**IREM Y. TUMER, PH.D.**

Associate Dean for Research, College of Engineering
Professor, School of Mechanical, Industrial, and Manufacturing Engineering (MIME)
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*CV Last Revision: 1/2018*

## RESEARCH EXPERTISE:

- Risk and reliability based design
- Model-based design
- System analysis & engineering
- Applications: aircraft, spacecraft, automobiles, power grid, nuclear systems, and renewable energy systems.

## DEGREES EARNED:

| | |
|---|---|
| Ph.D. in Mechanical Engineering, May 1998. | The University of Texas, Austin, Texas |
| M.S.E. in Mechanical Engineering, May 1995. | The University of Texas, Austin, Texas |
| B.S. in Mechanical Engineering, December 1991. | The University of Texas, Austin, Texas |

## POSITIONS HELD:

| **Oregon State University** | ***2006 to Present*** |
|---|---|
| Associate Dean for Research, College of Engineering | 2013-Present |
| Professor, School of Mechanical, Industrial, and Manufacturing Engineering | 2013-Present |
| Associate Professor with indefinite tenure, School of MIME | 2010-2013 |
| Associate Professor, School of MIME | 2006-2010 |

| **NASA Ames Research Center** | ***2000 to 2006*** |
|---|---|
| Senior Research Scientist (GS Level 15), Intelligent Systems Division | |
| Deputy Area Lead, Diagnostics and Systems Health, Intelligent Systems | 2005-2006 |
| Group Lead, Complex Systems Design | 2003-2006 |
| Deputy Project Lead, Integrated Systems Health Management, Exploration Systems Mission Directorate | 2005-2006 |
| Deputy Program Manager, System Reasoning and Risk Management, Engineering for Complex Systems Program | 2002-2003 |
| Program Manager, Core Risk Research, Engineering for Complex Systems Program | 2001-2004 |
| Program Manager, Intelligent Systems Program | 2001-2003 |

| **Caelum Research Corporation/Computer Sciences Corporation** | ***1998 to 2001*** |
|---|---|
| Research Scientist, Computational Sciences Division, NASA ARC | |
| Technical Lead, Integrated Health and System Monitoring Group | |

## DIRECTORSHIPS AND ADVISORY BOARDS:

- **Technical Advisory Committee member.** UI Labs Digital Manufacturing and Design Innovation Institute (DMDII) 2015-2017
- **R&D Board member.** Oregon Manufacturing Innovation Center 2016-Present
- **Co-Director:** NSF I-Corps Site, Oregon State University 2015-Present
- **Co-Director:** NSF I/UCRC Center for e-Design Site, Oregon State University 2014-Present

**LEADERSHIP EXPERIENCE:**

- **As Associate Dean for Research, College of Engineering, Oregon State University (2013-Present)**:
    - *Key accomplishments for the College:*
        - Doubled the research grants received
        - Increased research expenditures by 50%
        - Doubled the number of proposal awarded
        - Quadrupled the number of large proposal submissions
        - Tripled NSF CAREER and Young Investigator awards
        - Led the partnering with 4 Manufacturing USA Institutes and facilitated the forming of robotics and AI institute.

    - *Leadership training:*
        - Academy for Innovative Higher Education Leadership. By Arizona State University & Georgetown University. 2015-2016.
        - Executive Coaching by Kate Ebner. The Nebo Company. 2015-2016.
        - Communication. Executive Coaching by Dave Yewman. Elevator Pitch, Inc. 2015-2016.
        - Fund-raising. Optimizing Philanthropic Opportunities. Advancement Resources. 2015-2017.

    - *Leadership activities:*
        - College of Engineering Strategic Planning retreats. By the Napa Group. 2014-2015.
        - College of Engineering Team Building retreats. By Paul Axtell. 2014-2015.
        - College of Engineering Diversity and Inclusion Retreat. By Cardia Group. 2015.
        - Oregon State University NSF ADVANCE workshop on Difference, Power, and Discrimination (2-week long immersive workshop.) 2015.

    - *Mentoring and Faculty Development:*
        - Formed and hosted New Faculty Development Workshop internal series. 2013-present.
            Topics: Promotion and tenure, Time management, budget management, grant writing, agency contacts, teaching, NSF CAREER proposals, industry partnering, mentoring.
        - Hosted grant writing seminar and 1-on-1 coaching workshops from *Grant Writers' Seminars & Workshops*. 2016-Present.
        - Hosted grant writing workshop by *Grant Writing Central*. 2014.
        - Hosted mentoring workshop by Kerry Ann Rockquemore from the *National Center for Faculty Development and Diversity*. 2015.
        - Hosted quarterly networking meetings with new women faculty. 2015-2016.
        - Hosted the NSF CAREER Proposal Writing Workshop at Oregon State University. 2017.

    - *Proposal Development & Support Infrastructure:*
        - Formed and led the Office of Research and Economic Development support (Budget: ~$2M/year; 5 direct reports;). 2013-present.

    - *Fund raising and major gifts:*
        - Autodesk unrestricted gift for research. 2016.
        - Bonneville Power Administration and Oregon Best gift. 2016.
        - Cordy gift for Student Aid. 2016.
        - Keck Foundation gift for research. 2013.
        - Loughmiller gift for Faculty Innovation Fund. 2013.
        - NSF I/UCRC Center for e-design industry memberships. 2012-now.

    - *Large initiatives:*
        - OSU Lead for the state-wide Oregon Manufacturing Innovation Center (OMIC) initiative.
        - Formation of strategic partnerships with national labs in the Pacific Northwest.
        - Formation of two large institute/center efforts (Robotics, Autonomy, and Intelligent Systems; Cascadia Resilience Initiative.)
        - Partnering on 8 NNMI institute proposal efforts (Partners in two winning NNMI institutes.)
        - Establishment of lasting industry partnerships (Nike, Autodesk, PCC, Daimler Trucks, HP.)

- **As Faculty, Mechanical, Industrial, and Manufacturing Engineering, Oregon State University:**
    - Area Lead for Design and Mechanics Technical Area.
    - Lead, Complex Engineered Systems Design Laboratory.
    - Lead in >$6M in funding received in 10 years (Faculty Researcher Award in 2010).
    - Mentor for 5 Ph.D. Students (out of 7 total) and 2 Postdocs for placement into academic positions.
    - Area representative in the Graduate Program Committee.
    - Lead in multiple large collaborative initiatives (Research Collaboration Award in 2012).
    - Government Liaison, ASME Design Engineering Division.
    - Associate Editor for multiple journals.
    - Conference and Program chair in major conferences.

- **As Senior Research Scientist and Program Manager, NASA Ames Research Center:**
    - Formed and led a research group in complex system design (10+ direct reports; ~$2.5M/yr budget)
    - Deputy area lead, Diagnostics and Systems Health, Intelligent Systems (50+ people)
    - Deputy Project Lead, Integrated Systems Health Management (ISHM), ESMD (~$8M/yr budget)
    - Program Management in 3 different NASA programs:
        - Deputy Program Manager, SRRM/Engineering for Complex Systems Program (Level 2; ~$7M/yr budget)
        - Program Manager, CRR/Engineering for Complex Systems Program (Level 3; ~$4M/yr budget)
        - Program Manager, Intelligent Systems Program (Level 3; ~$1M/yr budget)

**CONSULTING:**

*September 2014-March 2015:* NuScale Power, Inc.
Reviewed systems engineering practices and proposed risk-based decision making methodology.

*May 2013-September 2013:* SGT at NASA Ames Research Center
Worked with Robust Software Engineering group for model-based embedded system design and verification.

*July 2012-August 2012:* Aalto University, Finland
Worked with faculty to visit Finnish industry and government to present on system design approaches.

*August 2012-September 2012:* SGT at NASA Ames Research Center
Mapped risk analysis to verification.

*August 2011-September 2011:* SGT at NASA Ames Research Center
Worked with Robust Software Engineering group for consulting on design rationale capture for verification.

*May 2010-August 2012:* Aalto University, Finland
Worked with faculty and Finnish industry on design-stage failure analysis methods for nuclear systems.

*August 2010:* SGT at NASA Ames Research Center
Worked with Robust Software Engineering group on testbed design for co-verification.

*July 2010:* San Jose State University Foundation at NASA Ames Research Center
Worked with Human Systems group on design process for design rationale capture.

