

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

Associate Dean for Research, College of Engineering  
Professor, School of Mechanical, Industrial, and Manufacturing Engineering (MIME)  
Oregon State University  
Corvallis, OR 97331-6001  
Voicemail: 541-737-6627  
Email: [irem.tumer@oregonstate.edu](mailto:irem.tumer@oregonstate.edu)  
URL: <http://web.engr.oregonstate.edu/~itumer/>  
*CV Last Revision: 6/2017*

### **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:**

<b>Oregon State University</b>	<b>2006 to Present</b>
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
<b>NASA Ames Research Center</b>	<b>2000 to 2006</b>
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
<b>Caelum Research Corporation/Computer Sciences Corporation</b>	<b>1998 to 2001</b>
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 2013-Present

## LEADERSHIP EXPERIENCE:

- **As Associate Dean, College of Engineering, Oregon State University (2013-Present):**
  - *Key accomplishments for the College:*
    - Doubled research grants received (\$24.8M in 2013 to \$49.5M in 2015)
    - Increased research expenditures from \$34M in 2013 to \$40M in 2015
    - Increased number of proposal submissions by 40% from 2013 to 2015
    - Increased number of proposal awarded by 60% from 2013 to 2015
    - Doubled the number of large proposal submissions (>\$1M) from 2013 to 2016
    - More than tripled NSF CAREER awards (6 in 2016, 4 in 2017) and 3 ONR YIP 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 Coaching. Optimizing Philanthropic Opportunities. Advancement Resources. 2015-2016.
  - *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 covered: Time management, grant writing, agency contacts, NSF CAREER proposal development, industry partnering, mentoring.
    - 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 grant writing seminar and 1-on-1 coaching workshops by David Morrison from *Grant Writers' Seminars & Workshops*. 2016.
    - Hosted quarterly networking meetings with new women faculty. 2015-2016.
    - Hosted the NSF CAREER Proposing Writing Workshop at Oregon State University. 2017.
    - Hosted Graduate Student Professional Development Series. 2016-2017.
  - *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, 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 Multi-agent 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 Pending):** 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 Mellon University.)** Verification of Complex Engineered Systems. PI: **Irem Y. Tumer**. January 2013-September 2013. Total Funding: **\$80,617**.
- **NSF IUCRC.** Center for e-Design. PIs: **Irem Y. Tumer**, Robert Stone. February 2013-March 2014. Total Funding: **\$13,000** (Planning Grant).
- **NSF IUCRC.** 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**.

#### **Gifts and Seed Grants:**

- **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, Oregon Chapter. 2014-2016.
- **Section Representative**, Society of Women Engineers. 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<sup>th</sup> 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:**

- 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 (9):**

- Nicolas Soria, PhD Student (Start Date: Summer 2016)
- Charlie Mannion, PhD Student (Start Date: Fall 2013)
- Joe Piacenza, PhD Student (Graduated, Spring 2014; Faculty, California State Univ. at Fullerton)
- 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 (16):**

- Hannah Walsh, MS Student (Start Date: Fall 2016)
- Daniel Hulse, MS Student (Start Date: Fall 2016)
- Nicolas Soria, MS Student (Graduated: Spring 2016; 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)
- 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)

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

- 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):**

- Elham Keshavarzi, Oregon State University (Fall 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. 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.
2. 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.
3. 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.
4. 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.
5. 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.
6. 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.
7. 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.
8. 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.
9. R. Yim, T. Doolen, R. Malak, I.Y. Tumer, "Exploring the Relationship between Project Risk and Project Classification." *International Journal of Project Management*. 2015.
10. 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.
11. 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.
12. 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. July 2014.
13. 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.
14. 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.
15. D.L. Van Bossuyt, L. Carvalho, A. Dong, I.Y. Tumer, "On Measuring Engineering Risk Attitudes." *ASME Journal of Mechanical Design*. 135(12). 2013.
16. 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.
17. 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.
18. 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).
19. 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*.
20. 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.
21. 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.
22. 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.
23. R. Hutcheson, D.A. McAdams, I.Y. Tumer, "Function-based behavioral modeling." *The International Journal of Computer Aided Engineering and Technology*. 4(3). 2012.

