation, Springer-Verlag, *International Society for Productivity Enhancement*, Detroit, MI, August 1988

J.H. Oliver and E.D. Goodman, "Computational Verification of Numerical Control Programs for Sculptured Surface Parts," *Computers in Design, Manufacture and Operation of Automobiles,* Computational Mechanics Publication, Springer-Verlag, T.K.S. Murthy and C.A. Brebbia, eds., pp. 105-119, presented by E.D. Goodman at *COMPAUTO'87*, International Conference, Geneva, Switzerland, March 1987

TECHNICAL REPORTS

J.H. Oliver, "Final Performance Report: Virtual Teleoperation of Unmanned Aerial Vehicles," AFOSR Award Numbers FA9550-05-1-0384 and FA9550-07-1-0475, Reporting Period: 15 May 2005 – 31 May 2011, Submitted 24 January 2012

J. Bernard, C. Cruz-Neira, J. Oliver, and A. Sannier, "Command and Control Embedded Training: Visualization of the Joint Battlespace," Final Technical Report, AFRL/IFSA Contract F30602-00-2-0622, July 2004

S. Rohatgi, J.H. Oliver, and S.S. Chen, "OPGEN: Opportunity Generator - Final Report," for Occidental Chemical Corporation, University at Buffalo Foundation Project No. 9103-242825, August 1990

J.H. Oliver, M.N. Pickelmann, E.D. Goodman, "SURFPAK User's Guide," Case Center for Computer-Aided Engineering and Manufacturing, Michigan State University, 1984

J.H. Oliver, "Case Center User's Guide," Case Center for Computer-Aided Engineering and Manufacturing, Michigan State University, 1982 (revisions through 1985)

PATENTS

M. Mellata, J.H. Oliver, M. Lyte, S. Millman-Hartline, R. Radkowski, G. Redweik, "Simulated Natural Landscape in a Cage-Fee Facility to Improve Animal Welfare and Health," US Patent Number 12,202,091 B2, January 2025

J.H. Oliver and Y.C. Huang, "Algorithms for Simulation and Dimensional Verification of Material Removal Processes," US Patent Number 5,710,709, January 1998

J.H. Oliver, "Sculptured Surface Synthesis Based on Functional Design Constraints," US Patent Number 5,510,995, April 1996

J.H. Oliver and N.K. Nair, "Area-Preserving Transformation Algorithms for Mapping a Sculptured Surface onto a Plane," US Patent Number 5,561,754, October 1996

EXHIBITS

Defense Manufacturing Conference and Exhibit, Orlando, FL, December 2009
Invited by research sponsor Rockwell Collins, Inc. to exhibit the *AugmenTable* – a table-top augmented reality interface enabling free-hand interaction and assembly of virtual and physical components without head-mounted display or separate tracking devices.

Manning the Unmanned, Human Factors of UAVs Workshop, Mesa, AZ, May 2006
Exhibit incorporated a large, rear-projected display featuring an immersive battlespace simulator with multiple integrated user interfaces, including a wireless game controller for general navigation and selection, an integrated binocular HMD for precision targeting, and tablet PC for unit re-tasking.

I/ITSEC 2005, Orlando, FL, December 2005
First public demonstration of VR-based teleoperation of UAVs. Exhibit incorporated a large, rear-projected display featuring an immersive battlespace simulator with multiple integrated user interfaces, including a wireless game controller for general navigation and selection, and an integrated binocular HMD for precision targeting. The envisioned usage scenario is a role-based group interface for next-generation command and control of swarms of semi-autonomous vehicles. I/ITSEC is the premier venue for defense-related simulation technologies.

BCCX Grand Opening, 133rd ACS, Ft. Dodge, IA, August 2003
Invited by our research sponsor, the Iowa Air National Guard, to display DoD-related applications at their debut of the mobile *Battle Control Center Experimental* (BCCX). Attended by over 200 government and defense personnel from across the nation. Our exhibit incorporated a large, rear-projected display featuring our immersive battlespace simulator and an interactive layout application for the BCCX.

I/ITSEC 2002, Orlando, FL, December 2002
Invited by our research sponsor AFRL to display two immersive applications in their booth at the I/ITSEC show floor. I/ITSEC is the premier venue for defense-related simulation technologies. Our exhibit incorporated a large, rear-projected display featuring our immersive battlespace simulator and an interactive layout application for multi-mission aircraft.

eLink 2000, London, England, February 2000
Invited by Conference sponsors Commerce One, British Telecom, Andersen Consulting, Compaq, Microsoft, PeopleSoft, and PricewaterhouseCoopers to exhibit e-Vis.com. First live public demonstration of e-Vis to a large international audience. Provided interviews for press and market analysts. Conducted customer education breakout sessions.

AUTOFACT'98, Detroit, MI, September 1998
Represented EAI executive management at a premier CAD/CAM software conference. Conducted customer-specific demonstrations at our exhibit. Provided interviews for press and market analysts.

CIMdata PDM'98, Innisbrook, FL, April 1998
Represented EAI executive management at a premier product data management software conference. Conducted customer-specific demonstrations at our exhibit. Provided interviews for press and market analysts.

SIGGRAPH'97, Los Angeles, CA, August 1997
Invited to the *Electric Garden*, a forum for innovative research and applications at the premier international conference on computer graphics and related technologies attended by 50,000. ICEMT's booth featured a fixed-base driving simulator (car buck) with a large-screen projection system and a second large-screen projection system demonstrating various high-performance interactive applications.