*August 2009:* SGT at NASA Ames Research Center
Worked with Robust Software Engineering group on verifiability analysis and system-level models.

*August 2008:* RIACS at NASA Ames Research Center
Established connections between hardware and software design and developed system and behavioral model.

**PROFESSIONAL ACTIVITIES:**

**Funding:**

***2006-Present as Faculty at Oregon State University****:*

**Full Proposals:**

- ***NSF CCF-0741584***: A Theory of Design Decisions. PI: **Irem Y. Tumer**, Martin Erwig, EECS, Oregon State University. Funded by **NSF**/CCF/Science of Design. June 2007. Total funding**: $199,999**.
- ***NSF CBET-0742698***: Collaborative Research: VOICED--A Virtual Organization for Innovation in Conceptual Engineering Design. PI: **Irem Y. Tumer**, Robert Stone and Dan McAdams, UMR, Matthew Campbell, UT Austin, Cari Bryant, PennState. Funded by **NSF**/CBET Engineering Virtual Organization program. July 2007. Total funding: **$200,000**.
- ***AFOSR FA9550-08-1-0158:*** A Framework for Designing Reliable Software-Hardware Systems. PI: **Irem Y. Tumer**, Carol Smidts, Ohio State University. Funded by **AFOSR**/Software and Systems Program/Mathematics, Information, and Life Sciences. March 2008-November 2010. Total funding: **$575,000**.
- ***NSF CMMI-0928076***: Collaborative Research: Quantifying Creativity in Automated Design Through a Multiagent Coordination Framework. PI: **Irem Y. Tumer**, Kagan Tumer, OSU. Funded by **NSF/CMMI** Engineering Design and Innovation. September 2009-August 2013. Total funding: **$440,000**.
- ***JPL 910***: Integration of Risk as a Tradeable Parameter in Team-X Using ModelCenter. PI: **Irem Y. Tumer**. Funded by **NASA Jet Propulsion Laboratory**. March 2010-September 2010. Total funding: **$22,105**.
- ***NASA NNX10AJ92G:*** Design-Stage Safety Consideration for Critical Systems Through ISHM and Formal Verification and Validation. PI: **Irem Y. Tumer.** Funded by **NASA Ames Research Center**. August 2010-September 2011. Total funding: **$309,000**. (Year 1: $56,038)
- ***NSF CMMI-1030060*****:** GOALI/Collaborative Research: A Methodology for Utility-Based Decision Making in Large Design Organizations Using Empirically-Derived Risk Indicators. PI: **Irem Y. Tumer,** Toni Doolen, OSU and Rich Malak, TAMU. Funded by **NSF/CMMI** Engineering Design and Innovation. September 2010-August 2013. Total funding: **$450,000.**
- ***DARPA-META-II (Subaward to PARC, DARPA Contract FA8650-10-C-7079)*****:** Formal Co-Verification of Correctness of Large Scale Cyber Physical Systems During Design. PI: **Irem Y. Tumer**, Serdar Uckun (PI—Lead Institution/PARC). Funded by **DARPA**/META-II DARPA-BAA-10-59, October 2010-September 2011. Total funding: **$378,000**. (Total funding for proposal team: **$3,344,000**.)
- ***DARPA META-X (Subaward to Vanderbilt University, DARPA Contract FA8650-10-C-7075)***: Probabilistic Requirements Verification Through Uncertainty Propagation. PI: **Irem Y. Tumer**. October 2011-September 2012. Total funding (***Bridge Funds + Phase Ib):*** **$255,552**.
- ***DARPA META-X (Subaward to Vanderbilt University, DARPA Contract)***: Probabilistic Requirements Verification Through Uncertainty Propagation. PI: **Irem Y. Tumer**. February 2013-March 2014. Total funding (***Phase II):*** **$206,559**.
- ***NASA (Subaward to University of Alabama, Huntsville, NASA Contract NNM11AA01A):*** Reliability and Functional Failure Analysis of Complex Cyber-Physical Systems. PI: **Irem Y. Tumer**. March 2012-September 2013. Total funding: **$70,000 ($40K Phase I, $30K Phase II).**
- ***DARPA C2M2L (Subaward to PARC.)*** A Fault Augmented Model Extension Framework for Supporting Verification under the Presence of Faults. Funded by DARPA-BAA-12-30. PI: **Irem Y. Tumer**. July 2012-August 2013. Total Funding: **$397,332**.
- ***NASA (Subaward to Carnegie Melon University.)*** Verification of Complex Engineered Systems. PI: **Irem Y. Tumer**. January 2013-September 2013. Total Funding: **$80,617**.
- ***NSF I/UCRC***. Center for e-Design. PIs: **Irem Y. Tumer,** Robert Stone. February 2013-March 2014. Total Funding: $**13**,**000** (Planning Grant).
- ***NSF I/UCRC***. Center for e-Design. PIs: **Irem Y. Tumer,** Robert Stone. March 2014-February 2019. Funding: $**300**,**000** (NSF), $**150**,**000**/year (Membership).
- ***Keck Foundation.*** New Shape Shifting Materials for Energy Storage and Conversion. PIs: A.P. Greaney, B. Gibbons, **Irem Y. Tumer,** Robert Stone. February 2014-January 2017. Funding: $**1**,**000**,**000**.
- ***NSF CMMI-1363509***. Collaborative Research: Improving the Safety of Complex Engineered Systems by Identifying Failure Paths Early in the Design Process. PIs: **Irem Y. Tumer**, Chris Hoyle, OSU, and David Jensen, University of Arkansas. August 2014. Total Funding: $**400**,**000**.
- ***NSF CMMI-1363411***. Designing Complex Engineering Systems using Multi-Agent Coordination Approaches. PIs: Irem Y. Tumer, Kagan Tumer. August 2014-July 2016. Total Funding: **$200,000**.
- ***NSF IIP-1450424***. I-Corps Site: Oregon State University Advantage Accelerator Program Enhancements Toward an NSF I-Corps Site. PIs: Karl Mundorff, **Irem Y. Tumer**. March 2015-February 2018. Total Funding: **$300,000**.

- ***NASA NNX15AQ90G***. Tools to Support Autonomy in Aviation. PI: Robert Stone, Chris Hoyle, **Irem Y. Tumer**. September 2015-August 2016. Total Funding: **$80,000.**
- ***NSF CMMI-1562027.*** Designing Failure-Tolerant Complex Engineering Systems. PI: **Irem Y. Tumer**. September 2016-August 2019. Total Funding: **$466,430.**
- ***NSF CMMI-167179.*** Workshop: Designing Systems to Address Global Challenges. PI: **Irem Y. Tumer.** September 2016-August 2018. Total Funding: $**49,999.**
- ***NSF CMMI-1627179***. NSF CAREER Faculty Early Career Development Workshop. PI: Brad Kramer (KSU), co-PI: **Irem Y. Tumer**. April 2017. Total Funding: **$49,999**.
- ***NASA NS295A***. Center for edesign: Distributed Optimization to Support Complex System Design. PI: Chris Hoyle, co-PI: **Irem Y. Tumer**. September 2017. Total Funding: **$40,000.**
- ***NASA NS294A.*** Center for edesign: Verification and Validation of Human Centric Operations in Large Scale Systems. PI: Onan Demirel, co-PI: **Irem Y. Tumer**. September 2017. Total Funding: **$40,000.**

**Gifts and Seed Grants:**

- **Autodesk.** Integration of Autodesk into Computational Design Curriculum. PIs: Irem Y. Tumer. September 2017. Total Funding: **$50,000**.
- **Autodesk.** Developing a Computational Design Framework. PIs: Irem Y. Tumer and Matthew Campbell. May 2016. Total Funding: **$50,000**.
- **Oregon BEST**: Developing a System Analysis and Integration Framework for Early Design Trades in Sustainable Building Design. **PI: Irem Y. Tumer**, Ihab Elyazadi (Co-PI at U. of Oregon). NEAA/Better Bricks through BEST. Total Funding Requested: $**25,000**. December 2010. OSU Share: **$10,647**.
- **MIME** School seed proposal: Understanding and Modeling Design Uncertainty in Real-World Organizations. **PI: Irem Y. Tumer**, with Toni Doolen, MIME, Oregon State University. Funded by School of Mechanical, Industrial, and Manuf. Engineering, OSU. December 2007. Total funding: **$25,000**