24. 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.
25. 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.
26. 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.
27. 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.
28. 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.
29. 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.
30. N. Patrasky 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.
31. K. Grantham-Lough, R.B. Stone, and I.Y. Tumer, "The risk in early design method." *Journal of Engineering Design*. 20(2). 2009.
32. 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.
33. 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.
34. N. Patrasky 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.
35. 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.
36. 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.
37. 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.
38. 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.
39. 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.
40. 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.
41. R.B. Stone, I.Y. Tumer, M. VanWie, "The Function-Failure Design Method." *ASME Journal of Mechanical Design*. 127(3): 397-407. 2005.
42. 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.
43. 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.
44. 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.
45. 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.)
46. 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.
47. I.Y. Tumer, K.L. Wood, I.J. Busch-Vishniac, "Monitoring of Manufacturing Signals Using the Karhunen-Loeve Transform." *Mechanical Systems & Signal Processing Journal*, 14(6): 1011-1026. 2000.
48. I.Y. Tumer, R.L. Longoria, K.L. Wood, "Signal Analysis Using the Karhunen-Loeve Transform: Application to Hydrodynamic Forces." *ASME Journal of Offshore Mechanics & Arctic Engineering*, 122(3): 208-213. 2000.
49. I.Y. Tumer, K.L. Wood, I.J. Busch-Vishniac, "A Mathematical Transform to Improve Part Surface Quality in Manufacturing." *ASME Journal of Manufacturing Science & Engineering*. 122(1): 273-279. February 2000.



50. I.Y. Tumer, D.C. Thompson, R.H. Crawford, K.L. Wood, "Characterization of Surface Fault Patterns, with Application to a Layered Manufacturing Process." *Journal of Manufacturing Systems*, 17(1): 23-36. 1998.
51. I.Y. Tumer, R.S. Srinivasan, K.L. Wood, "Investigation of Characteristic Measures for the Analysis and Synthesis of Precision-Machined Surfaces." *Journal of Manufacturing Systems*, 14(5): 378-392. 1995.

### **Journal Articles in Review:**

1. H. Walsh, A. Dong, I.Y. Tumer, "The Structure of Vulnerable Nodes in Behavioral Network Models of Complex Engineered Systems." In review. 2017.
2. N. Soria, M. Colby, I.Y. Tumer, C. Hoyle, K. Tumer, "Design of Complex Engineered Systems Using Multi-agent Coordination." In review. 2017.
3. 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. 2017.