Global Virtual Manufacturing, Detroit, MI, March 1997
ICEMT booth featured a fixed-base driving simulator (car buck) with a large-screen projection system, and video demonstrations of virtual prototyping and manufacturing research.

ACM'97, San Jose, CA, February, 1997
The Associating for Computing Machinery celebrated its 50th anniversary with a large conference exhibit featuring leading-edge research laboratories from around the world. ICEMT's booth featured a fixed-base driving simulator (car buck) with a large-screen projection system, and the ISU Atanasoff- Berry Computer replica.

Supercomputing'96, Pittsburgh, PA, November 1996
Invited by Silicon Graphics Inc. (SGI) to demonstrate ICEMT research in visual interactive supercomputing at SGI's booth on the exhibit floor. Demonstrated driving simulation and artificial life applications.

Supercomputing'95, San Diego, CA, November 1995
Invited by Silicon Graphics Inc. (SGI) to demonstrate ICEMT research in visual interactive supercomputing at SGI's booth on the exhibit floor. Demonstrated real-time space shuttle remote manipulator and molecular docking applications using a four-pipe Powerwall display device and multiple SGI Power Challenge computers.

PRESENTATIONS (* denotes accompanying paper in conference proceedings)

"Innovation and Entrepreneurship," Invited Panelist, 27th Annual Colloquium on International Engineering Education, University of Rhode Island, Providence, RI, November 2024

"ISU's Student Innovation Center," Invited Presentation, Innovation Lunch Club, Iowa State University Research Park, Ames, IA, November 2024

"XR Trends: Challenges and Opportunities in the Automotive Industry," Invited Keynote Address, 23rd Driving Simulation & Virtual Reality Conference & Exhibition, Strasbourg, France, September 2024

"ISU's Student Innovation Center," Invited Presentation, Iowa State University Women's Club, Ames, IA, April 2024

"ISU's Student Innovation Center," Invited Presentation, Ames Golden K Kiwanis Club, Ames, IA, October 2023

"VR & AR – the future of XR for driver research and training," Invited Panelist, 19th Driving Simulation & Virtual Reality Conference & Exhibition, Antibes, France, September 2020

"Evaluating Metrics for Standardized Benchmarking of Remote Presence Systems," C. Peasley (presenter) R. Dianiska, E. Oldham, N. Wilson, S. Gilbert, P. Wu, B. Israelsen and J.H. Oliver, IEEE VR Workshop VR, Online, March 2020

"HMD vs. CAVE for automobile HMI engineering design," Invited Panelist, 18th Driving Simulation & Virtual Reality Conference & Exhibition, Strasbourg, France, September 2019

"Virtual and Augmented Reality: From Promise to Productivity," Invited Keynote Address, 17th Driving Simulation & Virtual Reality Conference & Exhibition, Antibes, France, September 2018

"Virtual and Augmented Reality: From Promise to Productivity," Invited address, West Des Moines Chamber of Commerce, West Des Moines, IA, May 2018

"Virtual and Augmented Reality: From Promise to Productivity," Invited keynote address, 2018 Rural Telecom Industry Meeting and Expo (RTIME), Austin, TX, February 2018 (2,500 attendees)

"Virtual and Augmented Reality: From Promise to Productivity," Invited Departmental Seminar, Department of Food Science and Human Nutrition, Iowa State University, Ames, IA, January 2018

"Industry-focused Research at the VRAC," Invited address, ISU-Rockwell Collins Mini Research Symposium, Ames, IA, October 2017

"Virtual Reality: A look back… and ahead," Invited keynote address, 20 ans de lnstitut Image (20th Anniversary of the Institut Image), Ecole Nationale Supérieure d'Arts et Métiers, ParisTech, Chalon-sur-Saône, France, September 2017

"Manufacturing-focused Research at the VRAC," invited address, ISU-John Deere Mini Research Symposium, Ames, IA, August 2017

"Beyond the Hype-Cycle: The AR/VR Transition from Promise to Productivity," invited address, Iowa CIO Forum, Ames, IA, May 2017

"Science: What is it good for? Absolutely Everything!" invited keynote address, Iowa March for Science Fundraising Luncheon, Des Moines, IA, April 2017 – also live address at the march at the IA Capitol.

"Beyond the Hype-Cycle: The AR/VR Transition from Promise to Productivity," invited keynote address, Mercy Medical Center, Annual Board Retreat, Des Moines, IA, February 2017

"Technology Foresight Series, Wearables and AR/VR: Outlook and Impact on Future of Production," invited panelist, World Economic Forum, New York, New York, November 2016

"The VR/AR Rollercoaster: distinguishing the potential from the hype," invited keynote address, Technology Innovation Forum, United Technologies Research Center, East Hartford, CT, June 2016

"Technology trends in VR and the research opportunities they afford," invited keynote address, Workshop on Visual Computing, Universidad de los Andes, Bogota, Colombia, June 2016

"Preparing for a successful career in science and technology: what to expect on the road ahead," invited keynote address, Chicago Engineers Foundation 2016 Annual Incentive Awards Dinner, Chicago, IL, June 2016

"Perspectives on improving University Research-based Technology Transfer, Commercialization and Entrepreneurship," Invited Panelist, Belarusian-American Workshop on Scientific and Technical Cooperation, hosted by the US National Academy of Sciences, Engineering and Medicine, Minsk, Belarus, 2015

"Beyond the Hype-Cycle: VR/AR Opportunities and Challenges Ahead," Invited keynote address, Cummins Science and Technology Meeting, Columbus, IN, August 2015