**NSF REU Supplements:**

- **NSF CMMI-1543705**: Research for Undergraduate Supplement (REU) to NSF CMMI-1363509: Collaborative Research: Improving the Safety of Complex Engineered Systems by Identifying Failure Paths Early in the Design Process. **PI: Irem Y. Tumer**. Funded by NSF/CMMI Engineering and System Design. May 2015. Total funding: **$6,000**.
- **NSF CMMI-1249495**: Research for Undergraduate Supplement (REU) to NSF CMMI-1030060: A Methodology for Utility-Based Decision Making in Large Design Organizations Using Empirically-Derived Risk Indicators. **PI: Irem Y. Tumer**. Funded by **NSF**/CMMI Engineering Design and Innovation. April 2012. Total funding: **$12,000**.
- **NSF CMMI-1129404**: Research for Undergraduate Supplement (REU) to NSF CMMI-1033407: Quantifying creativity in automated design through a multiagent coordination framework. **PI: Irem Y. Tumer**. Funded by NSF/CMMI Engineering Design and Innovation. March 2011. Total funding: **$12,000**.
- **NSF CMMI-1127771**: Research for Undergraduate Supplement (REU) to NSF CMMI-1030060. GOALI/Collaborative Research: A Methodology for Utility-Based Decision Making in Large Design Organizations Using Empirically-Derived Risk Indicators. **PI: Irem Y. Tumer**. Funded **by NSF**/CMMI Engineering Design and Innovation. February 2011. Total funding: **$12,000**.
- **NSF CMMI-1033407**: Research for Undergraduate Supplement (REU) to NSF CMMI-1033407: Quantifying creativity in automated design through a multiagent coordination framework. **PI: Irem Y. Tumer**. Funded by NSF/CBET Engineering Design and Innovation. April 2010. Total funding: **$12,000**.
- **NSF CMMI-0939515**: Research for Undergraduate Supplement (REU) to NSF CBET-0742698: Collaborative Research: VOICED--A Virtual Organization for Innovation in Conceptual Engineering Design. **PI: Irem Y. Tumer**. Funded by NSF/CBET Engineering Design and Innovation. July 2009. Total funding: **$6,000**.
- **NSF CBET-0742677**: Research for Undergraduate Supplement (REU) to NSF CBET-0742698: Collaborative Research: VOICED--A Virtual Organization for Innovation in Conceptual Engineering Design. **PI: Irem Y. Tumer**. Funded by NSF/CBET Engineering Design & Innovation. July 2008. Total funding: **$6,000**.

***2005-2006 as Group Lead at NASA Ames (Total as PI: $2.5M)***

- Crew Launch Vehicle ISHM Design, Constellation Program, ESMD. 2005-06.
- Crew Exploration Vehicle ISHM Analysis & Optimization, Constellation, ESMD. 2005-06.
- ISHM Project, Exploration Systems Research & Technology Program, ESMD. 2005-06.
- Aging Aircraft Project, Aircraft Safety Program, ARMD. 2005-06.
- Hypersonic Flight Project, Fundamental Aeronautics Program, ARMD. 2005.

***1998-2005 as Senior Research Scientist at NASA Ames (Total as PI: $2.4M)***

- SRRM/ACST/ESMD Program: Function-based design and Failure Modes Analysis (**$750K**, FY05)
- ISHM/CDS/ESMD Program: Modeling and optimization of ISHM Systems (**$350K**, FY05)
- IS/IDU Program: Anomaly detection for failure-free aerospace missions (**$300K**, FY03-04)
- SRRM/ECS Program: Design for failure-free missions (**$300K**, FY02-04)
- Collaborative Engineering Environments/ECS Program: Risk quantification and decision management for human-agent design teams (**$400K**, FY04)
- CICT Program: Design for Vehicle Health Monitoring (**$150K**, FY00-FY02)
- Information Technology Strategic Research (ITSR Program): Condition-Based Maintenance: Analysis and Understanding of Compressor Vibration Data (**$150K**, FY99-FY00)

**Technical Conference Service:**

***Conference Chair:***

- International Design Theory and Methodology Conference, ASME IDETC/CIE. Chicago, IL. 2012.
- Design for Manufacturing Conference, ASME IDETC/CIE. Montreal, Canada. 2002.

***Program Chair:***

- International Design Theory and Methodology Conference. ASME IDETC/CIE. Washington, DC. 2011.
- First Annual IEEE Reliability Prognostics and Health Management Symposium. Denver, CO. 2008.
- Design for Manufacturing Conference, ASME IDETC/CIE. Pittsburg, PA. 2001.

***Local Chair:***

- Third Annual Prognostics and Health Management Conference, Portland, OR. 2010.

***Conference Co-Organizer/Program Committee Member:***

- SHM 2011: International Workshop on Software Health Management, Palo Alto, CA. 2011.
- AFRL Integrated Systems Health Management Conference, Cincinnati, OH. 2007.
- Integrated Systems Health Engineering and Management Forum, Napa, CA. 2005.

***Symposium/Workshop Organizer and Chair:***

- Symposium Co-Organizer and Co-Chair, Model Based System Design & Verification. 2012 Computers in Engineering Conference, IDETC&CIE 2012.
- Symposium Co-Organizer and Co-Chair, Integrated Systems Engineering. 2007 Computers in Engineering Conference, IDETC&CIE 2007.
- Symposium Co-Organizer and Co-Chair, Integrated Systems Engineering. 2008 Computers in Engineering Conference, IDETC&CIE 2008.
- Symposium Co-Organizer and Co-Chair, Systems Engineering and Information and Knowledge Management. 2009 Computers in Engineering Conference, IDETC&CIE 2009.
- Symposium Co-Organizer and Co-Chair, Prognostics and Health Management. 2009 Computers in Engineering Conference, IDETC&CIE 2009.
- VOICED Workshop Co-Organizer, IDETC&CIE2008.

***Invited Workshops and Panels:***

- Invited Speaker, Singapore NSF CMMI CAREER Proposal Writing Workshop. St. Louis, MO. March 2016.
- NSF Workshop on Modeling and Simulation. Arlington, VA. January 2016.
- New Faculty Orientation: Panel on Perspectives from Funding Agencies. Corvallis, OR. October 2015.
- NSF Workshop: Design Circle. Clemson, VA. November 2015.
- NSF Panel on Complex System Engineering & Design. Boston, MA. August 2015.
- Systems Engineering Panel, American Nuclear Society Annual Conference. Anaheim, CA. 2014.
- NSF Workshop on Mutual Mentoring: Moving Beyond One-Size-Fits-All Mentoring. Buffalo, NY. 2014.
- NSF/NASA Workshop on Large-Scale Complex Engineered Systems: From Basic Research through Product Realization. Arlington, VA. February 2012.
- System Engineering Consortium, Center for System Studies, University of Alabama. Huntsville, AL. December 2011.
- Invited Speaker, Workshop on New Faculty & Success Tips for Academia**.** International Manufacturing Science and Engineering Conference (MSEC). Corvallis, OR. June 2011.

- NSF Workshop on Bio-Inspired Design. Palo Alto, CA. March 2011.
- Design Frontiers Symposium- University of Michigan. May 19, 2011.
- NSF Workshop on Women in Engineering. San Diego, CA. September 2010.
- NSF Workshop on The Future of Multidisciplinary Design Optimization/Complex Systems Design. Multidisciplinary Analysis & Optimization (MA&O) Conference, Forth Worth, TX. Sept. 2010.
- Workshop on Complex System Design, Engineering of Complex Systems. September 2009.

***Special Panel and Track Organizer:***

- Organizer, Integrated Systems Engineering Panel. Computers in Engineering Conference, IDETC&CIE 2007.
- Co-organizer and session chair, Current Challenges in Systems Engineering. 2006 ASME Computers in Engineering Conference, IDETC&CIE 2006.
- Co-organizer, Simulation based design under uncertainty, 2006 ASME Design Automation Conference, IDETC & CIE 2006.
- Organizer, Risk Based Design Panel (with Steve Prusha and Dr. Erik Antonsson, Jet Propulsion Laboratory.) Int'l Design Theory & Methodology Conference. 2004.
- Organizer, Risk Based Design Panel (with Dr. David Ullman, Robust Decisions Inc.) Int'l Design Theory & Methodology Conference. IDETC & CIE 2003.