4. H. Mehropouyan, D. Giannakopoulou, G.P. Brat, and I.Y. Tumer, "Towards A Framework for Resilient Design of Complex Engineered Systems." In review. 2017.

### **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.
4. E. Keshavarzi, M. McIntire, K. Goebel, I.Y. Tumer, C. Hoyle, "Resilient System Design Using Cost-Risk Analysis with Functional Models." *ASME IDETC/CIE 2017 Design Automation Conference*. IDETC2017-67952. Cleveland, OH. 2017.
5. S.C. Hunter, D.C. Jensen, I.Y. Tumer, C. Hoyle, "Impact of abstraction and fidelity levels on the usefulness of early system functional models." *ASME IDETC/CIE 2016*. IDETC2016-60482. Charlotte, NC. 2016.
6. N.F. Soria, M.K. Colby, I.Y. Tumer, C. Hoyle, K. Tumer, "Design of complex engineering systems using multiagent coordination." *ASME IDETC/CIE 2016*. IDETC2016-59570. Charlotte, NC. 2016.
7. N. Papakonstantinou, S. Proper, D.L. VanBossuyt, B. O'Halloran, I.Y. Tumer, "A functional modeling based methodology for testing the predictions of fault detection and identification systems." *ASME IDETC/CIE 2016*. IDETC2016-59916. Charlotte, NC. 2016.
8. M. McIntire, E. Keshavarzi, C. Hoyle, I.Y. Tumer, "Towards a framework for safety analysis early in the design of complex systems." *ASME International Mechanical Engineering Congress & Exposition, IMECE 2016*. IMECE2016-67040. Phoenix, AZ. 2016.
9. R. Arlitt, C.A. Manion, R. Stone, M. Campbell, I.Y. Tumer, "Using molecular fingerprinting to infer functional similarity in engineered systems." *ASME IDETC/CIE2015*. IDETC2015-46888. Boston, MA. 2015.
10. C.A. Manion, N.F. Soria, K. Tumer, C. Hoyle, I.Y. Tumer, "Designing a self-replicating robotic manufacturing factory." *ASME IDETC/CIE2015*. IDETC2015-47628. Boston, MA. 2015.
11. C.A. Manion, R. Arlitt, I.Y. Tumer, M.I. Campbell, P. A. Greaney, "Towards automated design of mechanically functional molecules." *ASME IDETC/CIE2015*. IDETC 2015-46078. Boston, MA. 2015.
12. J.R. Piacenza, S. Proper, M.A. Bozorgirad, I.Y. Tumer, C. Hoyle, "Robust topology design of complex infrastructure systems." *ASME IDETC/CIE2015*. IDETC2015-46560. Boston, MA. 2015.
13. N. Papakonstantinou, S. Proper, B. O'Halloran, I.Y. Tumer, "A plant-wide and function-specific hierarchical functional fault detection and identification system for multiple faulty scenarios on complex systems." *ASME IDETC/CIE2015*. IDETC2015-46447. Boston, MA. 2015.
14. M. McIntire, C. Hoyle, D.C. Jensen, I.Y. Tumer, "Safety-informed design: using clustering analysis to elicit hazardous emergent failure behavior in complex systems," *ASME International Mechanical Engineering Congress & Exposition, IMECE 2015*. Houston, TX.
15. S. Hunter, D.C. Jensen, C. Hoyle, and I.Y. Tumer, "Validating model-based design simulation: abstraction and fidelity." *International Conference on Complex Systems Engineering, ICCSE 2015*. Storrs, CT. 2015.
16. J.R. Piacenza, J. Fields, C. Hoyle, I.Y. Tumer, "Quantification of indoor environmental quality in sustainable building designs using structural equation modeling." *International Conference on Engineering Design, ICED 2015*. Milan, Italy. July 2015.