"Recent Advances in Augmented Reality Interface Design," Invited keynote address, COMPSAC 2015: IEEE 39th Annual International Computers, Software & Applications Conference, Taichung, Taiwan, July 2015

"Recent Advances in Augmented Reality Interface Design," Invited keynote address, IMAGINE 2015: Visual Computing Workshop, Bogota, Colombia, June 2015

"Computer-Aided Design and Simulation: A State-of-the-Art Survey," Invited presentation, Machinery Manufacturing Innovation Summit, Center for Industrial Research and Service, Iowa State University, Ames, IA, April 2015

"Beyond the Hype-Cycle: VR/AR Opportunities and Challenges Ahead," Invited keynote address, 4D Expo, Los Angeles, CA, February 2015

"Beyond the Hype-Cycle: VR/AR Opportunities and Challenges Ahead," Invited keynote address, SAE 2014 Augmented and Virtual Reality (AR/VR) Technologies Symposium, Dearborn, MI, November 2014
"Making More Interdisciplinary, Globally Aware Engineers," Invited Panelist, 17th Annual Colloquium on International Engineering Education, Providence, RI, November 2014

"Summary of Recent Research Results at the VRAC," Invited seminar, Ecole Nationale Supérieure d'Arts et Métiers, ENSAM/ParisTech, Chalon-sur-Saône, France, June 2014

"Virtual, Mixed and Augmented Reality: Tools for Enhanced Product Development and Manufacturing," Invited Presentation, *TechConnect*, John Deere Indian Technology Innovation Center, Pune, India, May 2014

"Quantifying and Communicating the Business Value of Augmented and Virtual Reality," Invited Panelist, 2014 SAE World Congress, Detroit, MI, April 2014

"Simulation of Human Experience: Past and Future," Invited Keynote Lecture, DSC 2012 Europe, Driving Simulation Conference, Paris, France, September 2012

"Innovation and Commercialization Opportunities at ISU's VRAC," Invited presentation, Iowa Innovation Corporation, Opening Convocation, Iowa Historical Museum, Des Moines, IA, February 2012

* "Table Top Augmented Reality System for Conceptual Design and Prototyping," *ASME 3rd World Conference on Innovative Virtual Reality, WINVR11*, Milan, Italy, June 2011

"Virtual Reality: Trends and Research Opportunities," Invited Seminar, Collège de France, Paris, France, June 2011

"Emerging Interface Technology Research Trends," Invited Seminar, University College of London, London, England, April 2011

"Emerging Interface Technology Research Trends," Invited Seminar, University of Glasgow, Glasgow, Scotland, April 2011

"Virtual Reality: Trends and Research Opportunities," Invited Keynote Lecture, AIP Primeca Annual Conference, Le Mont Dore, France, March 2011

"Emerging Interface Technology Research Trends," Invited Seminar, Ecole Nationale Supérieure d'Arts et Métiers, ParisTech, Chalon-sur-Saône, France, January 2011

"Virtual Reality: Research Challenges and Opportunities," Invited Keynote Address, Eighth International Symposium on Tools and Methods of Competitive Engineering (TMCE 2010), Ancona, Italy, April 2010

"Virtual Reality: Research Challenges and Opportunities," Invited Seminar, Department of Mechanical Engineering, Michigan State University, East Lansing, MI, September 2009

"BodyViz: Simple. Visual. 3D," Pappajohn Business Plan Competition Finalist, Des Moines, IA, August 2009

* "Virtual Reality Interface Design for Multi-Modal Teleoperation," ASME World Conference on Innovative VR, *WINVR 2009*, Chalon-sur-Saône France, February 2009

"Virtual Reality in the Real World," Invited Keynote Address, ASME World Conference on Innovative Virtual Reality, *WINVR 2009,* Chalon-sur-Saône, France, February 2009

"Virtual Reality in the Real World," Invited address, *ICIDO Industry Summit*, Chicago, IL, September 2008

"Emerging Interface Technologies: Research Challenges and Opportunities," presented at:
Ecole Nationale Supérieure d'Arts et Métiers, ParisTech, Chalon-sur-Saône, France, May 2008
École Nationale Supérieure des Mines, Paris, France, May 2008
Université d'Evry, Paris, France, June 2008
Université de Bourgogne, Dijon, France, June 2008
Commissariat à l'énergie atomique (CEA), Paris, France, June 2008
Sogitec (division of Dassault Aviation), Paris, France, June 2008
Renault, Paris, France, June 2008
EADS, Munich, Germany, June 2008

"High-Resolution Immersive Virtual Reality," CNN's The Next Big Thing with Miles O'Brien, aired various times, January 2008

"Computer Games: What's in There and Why Should I Care," Invited presentation, Iowa Video Gaming Tournament, Science Center of Iowa, February 2008

"Trends in VR Technology and Applications," Keynote address, invited by ICIDO Inc., *ICIDO Industry Summit*, Stuttgart, Germany, September 2007

"Fully Immersive Ultra-High Resolution Virtual Reality," Invited Presentation, Technical University of Dresden, Germany, September 2007

"Trends in VR Technology and Applications," Invited Presentation, High-Performance Computing Center Stuttgart (HLRS), Stuttgart University, Germany, September 2007

"Fully Immersive Ultra-High Resolution Virtual Reality," Invited Presentation, Fraunhofer Institute for Factory Operation and Automation, Magdeburg, Germany, September 2007

"Fully Immersive Ultra-High Resolution Virtual Reality," Invited by Sony Corporation, *3DBizEx*, San Francisco, CA, September 2007