***Session Chair (2000-Present):***

- International Design Theory and Methodology Conference, ASME IDETC/CIE
- Computers in Engineering Conference, ASME IDETC/CIE
- Design Automation Conference, ASME IDETC/CIE
- Prognostics and Health Management Conference, PHM 2010
- Design for Manufacturing Conference, ASME IDETC/CIE
- Mechanical Vibration and Noise Conference, ASME IDETC/CIE
- IEEE Aerospace Conference
- AFRL Integrated Systems Health Monitoring Conference
- Meeting of the Society for Machinery Failure Prevention

***Tutorials Chair:***

- Design for Manufacturing Conference, ASME IDETC. 1999.

***Review Coordinator (2000-Present):***

- International Design Theory and Methodology Conferences
- Design Automation Conferences
- Design for Manufacturing and Lifecycle Conferences
- Computers in Engineering Conferences
- Prognostics and Health Management Conferences

***Technical Committee Participation:***

- **Government Relations Chair,** ASME Design Engineering Division Committee. 2008-2011.
- **Member of the Steering Committee**, NSF Workshop on The Future of Multidisciplinary Design Optimization/Complex Systems Design. *Multidisciplinary Analysis & Optimization (MA&O) Conference*, Forth Worth, TX. September 2010.
- **Member of the Scientific Organizing Committee**, International Conference On Engineering Design, ICED'09, Stanford, CA. August 2009.
- **Member of the Organizing Committee**, Prognostics and Health Management Conference, PHM'09, San Diego, CA. Sept. 2009.
- **Technical Committee Vice-Chair**, Systems Engineering & Information and Knowledge Management (SEIKM) Technical Committee, Computers in Engineering Conference, IDETC&CIE 2009.
- **Technical Committee Vice-Chair**, Integrated Systems Engineering Technical Committee, Computers in Engineering Conference, IDETC&CIE 2008.
- **Member of the Technical Committees** for Design Theory and Methodology Committee; Design for Manufacturing Committee; Design Automation Conference Committee; Risk, Safety and Failure Prevention Committee; Computers in Engineering; AFRL ISHM Conference; IEEE Prognostics and Health Management Committee. 2000-Present.

**Other External Service:**

- **Associate Editor,** ASME Journal of Mechanical Design. July 2012-present.
- **Invited Guest Editor,** AIEDAM Journal. Special Issue on Design of Complex Systems. 2013-2014.
- **Invited Guest Editor,** ASME Journal of Mechanical Design. Design under Uncertainty. 2011-2012.
- **Associate Editor,** International Journal of Prognostics and Health Management. 2008-2013.
- **Editorial Board,** Journal of Engineering Design. 2013-Present.
- **Editorial Board,** Research in Engineering Design. 2013-Present.
- **Advisory Board,** Conference on Design Computing and Cognition (DCC'16). 2015-2016.
- **Scientific Committee,** NTNU - Department of Engineering Design and Materials. 2015-Present.
- **Scholarship Committee co-Chair,** Society of Women Engineers, Willamette Valley Chapter. 2014-2016.
- **Section Representative**, Society of Women Engineers, Willamette Valley Chapter. 2017-Present.
- **Member of the Systems Engineering Consortium,** University of Alabama and NASA Marshall**.** 2010-2012.
- **Invited Reviewer**, NSF Review Panels (recurring). DMDII Review Panels. 2007-Present.
- **External Reviewer** for Promotion & Tenure cases. 2014-Present.
- **Technical Reviewer:**
    - ***Journals***
        - ASME Journal of Mechanical Design
        - ASME Journal of Vibration and Acoustics
        - Journal of Reliability and Maintenance
        - ASME Journal of Computing and Information Science in Engineering
        - Research in Engineering Design
        - Journal of Engineering Design
        - Design Studies
        - Artificial Intelligence in Engineering Design and Manufacturing
        - Journal of American Helicopter Society
        - Quality and Reliability Engineering International Journal
        - Mechanical Systems and Signal Processing
        - Journal of Manufacturing Science and Engineering
        - Risk Analysis Journal
        - Journal of Loss Prevention in the Process Industries
        - International Journal of Prognostics and Health Management
        - Journal of Advances in Engineering Education
    - ***Conferences***
        - Design Society, International Conference on Engineering Design
        - Design Society, Design Cognition & Computation
        - ASME Design Theory and Methodology Conferences
        - ASME Design for Manufacturing and Lifecycle Conferences
        - ASME Design Automation Conferences
        - ASME Computers In Engineering Conference
        - Prognostics and Health Management Conference
        - AFRL Integrated Systems Health Management Conference
    - ***NASA:*** SBIR & STTR proposals; NRA proposals

**University Service at OSU:**

- College of Engineering Liaison, ARCS Foundation. 2016-Present.
- Organizer, New Faculty Development Workshops, College of Engineering. 2013-Present.
- Member Boeing Professorship Search Committee, MIME, Oregon State University. 2016.
- Member, Search Committee for Vice-President for Research, Oregon State University. 2014-2015.
- Member, Search Committee for Associate Dean for Research, College of Agricultural Sciences. 2015.
- Member, Search Committee, Senior Program Manager for OSU Accelerator, College of Business. 2015.
- Member, Faculty Search Committee. MIME, Oregon State University. 2014-2015.
- Ex-Officio Member, Engineering Research Council. 2014-Present.
- Design/Mechanics Area lead. MIME. 2011-2013.
- Member, Oregon BEST Project Manager Search Committee. 2013.
- Member, Boeing Professorship Search Committee, MIME. 2013.
- Chair, Faculty Search Committee, MIME. 2012-13.

- Member, School of MIME Head Search Committee. 2012-13.
- Member, Faculty Search Committee, MIME. 2013-1014.
- College of Engineering Research Council, MIME representative. 2011-2013.
- Member, Faculty Search Committee, IME. 2011-12.
- New Faculty Mentor, Chris Hoyle, MIME. 2011-Present.
- New Faculty Mentor, Matt Campbell, MIME. 2013-Present.
- Design/Mechanics Area, Seminar Organizer (ME 507). 2008-2013.
- ASME Student Section Faculty Advisor. 2009-2011.
- Organizer and Host at OSU, ASME Student Professional Development Conference. April 2010.
- Undergraduate Program Committee, Design area representative, MIME. 2009-2010.
- Member, Boeing Professorship Search Committee, MIME, Oregon State University. 2009.
- Chair, Faculty Search Committee, MIME. 2008-2009.
- Member of the Vision Committee, MIME. 2007-2011.
- Graduate student recruitment, Design area representative: Reviewed all Design area applicants, arranged all design area activities. 2006-2013.
- Member, Faculty Search Committee, IME. 2007-2008.
- Yearly Participation in MIME's Industry Advisory Board meetings. 2007-2010.
- Invited and hosted speakers for MIME seminar series or ME 519, ME 516 seminars. 2007-2012.
- Organized student teams for the ASME Student Design Competition as part of ME382. 2008-09.

**NASA Service:**

- Group Lead, Complex System Design Group, Intelligent Systems Division, NASA ARC (size: 9 full time people and 3 graduate students; ~$2.5M/yr.) 2003-2006.
- Deputy Area Lead, Diagnostics and Systems Health Area, Intelligent Systems Division, NASA ARC (size: 50+ people.) 2005-2006.
- Deputy Project Lead, the Integrated Systems Health Management (ISHM) Project, Exploration Technology Development Program (ETDP), Exploration Systems Mission Directorate (ESMD) (~$8M/yr.) 2005-2006.
- Level 3 Project Manager, Core Risk Research (CRR) project in the Engineering for Complex Systems (ECS) program. (~$4M/yr.) 2001-2004.
- Deputy Level 2 Program Manager, System Reasoning and Risk Management (SRRM) thrust in the Engineering for Complex Systems (ECS) program (~$7M/yr.) 2002-2003.
- Level 3 Program Manager, Intelligent Systems Program. (~$1M/yr.) 2001-2003.
- ISHM Design lead at NASA ARC, ISHM core team for the Crew Launch Vehicle (CLV) and for the Crew Exploration Vehicle (CEV), Constellation Program, ESMD. Oct. 2005-2006. Lead for ISHM System Analysis & Optimization, Risk Modeling team for the Simulation-Based Acquisition project, ESMD. 2004-2005.
- Lead for the critical events risk analysis activity sponsored by the NASA Chief Engineer in response to the DIAZ report in the Columbia Accident Investigation Board results. 2004-2005.
- NASA ARC Point of Contact for the proposal team, Aging Aircraft & Durability/Aircraft Safety Program, Aeronautics Research Mission Directorate (ARMD). 2005-2006.
- NASA ARC Architecture Design lead for the proposal team, Integrated Vehicle Health Monitoring/Aircraft Safety, ARMD. 2005-2006.
- Member of the planning and proposal writing team for the Robotic Lunar Exploration Program.
- Member of the Computers, Software, & Automation Integrated Discipline Team, Advanced Planning and Integration Office (APIO) road-mapping efforts for ESMD's Constellation Program. 2005.
- Planning and presentations at non-advocate reviews, ATAC reviews, NRC reviews, internal program and management reviews, Preliminary Design Reviews.
- Technical Monitor on 11 academic research grants and contracts.