17. B. Haley, A. Dong, I.Y. Tumer, "Measuring functional robustness with network topological robustness metrics." International Conference on Engineering Design, ICED 2015. Milan, Italy. July 2015.
18. H. Mehrpouyan, I.Y. Tumer, C. Hoyle, D. Giannakopoulou, G.P. Brat, "Formal Verification of Complex Systems Based on Sysml Functional Requirements". *The 2014 Prognostics and Health Management Conference, PHM'14*. Fort Worth, Texas. October 2014.
19. B. Haley, A. Dong, I.Y. Tumer, "Creating faultable network models of complex engineered systems." *ASME IDETC/CIE 2014*. Buffalo, NY. 2014.
20. H. Mehrpouyan, D. Giannakopoulou, G.P. Brat, I.Y. Tumer, C. Hoyle, "Combination Of Compositional Verification and Model Checking For Safety Assessment Of Complex Engineered Systems." *The 2014 ASME Computers & Information in Engineering Conference, IDETC/CIE2014*. Buffalo, NY. August 2014.
21. N. Papakonstantinou, S. Proper, B.M. O'Halloran, I.Y. Tumer, "Simulation based machine learning for fault detection in complex systems using the FFIP framework." *ASME IDETC/CIE2014*. Buffalo, NY. August 2014.
22. S. K. Oman, I.Y. Tumer, R.B. Stone, "Reducing subjectivity in creativity assessment." *ASME IDETC/CIE 2014*. Buffalo, NY. August 2014.
23. C. Hoyle and I.Y. Tumer, "A structural equation modeling approach to product innovation." *Design Computing and Cognition, DCC 2014*. London, U.K. June 2014.
24. C. Rebhuhn, B. Gilchrist, S.K. Oman, I.Y. Tumer, R.B. Stone, K. Tumer, "A multiagent approach in innovative component selection." *Design Computing and Cognition, DCC 2014*. London, U.K. June 2014.
25. N. Papakonstantinou, S. Sierla, K. Charitoudi, B.M. O'Halloran, T. Karhela, V. Vyatkin, I.Y. Tumer, "Security impact assessment of industrial automation systems using genetic algorithms and simulation." In review. *The 19th IEEE International Conference on Emerging Technologies and Factory Automation, ETFA*. Barcelona, Spain. September 2014.
26. J.R. Piacenza, C. Hoyle, E. Cotilla-Sanchez, I.Y. Tumer, "Evaluating the impact of human-in-the-loop decision making in robust design." *The Hawaii International Conference on System Sciences, HICISS*. Manoa, HI. January 2014.
27. H. Mehrpouyan, B. Haley, A. Dong, I.Y. Tumer, C. Hoyle, "Resilient design of complex engineered systems." *The 2013 ASME Computers & Information in Engineering Conference, IDETC/CIE2013*. Portland, OR. August 2013.
28. B. Gilchrist, I.Y. Tumer, D.L. Van Bossuyt, R. Arlitt, R.B. Stone, "Functional impact comparison of common and innovative products." *The 2013 ASME Computers & Information in Engineering Conference, IDETC/CIE2013*. Portland, OR. August 2013.
29. H. Mehrpouyan, D. Giannakopoulou, G.P. Brat, I.Y. Tumer, C. Hoyle, "Complex system design verification using assumption generation." *The 2013 ASME Computers & Information in Engineering Conference, IDETC/CIE2013*. Portland, OR. August 2013.
30. D. Kasthurlathna, A. Dong, M. Piraveenan, I.Y. Tumer, "The failure tolerance of mechatronic software systems to random and targeted attacks." *The 2013 ASME Computers & Information in Engineering Conference, IDETC/CIE2013*. Portland, OR. August 2013.
31. B.M. O'Halloran, R.B. Stone, I.Y. Tumer, "Developing new design requirements to reduce failures in early complex system design." *The 2013 ASME Computers & Information in Engineering Conference, IDETC/CIE2013*. Portland, OR. August 2013.
32. R.L. Yim, J.M. Castaneda, T.L. Doolen, I.Y. Tumer, R.J. Malak, "A student of engineering design project complexity and risk indicators." *The 2013 ASME Computers & Information in Engineering Conference, IDETC/CIE2013*. Portland, OR. August 2013.
33. N. Papakonstantinou, S. Sierla, B. O'Halloran, I.Y. Tumer, "A simulation based approach to automate event tree generation for early complex system design." *The 2013 ASME Computers & Information in Engineering Conference, IDETC/CIE2013*. Portland, OR. August 2013.
34. J. Piacenza, S.H. Seyedmahmoudi, K. Haapala, C. Hoyle, I.Y. Tumer, "Comparison of sustainability performance: cross-laminated timber vs. concrete." *The 2013 ASME Computers & Information in Engineering Conference, IDETC/CIE2013*. Portland, OR. August 2013.
35. H. Mehrpouyan, B. Haley, A. Dong, I.Y. Tumer, C. Hoyle, "Resilient design of complex engineering systems against cascading failure." *ASME International Mechanical Engineering Congress & Exposition, IMECE2013*. San Diego, CA. November 2013.
36. B. Gilchrist, C. Rebhuhn, C. Hoyle, I.Y. Tumer, "A new take on quantifying innovation: a latent variable approach." *ASME International Mechanical Engineering Congress & Exposition, IMECE2013*. San Diego, CA. November 2013.
37. J. Piacenza, J. Fields, M.A. Bozorgirad, C. Hoyle, I.Y. Tumer, "Robust design of the North American power grid to mitigate cascading failures." *ASME International Mechanical Engineering Congress & Exposition, IMECE2013*. San Diego, CA. November 2013.