"Computer Games: What's in There and Why Should I Care," Invited presentation, Iowa Video Gaming Tournament, Science Center of Iowa, August 2007

"Cyber Innovation Institute: Strengthening Iowa's Information Technology Research and Economic Development," ISU Research Park Board of Directors, April 2007

"Cyber Innovation Institute: Strengthening Iowa's Information Technology Research and Economic Development," Des Moines Partnership, April 2007

"ISU's Battelle Implementation Progress in Information Technology," Joint House-Senate Economic Development Appropriations Committee, Iowa State House, February 2007

"Human Computer Interaction: An Interdepartmental Graduate Program Success Story," Iowa Board of Regents, November 2006

"Virtual Reality Applications Center: An Engine for Economic Development," Iowa Board of Regents, February 2006

"Virtual Reality Application Center: An Engine for Economic Development," Iowa State University Economic Development Council, February 2006

"Virtual Reality and Human Computer Interaction at Iowa State University," invited guest of ISU President Gregory Geoffroy, Talk of Iowa, WOI radio, November 2005

"Virtual Reality and Human Computer Interaction at Iowa State University," Invited Lecture, Department of Mechanical and Industrial Engineering, University of Iowa, Iowa City, IA, November 2005

* "Interactive Scenegraph Performance Analysis, Diagnosis and Enhancement," ASME International Design Engineering Technical Conferences & Computers and Information in Engineering Conference, Long Beach, CA, September 2005

"Virtual Reality and Human Computer Interaction at Iowa State University," Interactive collaborative presentation, National Governor's Association, Ames/Des Moines, IA, July 2005

"Technological Change: Impact and Opportunities," ISU Foundation Board of Directors, July 2005

"Technological Evolution of Virtual Reality and Human Computer Interaction," Invited Lecture, IBM, Rochester, Minnesota, (also presented at Rochester Rotary Club Luncheon), June 2005

"Technological Change: What's Next?," ASCE Mid-West Regional Student Conference, Iowa State University, Ames, IA, March 2005

"Technological Change: What's Next?," ASME/SAE Joint Regional Meeting, Iowa State University, Ames, IA, February 2005

"Moore's Law and IT Investment," UGS's Pragmatic Marketing's *Practical Product Management* seminar, Ames, IA, December 2004

"Technological Change and its Impact on PLM," Keynote Address, PLM World - Midwest Chapter, Minneapolis, MN, November 2004

"Talk of Iowa," WOI-AM Radio, Guest of President Geoffroy to discuss the ISU Human Computer Interaction Initiative, November 2004

* "Trim Loop Closure for Enhanced CAD Interoperability," ASME Computer and Information in Engineering Conference, Salt Lake City, UT, September 2004

"Virtual Reality and Human Computer Interaction at Iowa State University," Invited Lecture, College of Engineering, Michigan State University, East Lansing, MI, January 2004

"VRAC in the Age of Spiritual Machines," Invited Lecture, Speakers Bureau, Iowa State University, Recruiting talk to 250 high school seniors, January 2004

"Engineering the Future," ICN Investigations, ISU College of Engineering recruiting program interactive broadcast to eight high schools across the state, October 2003

"Engineers as Entrepreneurs," Engineering and Beyond (undergraduate recruiting seminar), ISU College of Engineering, four separate presentations to groups of 40 students, Ames, IA, mid-July 2003

"VRAC in the Age of Spiritual Machines," Invited Lecture, ISU College of Engineering Alumni Days, Ames, IA, May 2003

"From CAD to VR: Challenges and Progress," Invited Lecture, 18th Agricultural Machinery Conference, Cedar Rapids, IA, May 2003

"The Enterprise Tangle: An Unstructured Approach to Enterprise Information Management," Lindbergh Lecture (invited), University of Wisconsin, Madison, February 2003

"VRAC in the Age of Spiritual Machines," Invited Lecture, Association of Information Technology and Management, Des Moines, IA, January 2003

"Engineers as Entrepreneurs," Engineering and Beyond (undergraduate recruiting seminar), ISU College of Engineering, four separate presentations to groups of 40 students, Ames, IA, mid-July 2002

"Internet-enabled Collaborative Solutions for the Extended Enterprise," Executive Briefing hosted by Hewlett Packard, presented in Turin and Bergamo, Italy, July 2000

"The Supply and Demand Chain," Invited Panelist, e-Services World Conference and Exposition, participated with e-commerce technology leaders from Hewlett Packard, I2, Ariba, Cap Gemini and A.T. Kearney, Paris, France, March 2000

"Will the Internet Really Change What Engineers Do?," ISU College of Engineering Destination Day (undergraduate recruiting seminar), Ames, IA, December 1999

"Engineering Opportunities in 'High-Tech': How Technology is Changing Product Development," ISU College of Engineering Destination Day (undergraduate recruiting seminar), Ames, IA, December 1998

"Virtual Reality Applications in Engineering: Research Opportunities for Undergraduates," VR demonstration and presentation for ISU Athletic Department recruiting visits, Ames IA, three consecutive Saturdays, November-December 1997

"Visual Interactive Supercomputing: A New Tool for Science and Engineering," Invited Plenary Speaker, 24th Progress in Quantitative Nondestructive Evaluation, San Diego, CA, July 1997

* "Virtual Prototyping for Concurrent Engineering," First International Immersive Projection Technology Workshop, Fraunhofer Institute for Industrial Engineering, Stuttgart, Germany, July 1997