**Presentations (excluding presentations for conference papers)**:

- Invited keynote presentation on Design-Test-Build: Computational Design at the International Design Centre, Singapore University of Technology and Design. Singapore. 2017.
- Invited keynote presentation on complex system design at the International Design Centre, Singapore University of Technology and Design. Singapore. 2016.
- Invited presentation on Complex Systems Engineering & Design. American Society of Mechanical Engineers IDETC/CIE. 2015. Boston, MA. 2015.

- Invited presentation on Systems Engineering. American Nuclear Society Annual Conference. Anaheim, CA. 2014.
- Invited presentation, AFRL Safe and Secure Systems and Software Symposium. Dayton, OH. 2011.
- PI Presentation and Demo, DARPA Meta-II PI meeting. Nashville, TN. May 2011.
- PI Presentation and Demo, DARPA Meta-II PI meeting. Bellevue, WA. March 2011.
- Invited presentation, AFRL Safe and Secure Systems and Software Symposium. Dayton, OH. 2010.
- Invited presentation, Helsinki University of Technology, Finland. MIDE Workshop. June 2010.
- Invited panelist and presentation, ASME Mechanical Engineering Education Conference, Newport Beach, CA, March 2010.
- Invited presentation at Portland State University, Portland, OR. December 2009.
- Invited panelist, the PHM Education Panel, Prognostics & Health Management (PHM) Conference, San Diego, CA. October 2009.
- Invited presentation, Helsinki University of Technology. CRECOS workshop. September 2009.
- Poster presentation at the NSF CMMI Grantees Conference, Honolulu, HI. June 2009.
- AFOSR PI meeting, Software and Systems Program. June 2009.
- AFOSR PI meeting, Software and Systems Program. June 2008.
- Seminar for the Mentors & Mentees Program, Women and Minorities in Engineering, Oregon State University. April 2008.
- Seminar at Oregon State University, Mechanical Engineering Department. February 2007.
- Seminar at the Materials Science Seminar Series. February 2007.
- Invited talk at the Lockheed Martin Prognostics and Health Management Conference, Bethesda, MD. June 2006.
- Seminar at MIT, Mechanical Engineering Department & Engineering Systems Division. May 2006.
- Seminar at Oregon State University, Mechanical Engineering Department. April 2006.
- Seminar at the University of Maryland, Mechanical Engineering Department. April 2006.
- Seminar at the University of Southern California, ME Dept Seminar Series. March 2006.
- Invited presentation on Applications of Design Optimization. Clemson University, February 2006.
- Invited presentation at Boeing/IVHM Solutions, St. Louis, Missouri. February 2006.
- Invited presentation at the First Integrated Health Engineering and Management Conference, Nov. 2005, Napa, CA. (Based on an invited paper.)
- Invited paper and presentation at Airforce Research Laboratory's Integrated Systems Health Management Conference, Aug. 2005, Cincinnati, OH.
- Invited presentation at the Supportability Environment for ESMD at NASA JSC, July 2005.
- Invited presentation at the NASA Risk Management Conference, Orlando, FL. 2005.
- Invited presentation at the NASA Risk Management Conference, Cleveland, OH. 2004.
- Invited presentation at the IS/Intelligent Data Understanding PI review workshop: Data analysis for engineering data and engineering problems. Dana Point, CA. 2003.
- Invited panelist, Roundtable on Reliability Validation and Time to Market, Stanford, CA, 2003.
- Invited speaker at the AAAI Spring Symposia, Workshop on Information refinement and decision making for diagnostics and prognostics. Stanford, CA. 2002.
- Invited speaker, 4$^{th}$ Annual Key Characteristics and Variation Risk Mgt Symposium. Long Beach, CA, 2000.
- Invited panelist: Special panel on emerging issues: opportunities and directions in quality, statistics, and reliability, INFORMS'2001. 2001.
- Invited reviewer at the C-17 Dryden Program Review Meeting, P&W, Hartford, CT. 2001.
- Invited speaker at the AAAI Spring Symposia, Workshop on the Use of AI in Equipment Maintenance and Manufacturing. Stanford, CA. 1999.
- Presentations at NASA internal programmatic reviews, Preliminary Design Reviews, NRC reviews.
- Presentations at the ASME Design Engineering Technical Conferences, 1993-2005.
- Presentations at the ASME International Mechanical Engineering Congress & Expo, 2003-2005.

**Honors, Awards, Recognition, and Professional Memberships:**

- ASME Fellow.
- Distinguished paper award, International Journal of Design Creativity and Innovation. October 2014.
- College of Engineering Research Collaboration Award. Oregon State University. 2012.
- Faculty Researcher of the Year Award. MIME, Oregon State University. 2010.
- Meritorious rating, Oregon State University. 2011.
- Distinguished rating, NASA Employee Performance Evaluation Board (Top 10%.)

- NASA Performance and Merit Awards, January 2001-August 2005.
- NASA Ames Research Center Spotlight Award, 2003.
- Highly Commended Paper Award, J. of Quality in Maintenance Eng., 2002 Volume.
- Best Paper Award, American Helicopter Society's Annual Forum, May 2000.
- Winner of Best Paper Award, Graduate Studies Division, ASEE'98, Seattle, WA
- University of Texas Continuing Fellowship: 1996-1997.
- Alcoa Foundation Fellowship, Alternate Winner: 1995-1996.
- Winner of Student Design Competition in RESNA '95.
- NSF REU Undergraduate Summer Program Fellowship: 1992.
- Undergraduate Fellowships and Recognition: Dean's Honor Roll; Dean's List; Jesse Jones Scholarship, Mechanical Engineering Departmental Scholarship, Physics Department Scholarship.
- Member of American Society of Mechanical Engineers.
- Member of Pi Tau Sigma Honor Society.
- Member of IEEE.
- Member, Society of Women Engineers
- Member, ARCS Foundation
- Member, American Society of Engineering Education
- Ex-member of Design Society
- Ex-member of Society of Manufacturing Engineers
- Ex-member of American Helicopter Society

**Positions and Fellowships Held During Undergraduate and Graduate Education (1988-1997):**

*September 1996 to August 1997*: The University of Texas, Austin.
University Continuing Fellow.

*September 1996 to December 1996*: The University of Texas, Austin.
Instructor for Introduction to Mechanical Engineering.

*September 1996 to August 1997*: The University of Texas, Austin
ASEE Student Chapter, Officer

*September 1992 to August 1996:* The University of Texas, Austin.
Graduate Research Assistant, Dept. of Mechanical Engineering.

*June 1992 to August 1992:* The University of Texas, Austin.
Undergraduate Research Assistant, Dept. of Mechanical Engineering.
NSF Undergraduate Research Fellowship

*September 1991 to May 1992:* Houston Instrument. Austin, Texas.
Product Marketing Technician.
Accuracy and repeatability testing.

*September 1991 to December 1991:* The University of Texas, Austin.
Grader, Dynamic Systems and Control. Dept. of Mechanical Engineering.

*January 1990 to May 1990:* The University of Texas, Austin.
Grader, Computer Graphics. Dept. of Mechanical Engineering.

*June 1988 to August 1990:* ROLM Systems. Austin, Texas. (Three full semesters.)
Assistant Mechanical Engineer.
Cooperative Engineering Program, The University of Texas at Austin.

*January 1988 to May 1988:* The University of Texas, Austin.
The International Office.
Student assistant for the Study Abroad Exchange Program.