38. R. Yim, J. Castaneda, T. Doolen, I.Y. Tumer, R. Malak, "Functional complexity impact on engineering design project risk indicators." *The 2013 Industrial and Systems Engineering Research Conference*. San Juan, Puerto Rico. May 2013.
39. J. Piacenza, C. Hoyle, I.Y. Tumer, J. Fields, "Power grid design trades and system optimization considering renewable energy strategies and environmental impact." *ASME International Mechanical Engineering Congress & Exposition, IMECE2012*. Houston, TX. November 2012.
40. D.L. Van Bossuyt, C. Hoyle, I.Y. Tumer, R. Malak, T. Doolen, A. Dong, "Towards an early-phase conceptual system design risk-informed decision making framework." *ASME International Mechanical Engineering Congress & Exposition, IMECE2012*. Houston, TX. November 2012.
41. B.M. O'Halloran, C. Hoyle, I.Y. Tumer, R.B. Stone, "The early design reliability prediction method." *ASME International Mechanical Engineering Congress & Exposition, IMECE2012*. Houston, TX. November 2012.
42. B.M. O'Halloran, R.B. Stone, I.Y. Tumer, "A survey of risk and reliability methods and their impediments to move into practice." *ASME International Mechanical Engineering Congress & Exposition, IMECE2012*. Houston, TX. November 2012.
43. B.M. O'Halloran, R. Arlitt, J. Novak, R.B. Stone, I.Y. Tumer, "Applying design feedback to generate requirements for an intuitive biologically inspired design tool." *ASME International Mechanical Engineering Congress & Exposition, IMECE2012*. Houston, TX. November 2012.
44. K.R. Poppa, R.B. Stone, I.Y. Tumer, "A functional similarity measure inspired by latent semantic indexing." *ASME International Mechanical Engineering Congress & Exposition, IMECE2012*. Houston, TX. November 2012.
45. D.C. Jensen, C. Hoyle, I.Y. Tumer, "Clustering of function-based failure analysis results to evaluate and reduce system level risks." *The 2012 ASME Computers & Information in Engineering Conference, IDETC/CIE2012*. Chicago, IL. August 2012.
46. H. Mehrpouyan, D.C. Jensen, C. Hoyle, I.Y. Tumer, T. Kurtoglu, "A model based failure identification and propagation framework for the conceptual design of complex systems." *The 2012 ASME Computers & Information in Engineering Conference, IDETC/CIE2012*. Chicago, IL. August 2012.
47. B.M. O'Halloran, C. Hoyle, R.B. Stone, I.Y. Tumer, "A method to calculate function and component failure distributions using a hierarchical bayesian model and frequency weighting." *The 2012 ASME Design Theory and Methodology Conference, IDETC/CIE2012*. Chicago, IL. August 2012.
48. D.L. Van Bossuyt, C. Hoyle, I.Y. Tumer, A. Dong, T. Doolen, R. Malak, "Towards considering risk attitudes in engineering organizations using utility theory." *The 2012 ASME Design Theory and Methodology Conference, IDETC/CIE2012*. Chicago, IL. August 2012.
49. B. Gilchrist, I.Y. Tumer, R.B. Stone, Q. Gao, K.R. Haapala, "A comparison of environmental impacts of innovative vs. common products." *The 2012 ASME Design for Manufacturing and the Lifecycle Conference, IDETC/CIE2012*. Chicago, IL. August 2012.
50. S.K. Oman, B. Gilchrist, C. Rebhuhn, I.Y. Tumer, A. Nix, R.B. Stone, "Towards a repository of innovative engineering products to enhance engineering creativity education." *The 2012 ASME Design Education Conference, IDETC/CIE2012*. Chicago, IL. August 2012.
51. C. Hsiao, M. Ruffino, R. Malak, I.Y. Tumer, T. Doolen, "Developing a taxonomy of risk-mitigating actions from a legacy database of a large design organization." *The 2012 ASME Computers & Information in Engineering Conference, IDETC/CIE2012*. Chicago, IL. August 2012.
52. J. Piacenza, C. Hoyle, I.Y. Tumer, "Lighting optimization for sustainable building design considering user productivity." *The 2012 ASME Design Automation Conference, IDETC/CIE2012*. Chicago, IL. August 2012.
53. N. Papakonstantinou, S. Sierla, D.C. Jensen, I.Y. Tumer, "Using fault propagation analyses for early elimination of unreliable design alternatives of complex cyber-physical systems." *The 2012 ASME Computers & Information in Engineering Conference, IDETC/CIE2012*. Chicago, IL. August 2012.
54. C. Rebhuhn, B. Gilchrist, S.K. Oman, I.Y. Tumer, R.B. Stone, K. Tumer, "A multiagent framework for component-level creativity evaluation." *MABD/AAMAS Conference*. Valencia, Spain. June 2012.
55. M.T. Koopmans, S. Meicke, I.Y. Tumer, B. Paasch, "Experimental polymer bearing wear assessment and test stand benchmarking for ocean wave energy converter technology." *The 2011 Prognostics and Health Management Conference*, Montreal, Canada. September 2011.
56. B.M. O'Halloran, R.B. Stone, I.Y. Tumer, "Early design stage reliability analysis using function-flow failure rates." *ASME International Mechanical Engineering Congress & Exposition, IMECE2011*. Denver, CO. November 2011.
57. J. Piacenza and I.Y. Tumer, "Towards a system analysis and integration framework for early design trades in sustainable building design." *ASME International Mechanical Engineering Congress & Exposition, IMECE2011*. Denver, CO. November 2011.
58. D.L. VanBossuyt, L. Carvalho, A. Dong, I.Y. Tumer, "On measuring engineering risk attitudes." *The 2011 ASME International Design Theory and Methodology Conference, IDETC/CIE2011*. Washington, DC. August 2011.