"Projection-Based Immersive Technology: Opportunities and Challenges," Panel Moderator, Panelists: D. Banek, C. Cruz-Neira, M. Deering, B. Froehlich, M. Hirose, and R. Smith, First International Immersive Projection Technology Workshop, Fraunhofer Institute for Industrial Engineering, Stuttgart, Germany, July 1997

"Virtual Prototyping for Product Development," Technology Update, Deere and Company Executive Council, Moline, IL, July 1997

"Customer Feedback via Virtual Prototyping," Manufacturing Imperatives 2000, Des Moines Convention Center, Des Moines, IA, April 1997

"Virtual Reality Applications in Engineering: Research Opportunities for Undergraduates," VR demonstration and presentation for ISU Athletic Department recruiting visits, Ames IA, three consecutive Saturdays, November-December 1996

"Visual Interactive Supercomputing at Iowa State University," Visual Supercomputing Birds-of-a-Feather, Supercomputing'96, Pittsburgh, PA, November 1996

"A Survey of Research Activities at the Iowa Center for Emerging Manufacturing Technology," Boeing Information and Support Services, Seattle, WA, August 1996

* "Generalized Surface and Volume Decimation for Unstructured Tessellated Domains," IEEE Virtual Reality Annual International Symposium (VRAIS'96), Santa Clara, CA, April 1996

"New Approaches to Graduate Education: An Engineering Perspective," panel presentation, 4th Annual Iowa State University Faculty Conference, Grinnell, IA, March 1996

"A Vision for Virtual Prototyping for Enhanced Product Development," for representatives of Deere and Company, Iowa Center for Emerging Manufacturing Technology, January 1996

* "Assembly Planning and Evaluation in a Synthetic Environment," 24th Midwest Mechanics Conference, Ames, IA, October 1995

* "Generalized Surface and Volume Decimation for Unstructured Tessellated Domains," First Workshop on Simulation and Interaction in Virtual Environments, University of Iowa, Iowa City, IA, July 1995

"Virtual Reality Applications in Research and Education," invited presentation, State of Iowa Board of Regents, Iowa State University, Ames, IA, March 1995

"Unstructured Surface and Volume Decimation of Tessellated Domains," invited seminar, The George W. Woodruff School of Mechanical Engineering, Georgia Institute of Technology, Atlanta, GA, March 1995

"A Virtual Environment for Manufacturing Systems," ONR Virtual Environment Grantee Workshop, Arlington, VA, March 1995

* "A Decimation Scheme for Unstructured Tessellated Domains," poster presentation, 1995 NSF Design and Manufacturing Grantees Conference, University of California, San Diego, CA, January 1995

* "Geometric Design of Turbomachinery Blades on General Stream Surfaces," Symposium on Concurrent Product Design, ASME Winter Annual Meeting, Chicago, IL, November 1994

"A Geometric Framework for Design, Analysis and Manufacture of Turbomachinery Blades," Invited Seminar, Department of Mechanical Engineering, Carnegie Mellon University, Pittsburgh, PA, October 1994

"Parametric Volume Modeler for Interactive Three-Dimensional Grid Generation," NPSS Industrial Review Meeting, NASA Lewis Research Center, October 1994

* "Parametric Volume Models for Interactive Three-dimensional Grid Generation," ASME Design Automation Conference, Minneapolis, MN, September 1994

"Virtual Environment Applications in Design and Manufacturing," 9th ASAE/SAE Agricultural Machinery Conference, Cedar Rapids, IA, May 1994

"Concurrent Engineering Technology," for representatives of Takano, Inc., Iowa Center for Emerging Manufacturing Technology, Ames, IA, May 1994

"A Survey of Surface Modeling Research at Iowa State University," Second DT_NURBS Workshop, Boeing Computer Services, Bellevue, WA, February 1994

* "Research Progress in Surface Modeling Automation," poster presentation, NSF Design and Manufacturing Systems Conference, Massachusetts Institute of Technology, Cambridge, MA, January 1994

"A Framework for Integrated Conceptual Design of Sculptured Surface Models," Invited Seminar, Engineering Design Research Center, Carnegie Mellon University, Pittsburgh, PA, October 1993

"Five-Axis NC Milling Simulation and Dimensional Verification via Dexel Representations," SIAM MCAD Conference, Ann Arbor, MI, May 1993

"A Framework for Integrated Conceptual Design of Sculptured Surface Models," Invited Seminar, Department of Mechanical Engineering, University of Washington, Seattle, WA, April 1993

"Visualization Applications in Design and Manufacturing," Invited Seminar, NSF Industry/University Research Cooperative Program, Center for Non-Destructive Evaluation, Iowa State University, Ames, IA, April 1993

"Manufacturing Visualization and Virtual Reality Applications at Iowa State University," ONR Manufacturing Workshop, Washington, DC, January 1993

* "Toward Automated Generation of Sculptured Surface Models," poster presentation, 1993 NSF Design and Manufacturing Systems Conference, University of North Carolina - Charlotte, Charlotte, NC, January 1993

"A Progress Report on Surface Modeling and Visualization Capabilities," NPSS Industry Review Meeting, NASA Lewis Research Center, Cleveland, OH, October 1992

* "Intersection of Rays with Parametric Envelope Surfaces Representing Five-Axis NC Milling Tool Swept Volumes," ASME Design Automation Conference, Phoenix, AZ, September 1992

"Synthesis of Sculptured Surface Models Incorporating Packaging and Manufacturability Constraints," Invited Seminar, General Motors Technical Center, Warren, MI, August 1992