**EDUCATIONAL AND SUPERVISORY ACTIVITIES:**

**Courses Taught:**

- *ME 302: Introduction to Mechanical Engineering.* Fall 1996.
  The University of Texas at Austin.
  Team-taught and developed a hands-on freshman introductory engineering course.

Topics: Mechanical Dissection, Reverse Engineering, Modeling, Manufacturing Processes.

- *ME 317: Intermediate Dynamics*. Winter 2007.
  Oregon State University.
  Fundamentals of planar and 3D kinematics and equations of motion. Junior level required course.

- *ME 382: Introduction to Design.* Fall 2008.
  Oregon State University.
  Junior level required course on the fundamentals of the engineering design process.

- *ME 516: Complex System Design*. Fall Terms. 2007-2013.
  Oregon State University.
  Graduate course on systems engineering and model based design for complex systems.

- *ME 515: Risk and Reliability Based Design*. Fall Terms. 2008-2013.
  Oregon State University.
  Graduate course on the modeling, analysis, and quantification of risk in system design.

- *ME 383: Mechanical Component Design.* Winter Terms. 2008-2013.
  Oregon State University.
  Junior level required course on the fundamentals of failure analysis in mechanical components.

**Postdoctoral Fellows Supervised (2007-2013):**

- Bryan O'Halloran (June-August 2013)
- David Jensen (June-August 2012)
- Scott Proper (April 2012-Present)
- Christopher Hoyle (December 2010-August 2011)
- Matt Bohm/Co-Supervised (2009-2010)

**Graduate Students Supervised (2007-Present):**

**PhD Students (11):**

- Lukman Mohamed Irshad, PhD Student (Start Date: Fall 2017)
- Hannah Walsh, PhD Student (Start Date: Fall 2016)
- Nicolas Soria, PhD Student (Start Date: Summer 2016)
- Charlie Manion, PhD Student (Graduated, Spring 2017)
- Joe Piacenza, PhD Student (Graduated, Spring 2014; Faculty, Univ. of West Florida)
- Hoda Mehrpouyan, PhD Student (Graduated, Spring 2014; Faculty, Boise State University)
- Bryan O'Halloran, PhD Student (Graduated: Spring 2013; Faculty, Naval Postgraduate School)
- David Jensen, PhD Student (Graduated, Spring 2012; Faculty, University of Arkansas)
- Douglas Van Bossuyt, PhD Student (Graduated, Spring 2012; Faculty, Colorado School of Mines)
- Sarah Oman, PhD Student (Graduated, Spring 2012; Instructor, Northern Arizona University)
- Kerry Poppa, PhD Student (Graduated, Spring 2011; Senior Engineer, ESI Group.)

**MS Students (17):**

- Daniel Hulse, MS Student (Start Date: Fall 2016)
- Nicolas Soria, MS Student (Graduated: Spring 2016; Currently PhD Student)
- Sean Hunter, MS Student (Graduated: Spring 2016; Employed by Aerojet Rocketdyne)
- Brandon Haley, MS Student (Graduated: Spring 2014; Employed by NuScale Power)
- Jesse Grimes, MS Student (Graduated: Summer 2013; Employed by NASA Jet Propulsion Laboratory)
- Brady Gilchrist, MS Student (Graduated: Spring 2013; Employed by Solar City)
- Joe Piacenza, MS Student (Graduated: Spring 2012; Employed by California State Univ. at Fullerton)
- Bryan O'Halloran, MS Student (Graduated, Fall 2011; Employed by Raytheon)
- Mike Koopmans, MS Student (Graduated, Spring 2011; Employed by Tesla Motors)
- Blake Giles, MS Student (Graduated, Spring 2010); Employed by Oregon Iron Works)
- Michael Koch, MS Student (Graduated, Spring 2010; Employed by Cascade Energy, Inc.)
- Masahiro Kitagawa, MS Student (Graduated, Spring 2010; Employed in Japan)
- Rudy Hooven, MS Student (Graduated, Spring 2010; Employed by Boeing)
- Farzaneh Farhangmehr, MS Student (Graduated, Spring 2009; PhD student at UC San Diego)

- Jonathan Mueller, MS Student (Graduated, Spring 2009; Employed by Hanson Professional Services)
- Scott Kramer, MS Student (Graduated, Spring 2009; Employed by US Army Corps)
- David Jensen, MS Student (Graduated, Spring 2009; Employed by the University of Arkansas)

**Students and Postdocs Placed in Academic Positions (5 PhD students, 2 Postdocs):**

- David Jensen, University of Arkansas (2012)
- Douglas Van Bossuyt, Colorado School of Mines (2013)
- Joe Piacenza, California State University at Fullerton (2014), University of West Florida (2017)
- Hoda Mehrpouyan, Columbus State University (2014), Boise State University (2016)
- Bryan O'Halloran, Naval Postgraduate School (2016)
- Sarah Oman, Northern Arizona University (2014)
- Christopher Hoyle, Oregon State University (2011)
- Matt Bohm, University of Louisville (2010), Florida Polytechnic University (2016)

**Undergraduate Students Supervised (23):**

- Mayur Dixit, IIT-Kanpur (Summer 2007)
- David Jensen, OSU (Winter 2008)
- Jesse Boudart, NSF REU, OSU (Winter 2009)
- Max Breedlove, OSU (Winter 2009)
- Bryan O'Halloran, OSU (Spring 2009)
- Vince Foley, U of Missouri, NSF REU (Summer 2009)
- Nick Taylor, OSU (Fall 2009-Summer 2011)
- Yousef Alhashemi, OSU, NSF REU, CS (Winter 2009-Spring 2010)
- Josh Wilcox, OSU (Spring 2009-Winter 2011)
- Carrie Rubhuhn, OSU, NSF REU (Spring 2010-Summer 2011)
- Brady Gilchrist, OSU, NSF REU (Fall 2010-Summer 2011)
- Courtney Solem, OSU, NSF REU (Spring 2011-Present)
- Raschelle Berkume, OSU, NSF REU (Summer 2011-Present)
- Sean Hunter, OSU, Undergraduate TA (Winter 2011)
- Jill Lewis, OSU, Undergraduate TA (Winter 2011)
- Josh Wilcox, OSU, Undergraduate TA (Fall 2011/Winter 2012)
- Jason Castaneda, OSU, NSF REU (Fall 2011-2013)
- Amanda Smith, OSU, NSF REU (Summer 2013)
- Naomi Spevack, OSU, NSF REU (Summer 2013)
- Davis Schneider, Georgia Tech, NSF REU (Summer 2013)
- Katy Schmidt, Brown University, NSF REU (Summer 2014, Summer 2015)
- Francisco Boschetti Tofano (Fall 2014-Present)
- Valerie Bryxbe (Summer 2016-Present)

**PhD Thesis Committee Member (2007-Present):**

- Caity Clark, Oregon State University (Summer 2017, Mechanical Engineering)
- Ada Rhodes-Short, Oregon State University (Summer 2017, Mechanical Engineering)
- Elham Keshavarzi, Oregon State University (Summer 2017, Mechanical Engineering)
- Ryan Arlitt, Oregon State University (Summer 2015, Mechanical Engineering)
- Goknur Sirin, Ecole Centrale, Paris (Spring 2015, Mechanical Engineering)
- Raul Avelar, Oregon State University (Spring 2012, Civil Engineering)
- Delvin Peterson, Oregon State University (Fall 2011, Mechanical Engineering)
- Diane Van Scoter, Oregon State University (Fall 2011, Industrial Engineering)
- Sarah Gallops, Oregon State University (Summer 2011, Material Science)
- Robert Nagel, Oregon State University (Spring 2010, Mechanical Engineering)
- Jacquelyn Stroble, Oregon State University (Spring 2010, Mechanical Engineering)
- Murat O. Hamutcuoglu, Oregon State University (Spring 2010, Civil Engineering)
- Nantakrit Yodpijit, Oregon State University (Spring 2009, Industrial Engineering)
- Ryan Hutcheson, Texas A&M University (Spring 2007, Mechanical Engineering)
- Nina Robson, University of California, Irvine (Summer 2008, Mech. Engineering)

- Larry Chao, Stanford University (Spring 2005, Mechanical Engineering)