59. C. Hoyle, I.Y. Tumer, T. Kurtoglu, W. Chen, "Multi-stage uncertainty quantification for verifying the correctness of complex system designs." *The 2011 ASME International Design Automation Conference, IDETC/CIE2011*. Washington, DC. August 2011.
60. D.L. VanBossuyt, C. Hoyle, I.Y. Tumer, "Considering risk attitude using utility theory in risk-based design." *The 2011 ASME International Design Automation Conference, IDETC/CIE2011*. Wash., DC. August 2011.
61. M.T. Koopmans and I.Y. Tumer, "Electromechanical actuator testbed coupling design to reduce prognostic model uncertainty." *The 2011 ASME Computers & Information in Engineering Conference, IDETC/CIE2011*. Washington, DC. August 2011.
62. N. Papakonstantinou, S. Sierla, D. Jensen, I.Y. Tumer, "On applying functional failure analysis to large complex systems: Boiling water reactor design." *The 2011 ASME Computers & Information in Engineering Conference, IDETC/CIE2011*. Washington, DC. August 2011.
63. B.M. O'Halloran, R.B. Stone, I.Y. Tumer, "Early design stage reliability analysis using function-flow failure rates." *The 2011 ASME International Design Theory and Methodology Conference, IDETC/CIE2011*. Washington, DC. August 2011.
64. M.T. Koopmans, R. Hooven, I.Y. Tumer, "Reliability based design recommendations for an electromechanical actuator test stand." *The 2010 Prognostics and Health Management Conference*. Portland, OR. Oct 2010.
65. D.L. VanBossuyt and I.Y. Tumer, "Toward understanding collaborative design center trade study software upgrade and migration risks." *ASME International Mechanical Engineering Congress & Exposition. IMECE 2010-39213*. Vancouver, Canada. November 2010.
66. S.K. Oman, M.D. Koch, I.Y. Tumer, M.R. Bohm, "Verifying the usability of failure-based computational design methods." *ASME International Mechanical Engineering Congress & Exposition. IMECE2010-39259*. Vancouver, Canada. November 2010.
67. M.D. Koch, R.J. Schulte, I.Y. Tumer, "On the utilization of web-based collaboration tools by student design teams." *ASME International Mechanical Engineering Congress & Exposition. IMECE2010-39207*. Vancouver, Canada. November 2010.
68. E. Coatanea, T. Ritola, I.Y. Tumer, D.C. Jensen, "A framework for building behavioral models for design stage failure identification using dimensional analysis." *The 2010 ASME International Design Theory and Methodology Conference, IDETC/CIE2010*. Montreal, Canada. August 2010.
69. M.R. Bohm, K.R. Haapala, K. Poppa, R.B. Stone, I.Y. Tumer, "Environmental analysis of consumer products during the conceptual phase of product design." *The 2010 ASME Design for Manufacturing and the Lifecycle Conference, IDETC/CIE2010*. Montreal, Canada. August 2010.
70. D.L. Van Bossuyt, S. Wall, and I.Y. Tumer, "Towards risk as a tradeable parameter in complex system design trades." *The 2010 ASME Computers in Engineering Conference, IDETC/CIE2010*. Montreal, Canada. August 2010.
71. M.T. Koopmans and I.Y. Tumer, "Function-based analysis and redesign of a flyable electromechanical actuator test stand." *The 2010 ASME Computers and Information in Engineering Conference, IDETC/CIE2010*. Montreal, Canada. August 2010.
72. M.D. Koch, R.J. Schulte, I.Y. Tumer, "The effects of open innovation on collaboration and knowledge sharing in student design teams." *The 2010 ASME International Design and Design Education Conference, IDETC/CIE2010*. Montreal, Canada. August 2010.
73. S.K. Oman and I.Y. Tumer, "Assessing creativity and innovation at the concept design stage in engineering design: a classroom experiment." *The 2010 ASME International Design and Design Education Conference, IDETC/CIE2010*. Montreal, Canada. August 2010.
74. A. Brown, R. Paasch, I.Y. Tumer, P. Lenee-Bluhm, J. Hovland, A. von Jouanne, T. Brekken, "Towards a definition and metric for the survivability of ocean wave energy converters." *The 2010 ASME International Conference on Energy Sustainability*. Phoenix, AZ. July 2010.
75. D.C. Jensen, I.Y. Tumer, and T. Kurtoglu, "Design of an electrical power system using a functional failure and flow state reasoning methodology." *The 2009 Prognostics and Health Management Conference, PHM'09*. San Diego, CA. October 2009.
76. S. Kramer and I.Y. Tumer, "Towards StateCharts based failure propagation analysis for designing embedded PHM systems." *The 2009 Prognostics and Health Management Conference, PHM'09*. San Diego, CA. 2009.
77. D.C. Jensen, I.Y. Tumer, and T. Kurtoglu, "Flow State Logic (FSL) for analysis of failure propagation in early design." *The 2009 ASME International Design Theory and Methodology Conference, IDETC/CIE2009*. San Diego, CA. September 2009.
78. E. Walkingshaw, P. Strauss, J. Mueller, M. Erwig, and I.Y. Tumer, "A Formal Representation of Software-Hardware System Design." *The 2009 ASME International Design Theory and Methodology Conference, IDETC/CIE2009*. September 2009, San Diego, CA.
79. S. Kramer and I.Y. Tumer, "A framework for early assessment of failures during the design of PHM systems." *The 2009 ASME Computers and Information in Engineering Conference, IDETC/CIE2009*. San Diego, CA. September 2009.