"Computer Visualization Research at ISU," Invited Seminar, Co-presenter with M.J. Vanderploeg, John Deere Dubuque Works, Dubuque, IA, August 1992

"Research Progress in Applied Surface Modeling," Research Grant Progress Briefing, NASA Lewis Research Center, Cleveland, OH, June 1992

* "Recent Advances in Constrained B-Spline Synthesis," poster presentation, 1992 NSF Design and Manufacturing Systems Conference, Georgia Institute of Technology, Atlanta, GA, January 1992

"Synthesis of Sculptured Surface Models for Concurrent Product and Process Design," Invited Seminar, Department of Mechanical Engineering, University of Iowa, Iowa City, IA, December 1991

"Synthesis of Sculptured Surface Models for Concurrent Product and Process Design," Invited Seminar, Department of Mechanical Engineering, Ohio State University, Columbus, OH, November 1991

"Surface Modeling Research at Iowa State University," Structural Dynamics Research Corporation, Milford, OH, November 1991

* "Synthesis of Spatially and Intrinsically Constrained Curves using Simulated Annealing," 17th ASME Design Automation Conference, Miami, FL, September 1991

"Non-Uniform Rational B-Spline Surface Development for Design and Analysis Applications," NASA Lewis Research Center, Cleveland, OH, September 1991

"Synthesis of Sculptured Surface Models Using Functionality and Manufacturability Design Constraints," Department of Mechanical Engineering, Iowa State University, Ames, IA, March 1991

"Simulated Annealing for Computer-Aided Design," Graduate Group for Applied Artificial Intelligence in Engineering, SUNY at Buffalo, January 1991

* "Efficient Intersection of Surface Normals with Milling Tool Swept Volumes for Discrete Three-Axis NC Verification," 16th ASME Design Automation Conference, Chicago, IL, September 1990

* "Automated Assembly of Planar Closed Loop Mechanisms," 2nd ASME Flexible Assembly Conference, Chicago, IL, September 1990

* "Intersection of Vectors with General Five-Axis Swept Volumes," Poster Session, Manufacturing International '90 Conference, Atlanta, GA, March 1990

* "Gouge Detection Algorithms for Sculptured Surface NC Generation," Symposium on Computer-Aided Design and Manufacture of Cutting and Forming Tools, ASME Winter Annual Meeting, San Francisco, CA, December 1989

"Research Issues in Numerically Controlled Milling," Seminar, co-sponsored by Society of Manufacturing Engineers and Department of Industrial Engineering, State University of New York at Buffalo, October 1989

* "A Vector/Solid Intersection Technique for Three-Axis NC Verification," 3rd International Conference on CAD/CAM, Robotics, and Factories of the Future, International Society for Productivity Enhancement, Detroit, MI, August 1988

"Simultaneous Model Development Project," General Motors Technical Center, Warren, MI, August 1988

"Algorithms for Conversion of PDGS Sculptured Surfaces into Non-Uniform Rational B-Spline Representations," Ford Motor Company, Dearborn, MI, June 1988

* "Graphical Verification of N/C Milling Programs for Sculptured Surface Parts," ASME Winter Annual Meeting, Anaheim, CA, December 1986

"Dimensional Verification of NC Milling Programs for Sculptured Surface Parts," presented at:
General Electric, Corporate R & D, Schenectady, NY, June 1986
Prime Computer Inc., CAD/CAM Division, Framingham, MA, June 1986
Sandia National Laboratories, Albuquerque, NM, August 1986
University of California at Davis, Davis, CA, October 1986
University of Colorado, Boulder, CO, October 1986
Utah State University, Logan, UT, November 1986

University of Minnesota, Minneapolis, MN, November 1986
Structural Dynamics Research Corp., Cincinnati, OH, January 1987
Industrial Technology Institute, Ann Arbor, MI, February 1988
Syracuse University, Syracuse, NY, February 1988
University of Massachusetts at Amherst, Amherst, MA, March 1988
University of Washington, Seattle, WA, April 1988

* "Color Graphic Verification of N/C Milling Programs for Sculptured Surfaces," 10th ACM/ESD Automotive Computer Graphics Conference, Detroit, MI, December 1985

PROFESSIONAL MEMBERSHIPS AND ACTIVITIES

Fellow (2006), ASME International (American Society of Mechanical Engineers), member since 1978