**MS Thesis Committee Member (2007-Present):**

- Rachel Yim, Oregon State University (Spring 2013, Industrial Engineering)
- Anthony Nix, Oregon State University (Spring 2011, Mechanical Engineering)
- Raul Avelar, Oregon State University (Spring 2010, Civil Engineering)
- Justin Hovland, Oregon State University (Spring 2010, Mechanical Engineering)
- Mary Beth Oshnack, Oregon State University (Spring 2010, Civil Engineering)
- Brian Rurik, Oregon State University (Fall 2009, Mechanical Engineering)
- Adam Brown, Oregon State University (Spring 2009, Mechanical Engineering)
- Brenton Gibson, Oregon State University (Spring 2009, Mechanical Engineering)
- Paul Strauss, Oregon State University (Spring 2009, Computer Science)
- Michael Chamblin, Oregon State University (Spring 2008; Mechanical Engineering)
- Leslie Braitsch, Oregon State University (Spring 2008; Industrial Engineering)
- R. K. Nelson, Oregon State University (Fall 2008; Nuclear Engineering)
- Mike Lee, Oregon State University (Fall 2008; Industrial Engineering)
- Douglas Van Bossuyt, Oregon State University (Fall 2008; Mech. Engineering)
- Michael Stock, University of Missouri-Rolla (Fall 2003, Mech. Engineering)
- Srikesh Arunajadai, University of Missouri-Rolla (Spring 2002, Mech. Engineering)
- Rory Roberts, University of Missouri-Rolla (Spring 2002, Mech. Engineering)

**Other Supervisory Roles (while at NASA):**

- Graduate student collaboration: Tolga Kurtoglu, University of Texas at Austin (was intern at NASA ARC summer 2006); Christopher Hoyle, Northwestern University (was intern at NASA ARC summer 2006); Alex F. Mehr (was postdoc at NASA ARC Fall 2005).
- Thesis research supervisory role: Matt Bohm (UMR), Scott Uder (UMR), Jason Vuchovich (UMR), Katie Grantham-Lough (UMR).
- Supervision of summer interns (2000-2005): Ryan Hutcheson (UMR), Jeremy Johnson (UMR), Julien Sauvageon (Berkeley), Paul Constantine (Stanford), Larry Chao (Stanford), Matt Bohm (UMR), Mike VanWie (Postdoc), Scott Uder (UMR), Andy Roberts (UC Irvine).
- Educational Associates Program, NASA Ames Research Center. Supervising and funding two PhD students, 2005-2006 academic year.
- MUSE Program at Santa Clara University, CA. Mentor for first-year undergrad student, 1999.

**Other Educational and Outreach Activities:**

- Invited speaker for Underrepresented Middle Schoolers, SMILE Program, OSU. Winter 2011.
- Faculty advisor for ASME Student Section, 2009-Present: Organized and hosted the Annual ASME Student Professional Development Conference at OSU. April 2010.
- Organized Middle School Visit and Presentations as part of ME383. W2008, W2009. W2010.
- Organized student teams for the ASME Student Design Competition as part of ME382. 2008-09.
- Faculty Sponsor and Advisor for senior project team. 2008-09.
- Faculty Advisor for senior project team. 2007-08.
- Seminar: Mentors & Mentees Program, Women and Minorities in Engineering, OSU. April 2008.
- Innovations in Engineering and Science Education Conference. Oregon State University. 2007.
- Supervised Teaching in Mechanical Engineering (1997*)*: Delivered and critiqued lectures. Topics included: Fourier Transform and Power Spectrum; Reverse Engineering.
- Invited and funded to attend a workshop on *Junior Faculty Development* at the ASEE National Conference in Milwaukee, WI, June 1997.
- Established the *ASEE Student Chapter* at The University of Texas at Austin. Information Resources Officer, Fall 1996-Spring 1997.
- Discover Engineering, Panelist in a live NTU broadcast to answer questions from high school students interested in becoming engineers, Lisle, IL. February 1997.
- Women in Engineering Program: Careers in Engineering for Women, Team Advising Engineer and Project Judge. Summer 1996. Tool Time, Supervisor of Power Tools. Fall 1996.

**PUBLICATIONS:**

**Journal Articles Published:**

1. H. Walsh, A. Dong, I.Y. Tumer, "The Role of Bridging Nodes in Behavioral Network Models of Complex Engineered Systems." In Print. *Journal of Design Science*. 2017.
2. N. Soria, M. Colby, I.Y. Tumer, C. Hoyle, K. Tumer, "Design of Complex Engineered Systems Using Multi-agent Coordination." ASME *Journal of Computing & Information Sciences in Engineering.* 18(2). 2018.
3. R. Arlitt, D. VanBossuyt, I.Y. Tumer, R.B. Stone, "The function-based design for sustainability method." *ASME Journal of Mechanical Design*. 139(4). 2017.
4. J. Piacenza, M. A. Bozorgirad, C. Hoyle, I.Y. Tumer, "Robust topology design of complex infrastructure systems*." ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems, Part B: Mechanical Engineering.* 3(2). 2017.
5. B. Haley, A. Dong, I.Y. Tumer, "A Comparison of Network Based Metrics of Behavioral Degradation in Complex Engineered Systems." *ASME Journal of Mechanical Design*. 138(12). 2016.
6. C. Hsiao, M. Ruffino, R. Malak, I.Y. Tumer, T. Doolen, "Discovering Taxonomic Structure in Design Archive Information: A Study of Risk-Mitigating Actions in a Large Engineering Organization." *Journal of Engineering Design*. 27 (1-3), 146-169. 2016.
7. H. Mehrpouyan, D.Giannakopoulou, G. P. Brat, I. Y. Tumer, C. Hoyle, "Complex Engineered Systems Design Verification Based on Assume-Guarantee Reasoning." *Journal of International Council on Systems Engineering*. 19(6): 461-476. 2016.
8. M. McIntire, C. Hoyle, I.Y. Tumer, D.C. Jensen, "Safety-informed design: using subgraph analysis to elicit hazardous emergent failure behavior in complex systems." *AIEDAM Journal.* 30(04): 466-473. 2016.
9. C.A. Manion, R. Arlitt, M.I. Campbell, I.Y. Tumer, R.B. Stone, P.A. Greaney, "Automated Design of Flexible Linkers." *Dalton Transactions, Royal Society of Chemistry*. 2017.
10. R. Yim, T. Doolen, R. Malak, I.Y. Tumer. "Exploring the Relationship between Rework Projects and Risk Indicators." *Project Management Journal*. 46(4): 63-75. 2015.
11. R. Yim, T. Doolen, R. Malak, I.Y. Tumer, "Exploring the Relationship between Project Risk and Project Classification." *International Journal of Project Management*. 2015.
12. H. Mehrpouyan, B. Haley, I.Y. Tumer, C. Hoyle, A. Dong, "Resiliency Analysis for Complex System Design." *AIEDAM Journal*. 29(01): 93-108. February 2015.
13. D.C. Jensen, O. Bello, C. Hoyle, I.Y. Tumer, "Reasoning about Emergent System Failure Behavior using Large Sets of Qualitative Function-Based Simulation Data." *AIEDAM Journal*. Special Issue on Complex System Design 28(04): 385-398. November 2014.
14. B.M. O'Halloran, B. Haley, D.C. Jensen, R.B. Stone, I.Y. Tumer, "The early implementation of failure modes into component model libraries." *Journal of Research in Engineering Design*. 25(3): 203-221. 2014.
15. S.K. Oman, B. Gilchrist, I.Y. Tumer, R.B. Stone, "The Development of a Repository of Innovative Products (RIP) for Inspiration in Engineering Design." *International Journal of Design Creativity and Innovation*. 2(4). Distinguished paper award. October 2014.
16. S. Sierla, B.M. O'Halloran, H. Nikula, N. Papakonstantinou, I.Y. Tumer, "Safety analysis of mechatronic product lines." *Mechatronics*. 24(3): 231–240. 2014.
17. D.L. Van Bossuyt, L. Carvalho, A. Dong, I.Y. Tumer, "On Measuring Engineering Risk Attitudes." *ASME Journal of Mechanical Design*. 135(12). 2013.
18. S. Sierla, B.M. O'Halloran, T. Karhela, N. Papakonstantinou, I.Y. Tumer, "Common cause failure analysis of cyber-physical systems situated in constructed environments." *Journal of Research in Engineering Design*. October 2013, 24(4): 375-394.
19. D.L. Van Bossuyt, I.Y. Tumer, S. Wall, "A Case for Trading Risk in Conceptual Design Trade Studies." *Journal of Research in Engineering Design*. 24: 259-275. 2013.
20. C. Metha, D.C. Jensen, I.Y. Tumer, C. Smidts, "An Integrated Multi-Domain Functional Failure and Propagation Analysis Approach for Safe System Design." *AIEDAM Journal*. 27(4): 317-347 *(*2013*)*.
21. S.K. Oman, I.Y. Tumer, K.L. Wood, C. Seepersad, "A Comparison of Creativity and Innovation Metrics and Validation through In-Class Design Projects." 24(1): 65-92. *Journal of Research in Engineering Design*.
22. N. Papakonstantinou, S. Sierla, I.Y. Tumer, D. Jensen, "Multi-Scale Simulation on Interactions and Emergent Failure Behavior During Complex System Design." *ASME Journal of Computing & Information Sciences in Engineering.* 12(3). September 2012.
23. S. Sierla, I.Y. Tumer, N. Papakonstantinou, K. Koskinen, D. Jensen, "Early Integration of Safety to the Mechatronic System Design Process for the Functional Failure Identification and Propagation Framework." *Mechatronics*. 22(2): 137-151. March 2012.
24. D.L. Van Bossuyt, C. Hoyle, I.Y. Tumer, A. Dong, "Considering Risk Attitude Using Utility Theory in Risk-Based Design." *AIEDAM Journal*. *Special Issue on Intelligent Decision Support and Modeling*. 26(4). 2012.