80. F. Farhangmehr and I.Y. Tumer, "Optimal risk-based integrated design (ORBID) for multidisciplinary complex systems." *International Conference and Engineering Design, ICED2009*. Stanford, CA. August 2009.
81. S.K. Oman and I.Y. Tumer, "The potential of creativity metrics for mechanical engineering concept design". *International Conference and Engineering Design, ICED2009*. Stanford, CA. August 2009.
82. M. Koch and I.Y. Tumer, "Towards Open Design: The emergent face of engineering design". *International Conference and Engineering Design, ICED2009*. Stanford, CA. August 2009.
83. N. Patrinsky Robson, J.M. McCarthy, I.Y. Tumer, "Exploring New Strategies for Failure Recovery of Crippled Robot Manipulators". *ASME/IFTOMM International Conference on Reconfigurable Mechanisms and Robots (ReMAR 2009)*. 2009.
84. D.C. Jensen. I.Y. Tumer, and T. Kurtoglu, "Modeling the propagation of failures in software-driven hardware systems to enable risk-informed design." *ASME International Mechanical Engineering Congress and Exposition. Safety Engineering, Risk Analysis, and Reliability Methods Track*. Boston, MA. 2008.
85. F. Farhangmehr and I.Y. Tumer, "Capture, Assessment and Communication Tool for Uncertainty Simulation (CACTUS) in complex systems." *ASME International Mechanical Engineering Congress and Exposition. Safety Engineering, Risk Analysis, and Reliability Methods Track*. Boston, MA. 2008.
86. J. Mueller and I.Y. Tumer, "A methodology for identifying hardware states and requirements to ensure system reliability and success in software-hardware systems". *ASME International Mechanical Engineering Congress and Exposition. Safety Engineering, Risk Analysis, and Reliability Methods Track*. Boston, MA. 2008.
87. T. Kurtoglu and I.Y. Tumer, "A risk-informed decision making methodology for evaluating failure impact of early system designs." *ASME International Design Theory and Methodology Conference, IDETC/CIE2008*. New York City, NY. 2008.
88. A. Brown, I.Y. Tumer, R. Paasch, "Early stage failure modeling and safety analysis applied to the design of wave energy converters." *The 2008 ASME International Design Theory and Methodology Conference, IDETC/CIE2008*. New York City, NY. 2008.
89. R. Hutcheson, D.A. McAdams, R.B. Stone, I.Y. Tumer, "Effect of Model Element Fidelity Within a Complex Function-Based Behavioral Model." *The 2008 ASME Computers and Information in Engineering Conference, Integrated Systems Engineering Symposium, IDETC/CIE2008*. New York City, NY. 2008.
90. R.S. Hutcheson, D.A. McAdams, R.B. Stone, I.Y. Tumer, "Function-based behavioral modeling." *The 2007 ASME International Design Theory and Methodology Conference, IDETC/CIE2007*. Las Vegas, NV. 2007.
91. T. Kurtoglu and I.Y. Tumer, "A graph-based framework for early assessment of functional failures in complex systems." *The 2007 ASME International Design Theory and Methodology Conference, IDETC/CIE2007*. Las Vegas, NV. 2007.
92. F. Barrientos, I.Y. Tumer, D. Ullman, "Modeling uncertainty reduction in concurrent engineering design teams." *The 2007 ASME Reliability, Safety, and Failure Prevention Conference, IDETC/CIE2007*. Las Vegas, NV. 2007.
93. C. Hoyle, A.F. Mehr, I.Y. Tumer, W. Chen, "Cost-benefit analysis of ISHM in aerospace systems." *The 2007 ASME Computers and Information in Engineering Conference, Integrated Systems Engineering Symposium, IDETC/CIE2007*. Las Vegas, NV. 2007.
94. R.S. Hutcheson and I.Y. Tumer, "FACE—A function-based methodology for analyzing critical events." *The ASME 2006 Design Automation Conference, IDETC/CIE2006*. DETC2006-99535. Philadelphia, PA. 2006.
95. A.F. Mehr and I.Y. Tumer, "A multidisciplinary and multiobjective system analysis and optimization methodology for embedding integrated systems health management into NASA's complex systems." *The ASME 2006 Design Automation Conference, IDETC/CIE2006*. DETC2006-99619. Philadelphia, PA. 2006.
96. K. Grantham, R.B. Stone, I.Y. Tumer, "The risk in early design (RED) method: likelihood and consequence formulations." *The ASME 2006 Design Automation Conference, IDETC/CIE2006*. DETC2006-99375. Philadelphia, PA. 2006.
97. K. Grantham, R.B. Stone, I.Y. Tumer, "Prescribing and implementing the risk in early design method." *The ASME 2006 International Design Theory and Methodology Conference, IDETC/CIE2006*. DETC2006-99374. Philadelphia, CA. 2006.
98. A.F. Mehr and I.Y. Tumer, "A new approach to probabilistic risk analysis in the early stages of concurrent and distributed design of aerospace systems." *The ASME 2005 Design Automation Conference, IDETC/CIE2005*. DETC2005-85056. Long Beach, CA. 2005.
99. K. Grantham, M. VanWie, R.B. Stone, I.Y. Tumer, and F. Barrientos, "An Analysis of Risk and Function Information in Early Stage Design." *The ASME 2005 International Design Theory and Methodology Conference, IDETC/CIE2005*. DETC2005-85405. Long Beach, CA. 2005.
100. K. Grantham, R.B. Stone, and I.Y. Tumer, "Function-Based Risk Assessment: Mapping Function to Likelihood." *The ASME 2005 International Design Theory and Methodology Conference, IDETC/CIE2005*. DETC2005-85053. Long Beach, CA. 2005.