- Associate Editor, *ASME Transactions*, *Journal of Computing and Information Science in Engineering,* 2005-2008, renewed appointment 2008-2011.
- Guest Editor (with A. Kemeny, W. Allen, H. Bulthoff, and F. Merienne), *ASME Transactions*, *Journal of Computing and Information Science in Engineering,* Special Issue on Driving Simulation, March 2011
- Guest Editor (with T. Kesavadas and M. O'Malley), *ASME Transactions*, *Journal of Computing and Information Science in Engineering,* Special Issue on Haptics, Tactile and Multimodal Interfaces, March 2009
- Guest Editor, *ASME Transactions*, *Journal of Computing and Information Science in Engineering,* Special Issue on Virtual Reality for Product Development, June 2004
- Paper Review Coordinator, 9th ASME Design Theory and Methodology Conference, Sacramento, CA, August 1997
- Session Chairman, "Tolerance Analysis," 23rd ASME Design Automation Conference, Sacramento, CA September 1997
- Session Chairman, "Motion Planning," 23rd ASME Design Automation Conference, Sacramento, CA, September 1997
- Session Vice Chairman, "Design Information Modeling," 9th ASME Design Theory and Methodology Conference, Sacramento, CA, September 1997
- Paper Review Coordinator, ASME Design Theory and Methodology Conference, Irvine, CA, August 1996
- Session Chairman, "Virtual Environments for Product Design and Assembly," Computer Aided Concurrent Design Symposium, ASME Design Technical Conferences, Boston, MA, September 1995
- Session Vice Chairman, "Solid and CAD Models," 21st ASME Design Automation Conference, Boston, MA, September 1995
- Session Chairman, "Parametric Surfaces, Projections, and Reverse Engineering," 20th ASME Design Automation Conference, Minneapolis, MN, September 1994
- Session Vice Chairman, "Reverse Engineering and Surface Reconstruction," 19th ASME Design Automation Conference, Albuquerque, NM, September 1993
- Session Chairman, "Expert Systems," ASME International Computers in Engineering Conference, San Francisco, CA, August 1992
- Session Organizer and Chairman, "Geometric Modeling for Automated Manufacture," 17th ASME Design Automation Conference, Miami, FL, September 1991
- Session Chairman, "Integrated CAD/CAM and Geometric Issues in Manufacturing," Symposium on Advances in Integrated Product Design and Manufacturing, ASME Winter Annual Meeting, Dallas, TX, November 1990
- Session Organizer and Chairman, "Geometric Modeling for Automated Manufacture," 16th ASME Design Automation Conference, Chicago, IL, September 1990
- Session Chairman, "Robots and Fixtures in Flexible Assembly," 2nd ASME Conference on Flexible Assembly, Chicago, IL, September 1990

Scientific Committee member, "23rd Driving Simulation and Virtual Reality Conference and Exhibition," Strasbourg, France, September 2024

Scientific Committee member, "22nd Driving Simulation and Virtual Reality Conference and Exhibition," Antibes, France, September 2023

Scientific Committee member, "21st Driving Simulation and Virtual Reality Conference and Exhibition," Strasbourg, France, September 2022

Scientific Committee member, "20th Driving Simulation and Virtual Reality Conference and Exhibition," Munich, Germany, September 2021

Scientific Committee member, "19th Driving Simulation and Virtual Reality Conference and Exhibition," Antibes, France, September 2020

General Chair, COMPSAC Symposium on Human-Machine and Aware Computing (HUMA), IEEE 39th Annual International Computers, Software & Applications Conference, Taichung, Taiwan, July 2015

Scientific Committee member, "3rd World Conference on Innovative Virtual Reality (WINVR 2011)," Milan, Italy, June 2011

International Scientific Committee member, Virtual Concept 2010, Bordeaux, France, October 2010
Co-organizer and Co-Chair, "2nd World Conference on Innovative Virtual Reality (WINVR 2010)," Ames, IA, May 2010

Invited Co-Chair, "Symposium on Augmented and Virtual Reality for Product Design," Virtual Reality International Conference, Laval Virtual, Laval, France, April 2010

Co-Organizer and Moderator, "Get Your Head in the Cloud: Conference on Cloud Computing," Ames, IA, September 2009

Chair, "Emerging Technologies Conference," featuring Keynote address by Gregory Abowd (Georgia Tech Distinguished Professor), Ames, Iowa, April 2009

Co-organizer and Scientific Committee member, "World Conference on Innovative Virtual Reality," Chalon-sur-Saône, France, February 2009

Chair, "Emerging Technologies Conference," featuring Keynote address by Michael Schrage, Iowa State University, April 2008

Chair, "Emerging Technologies Conference," featuring Keynote addresses by Don Norman, Neal Stephenson, and Guy Kawasaki, Iowa State University, April 2007

Chair, "HCI Forum Designing Interaction 2006," Featuring Keynote address by Ray Kurzweil, Iowa State University, April 2006

Co-Chair (with C. Cruz-Neira) 8th International Immersive Projection Technology and Virtual Environments Conference, Ames, IA, May 2004

Session Organizer and Chairman, "Emerging Design Technologies," 24th Midwest Mechanics Conference, Iowa State University, Ames, IA, October 1995

Member, IEEE, Institute for Electrical and Electronic Engineers, 1983

Member, ACM, Association for Computing Machinery, 2010

REVIEWER FOR

Funding Agencies:
- National Science Foundation
  - Engineering Directorate: numerous programs
  - Directorate for Computer and Information Sciences and Engineering
- Aix-Marseille Excellence Initiative A*MIDEX (France)
- Canada Foundation for Innovation

Professional Journals:
- Advances in Engineering Computing (Elsevier)
- Computer Aided Design (Elsevier)
- Computer Aided Geometric Design (North-Holland)
- Engineering Design and Automation
- Institute of Industrial Engineers (IIE) Transactions
- International Journal of Human-Computer Studies
- International Journal of Product Development
- Journal of Manufacturing Systems
- Journal of Supercomputing
- Presence (MIT Press)
- Research in Engineering Design
- Robotics and Computer Integrated Manufacturing
- Scientific Research and Essays
- The Visual Computer, International Journal of Computer Graphics
- Transactions of the ASME, Journal Computing and Information in Science and Engineering
- Transactions of the ASME, Journal of Mechanical Design
- Transactions of the ASME, Journal of Engineering for Industry
- Virtual Reality, Springer Nature

Conference Reviews:
- ACM Solid Modeling
- ASME Computers in Engineering
- ASME Design Automation
- ASME Design Theory and Methodology
- ASME Production Engineering
- IEEE Virtual Reality
- Virtual Concept
- World Conference on Innovative Virtual Reality