25. R. Hutcheson, D.A. McAdams, I.Y. Tumer, "Function-based behavioral modeling." *The International Journal of Computer Aided Engineering and Technology*. 4(3). 2012.
26. A.M. Agogino, A.K. Goel, C.C. Hayes, W.C. Regli, I.Y. Tumer, "Intelligent Systems in Product Design: A Retrospective." *ASME Journal of Computing & Information Sciences in Engineering*. 11(2). June 2011.
27. I.Y. Tumer and C.S. Smidts, "Integrated design-stage failure analysis of software-driven hardware systems." *IEEE Transactions on Computers*. *Special Issue on Science of Design for Safety Critical Systems*. 60(8): 1072-1084. 2011.
28. E. Coatanea, S. Nonsiri, T. Ritola, I.Y. Tumer, D. Jensen, "Dimensional analysis based behavioral modeling for design-stage failure analysis." *ASME Journal of Mechanical Design*. 133(12). 2011.
29. T. Kurtoglu, D. Jensen, I.Y. Tumer, "A functional failure reasoning methodology for evaluation of conceptual system architectures". *Journal of Research in Engineering Design*. 21:209-234. 2010.
30. M.R. Bohm, K.R. Haapala, K. Poppa, R.B. Stone, I.Y. Tumer, "Towards integrating sustainability analysis into the conceptual phase of product design." *ASME Journal of Mechanical Design*. *Special Issue in Sustainable design*. 132. September 2010.
31. C. Hoyle, I.Y. Tumer, A.F. Mehr, W. Chen, "Health Management Allocation for Conceptual System Design." *ASME Journal of Computing & Information Sciences in Engineering.* 9(2). 2009.
32. N. Patransky Robson, J.M. McCarthy, I.Y. Tumer, "Failure recovery planning for an arm actuator failure on an exploratory rover." *The IEEE Transactions on Robotics***.** 25(6): 1448-1453. 2009.
33. K. Grantham-Lough, R.B. Stone, and I.Y. Tumer, "The risk in early design method." *Journal of Engineering Design*. 20(2). 2009.
34. K Grantham-Lough, M. Van Wie, R.B. Stone, F. Barrientos, I.Y. Tumer, "Promoting risk communication in early design through linguistic analyses and tools." *Journal of Research in Engineering Design*, 20(1): 29. 2009.
35. K. Grantham-Lough, R.B. Stone, I.Y. Tumer, "Failure prevention through effective cataloguing and utilization of failure events," *Journal of Failure Analysis and Prevention*. 8(5): 469-481. 2008.
36. N. Patransky Robson, J.M. McCarthy, I.Y. Tumer, "The algebraic synthesis of a spatial TS chain for a prescribed acceleration task." *Mechanisms and Machine Theory*. 2008.
37. K. Grantham-Lough, R.B. Stone, I.Y. Tumer, "Implementation Procedures for the Risk in Early Design (RED) Method," *Journal of Industrial and Systems Engineering*. 2(2): 126-143. 2008.
38. T. Kurtoglu and I.Y. Tumer, "A graph based fault identification and propagation framework for functional design of complex systems." *ASME Journal of Mechanical Design*. 30(5). 2008.
39. D.A. McAdams, D. Comella, I.Y. Tumer, "Exploring effective methods for simulating damaged structures with geometric variation." *ASME Journal of Applied Mechanics, JAM-05-116.* 2007.
40. A.F. Mehr and I.Y. Tumer, "Risk based decision making for managing resources during the design of complex aerospace systems." *ASME Journal of Mechanical Design*. Special Issue on Robust and Reliability Based Design. 128(4): 1014-1022. July 2006.
41. R.B. Stone, I.Y. Tumer, M.E. Stock, "Linking product functionality to historical failures to improve failure analysis in design." *Journal of Research in Engineering Design*. 16(2): 96-108. 2005.
42. D.A. McAdams and I.Y. Tumer, "Toward Intelligent fault detection in turbine blades: Variational vibration models of damaged pinned-pinned beams." *ASME Journal of Vibration & Acoustics*. 127(5): 467-474. 2005.
43. R.B. Stone, I.Y. Tumer, M. VanWie, "The Function-Failure Design Method." *ASME Journal of Mechanical Design*. 127(3): 397-407. 2005.
44. S.G. Arunajadai, R.B. Stone, I.Y. Tumer, "Failure mode identification through clustering analysis." *Quality and Reliability Engineering International Journal*. 20:511-526. 2004.
45. I.Y. Tumer, R.B. Stone, "Mapping Function to Failure during High-Risk Component Development." *Journal* of *Research in Engineering Design*. 14: 25-33. 2003.
46. I.Y. Tumer, E.M. Huff, "Analysis of Triaxial Vibration Data for Health Monitoring of Helicopter Gearboxes." *ASME Journal of Vibration and Acoustics*. 125(1): 120-128. 2003.
47. I.Y. Tumer, E.M. Huff, "On the Effects of Production and Maintenance Variations on Rotating Machinery Component Performance." *Journal of Quality in Maintenance and Engineering*. 8(3): 226-238. 2002. (Highly Commended Award, 2002 Volume, Emerald Literati Club.)
48. E.M. Huff, I.Y. Tumer, E. Barszcz, M. Dzwonczyk, J. McNames, "Analysis of Maneuvering Effects on Transmission Vibrations in an AH-1 Cobra Helicopter." *Journal of the American Helicopter Society*. 47(1): 42-49. January 2002.
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1. D. Hulse, K. Tumer, C. Hoyle, I.Y. Tumer, "A Multiagent Framework for Designing Complex Engineered Systems." In review.
2. M. McIntire, E. Keshavarzi, C. Hoyle, I.Y.Tumer, "Functional Models with Inherent Behavior: Towards a Framework for Safety Analysis Early in the Design of Complex Systems." In review.
3. H. Mehrpouyan, D. Giannakopoulou, G.P. Brat, and I.Y. Tumer, "Towards A Framework for Resilient Design of Complex Engineered Systems." In review.

**Fully Refereed Conference Articles:**

1. N. Soria, I.Y. Tumer, "A Survey: Understanding Emergent Behavior in Complex Systems." *ASME IDETC/CIE 2017, Design Theory and Methodology Conference.* IDETC2017-67453. Cleveland, OH. 2017
2. H. Walsh, A. Dong, I.Y. Tumer, "The Structure of Vulnerable Nodes in Behavioral Network Models of Complex Engineered Systems." *ASME IDETC/CIE 2017, Design Theory and Methodology Conference.* IDETC2017- 67866. Cleveland, OH. 2017.
3. D. Hulse, B. Gigous, K. Tumer, C. Hoyle, I.Y. Tumer, "Towards a Distributed Multiagent Based Design Framework." *ASME IDETC/CIE 2017, Design Automation Conference.* IDETC2017-68042. Cleveland, OH. 2017.
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