Publishers:
- Prentice Hall:
  - *Computer Graphics*, 2nd Edition, Hearn and Baker
- Springer-Verlag:
  - *The NURBS Book*, Tiller and Piegl

BOARDS OF DIRECTORS

Information Technology Council, Iowa Department of Economic Development (2005-2010)
Technology Association of Iowa (2007-2010)

INTERNATIONAL SERVICE

Invited external reader and President of the doctoral Jury for Pierre Raimbaud, PhD Defense (co-tutelle), University of the Andes, Bogota, Colombia and Ecole Nationale Supérieure d'Arts et Métiers, ParisTech, November 2020

Invited external reader and "opponent" for the doctoral Jury of Bjorn Blissing, PhD Defense, Linkoping University, Linkoping, Sweden, October 2020

Invited external reader and member of the doctoral Jury for Jose Alejandro Betancour, PhD candidacy, Pontificia Universidad Javeriana, Bogota, Colombia, December 2018

Invited external reader and member of the doctoral Jury for Diego Hernando Rodríguez, PhD candidacy, University of the Andes, Bogota, Colombia, December 2016

Invited external reader and member of the doctoral Jury for Diego Angulo Pabon, PhD defense, University of the Andes, Bogota, Colombia, December 2015

Invited external reader and "President" of the doctoral Jury for Juan Camilo Ibarra Lopez, PhD defense, University of the Andes, Bogota, Colombia, December 2014

UNIVERSITY SERVICE

Athletics Council Chair, (2024-present)
Athletics Council, Presidential Appointment (2023-2024)
Student Innovation Center Steering Committee (2016-2019)
University Professor Award Evaluation Committee (2013-2019)
Faculty Review Board, Office of the Senior Vice President and Provost (2013-2016)
Senior Vice President and Provost Search Committee (2012)
Research Computing Council (2007-2010)
Great Lakes Consortium for Petascale Computation, ISU Representative (2007-2010)
Research and Economic Development Council (2008-2010)
Computer Advisory Committee (2003-2004)
ISU Human Computer Interaction Initiative Faculty Search Committee, Chair (2002-2004, 2008, 2010)
Application Representative, Internet2 National Committee (1997-1998)
Faculty Mentor, Iowa State University (ISU) Honors Program (1991-1998, 2001-2010)
Faculty Senate Alternate, University at Buffalo, 1989-90
Faculty Mentor, University at Buffalo Honors Program, 1989-91

COLLEGE OF ENGINEERING SERVICE

Promotion and Tenure Committee (2015-2018)
University Lectures Committee, COE representative (2011-2019)
Search Committee Chair, Director of the Center for Nondestructive Evaluation (2017-2018)
Search Committee member, Chair of Electrical and Computer Engineering Department (2009-2010)
Engineering Computer Services and Policy Task Group, ISU College of Engineering (1993-1998)
Silicon Graphics Gift Committee, ISU College of Engineering, Chairman (1994-1998)

DEPARTMENTAL SERVICE

Iowa State University
- Leadership Committee (2013-2015)
- Faculty Search Committee (2011-2012)
- Governance Document Committee, Chair, (2008-2009)
- Executive Committee (2004-2006)
- Course Development, Design (2003-2010)
- Course Development, ME270 (Chair, 2003-2006)

Graduate Program Committee (2003-2006)
Curriculum Committee (2003-2006)
Faculty Recruitment Committee, Chair (2002-2003)
Boyd Laboratory Committee (2002-2004)
Graduate Program Committee (1996-1998)
Computer Committee, Chairman (1992-1998)
Curriculum Committee (1995-1996)
Design Faculty Search Committee, Chair (1996)
Engel Manufacturing Systems Laboratory Committee (1993-1998)
Faculty Advisor of SAE Student Section (1992-1994)

State University of New York at Buffalo
Graduate Studies Committee
Ph.D. Qualifying Exam Committee
Faculty Advisor for SAE Supermilage Vehicle Project
Faculty Advisor for Pi Tau Sigma, National Engineering Honor Society
Faculty Reviewer for Approval Book Program, University at Buffalo
Science and Engineering Library, 1988-1990

START UPS

Visual Medical Solutions (d.b.a. BodyViz), Co-Founder, 2007-present
Arete Software, Founder 1993-1996

CONSULTANT FOR

King & Spalding, LLP, Washington, DC
Prince, Lobell & Tye LLP, Boston, MA
Arnold & Porter Kaye Scholer LLP, Washington, DC
Quinn Emanuel Urquhart & Sullivan LLP, New York, NY
Finnegan, Henderson, Farabow, Garrett & Dunner, LLP, Atlanta, GA
Wood, Herron & Evans, LLP, Cincinnati, OH
Irell & Manella LLP, Los Angeles, CA
Gerson Lehrman Group, Inc., Austin, TX
Burns & Levinson, LLP, Boston, MA
Groover and Associates, PLLC, Dallas, TX
Beem Patent Law, Chicago, IL
Intelligent Automation, Inc., Washington D.C.
Immersive Engineering Inc., Bloomfield Hills, MI
CIMLINC Inc., Troy, MI
Deneb Robotics Inc., Auburn Hills, MI
Engineering Animation Inc., Ames, IA
International TechneGroup Inc., Milford, OH
Jamestown Advanced Products Inc., Jamestown, NY
Outokumpu American Brass, Buffalo, NY
Wendell Engineers, P.C., Amherst, NY
Motor Wheel Corp. (Division of Goodyear Inc.), Lansing, MI