101. I.Y. Tumer, F. Barrientos, A.F. Mehr, "Towards Risk Based Design for NASA Missions: A Review of Practice and Research Trends at NASA." *The ASME 2005 Reliability, Safety, and Failure Prevention Conference, IDETC/CIE2005*. DETC2005-85100. Long Beach, CA. 2005.
102. R. Hutcheson and I.Y. Tumer, "Function-based design of a spacecraft power subsystem diagnostics testbed". *ASME International Mechanical Engineering Congress and Exposition*. IMECE2005-81120. Orlando, FL. 2005.
103. I.Y. Tumer, A.F. Mehr, F. Barrientos, D. Ullman, "An Information-Exchange Tool for Capturing and Communicating Decisions during Early-Phase Design and Concept Evaluation." *ASME International Mechanical Engineering Congress and Exposition*. IMECE2005-81690. Orlando, FL. 2005.
104. B. Mitchell, D.A. McAdams, R.B. Stone, I.Y. Tumer, "Computational Methods to Predict and Avoid Failure." *ASME International Mechanical Engineering Congress and Exposition*. IMECE2005-79907. Orlando, FL. 2005.
105. L.P. Chao, I.Y. Tumer, K. Ishii, "Design process error-proofing: Lessons from and challenges for NASA." *ASME International Mechanical Engineering Congress and Exposition*. IMECE2005-79451. Orlando, FL. 2005.
106. S.J. Uder, R.B. Stone, and I.Y. Tumer, "Failure analysis in subsystem design for space missions." *The ASME 2004 International Design Theory and Methodology Conference, IDETC/CIE2004*. DETC2004-57338. Salt Lake City, UT. 2004.
107. L.P. Chao, I.Y. Tumer, K. Ishii, "Design process error-proofing: engineering peer review lessons from NASA." *The ASME Design for Manufacturing Conference, IDETC/CIE2004*. Salt Lake City, UT. 2004.
108. I.Y. Tumer, F. Barrientos, L. Meshkat. "Risk Based Design for NASA's missions: Past and Future." *ASME International Mechanical Engineering Congress and Exposition*. IMECE2004-60829. Anaheim, CA. 2004.
109. S.J. Uder, R.B. Stone, and I.Y. Tumer, "Functional Modeling for Failure Cause and Effect Identification in the Design of Space Subsystems." *ASME International Mechanical Engineering Congress and Exposition*. IMECE2004-60846. Anaheim, CA. 2004.
110. M.E. Stock, R.B. Stone, I.Y. Tumer, "Comparing two levels of functional detail for mapping historical failures: you are only as good as your knowledge base." *ASME International Mechanical Engineering Congress and Exposition*. IMECE2003-41593. Washington, D.C. November 2003.
111. D.A. McAdams, D. Comella, I.Y. Tumer, "Developing variational vibration models of damaged beams: toward intelligent failure detection." *ASME International Mechanical Engineering Congress and Exposition*. IMECE2003-42540. Washington, D.C. November 2003.
112. R.A. Roberts, I.Y. Tumer, R.B. Stone, A.F. Brown, "A function-based exploration of JPL's problem and failure reporting database." *ASME International Mechanical Engineering Congress and Exposition*. IMECE2003-42769. Washington, D.C. November 2003.
113. M.E. Stock, R.B. Stone, I.Y. Tumer, "Going back in time to improve design: The Elemental Function-Failure Design Method." *The ASME 2003 International Design Theory and Methodology Conference, IDETC/CIE2003*. DETC2003/DTM-48633. Chicago, IL. September 2003.
114. S.G. Arunajadai, R.B. Stone, I.Y. Tumer, "A clustering based approach for failure mode identification." *ASME International Mechanical Engineering Congress and Exposition*. IMECE2002-DE-34422. New Orleans, LA. November 2002.
115. I.Y. Tumer, R.B. Stone, R.A. Roberts, "Towards failure-free design: Reducing dimensionality in function-failure similarity analysis for large databases." *ASME International Mechanical Engineering Congress and Exposition*. IMECE2002-33473. New Orleans, LA. November 2002.
116. S.G. Arunajadai, R.B. Stone, I.Y. Tumer, "A framework for creating a function-based design tool for failure mode identification." *The ASME 2002 International Design Theory and Methodology Conference, IDETC/CIE2002*. DETC2002/DTM-34018. Montreal, Canada. September 2002.
117. D.A. McAdams and I.Y. Tumer, "Towards failure modeling in complex dynamic systems: impact of design and manufacturing variations." *The ASME 2002 Design for Manufacturing Conference, IDETC/CIE2002*. DETC2002/DFM-34161. Montreal, Canada. September 2002.
118. R.A. Roberts, R.B. Stone, I.Y. Tumer, "Deriving function-failure similarity information for failure-free rotorcraft component design." *The ASME 2002 Design for Manufacturing Conference, IDETC/CIE2002*. DETC2002/DFM-34166. Montreal, Canada. September 2002.
119. I.Y. Tumer and R.B. Stone, "Analytical Method to Evaluate Failure Potential during High-Risk Component Development." *The ASME 2001 Design for Manufacturing Conference*. DETC2001-DFM21173. Pittsburgh, PA. September 2001.
120. I.Y. Tumer and E.M. Huff, "Using Triaxial Vibration Data for Vibration Monitoring of Helicopter Gearboxes." *The ASME Mechanical Vibration and Noise Conference*. DETC2001-VIB21755. Pittsburgh, PA. 2001.
121. I.Y. Tumer, and E.M. Huff, "Evaluating Manufacturing and Assembly Errors in Rotating Machinery to Enhance Component Performance." *The ASME 2000 Design for Manufacturing Conference*. DETC00-DFM14006. Baltimore, MD. September 2000.

122. I.Y. Tumer, K.L. Wood, I.J. Busch-Vishniac, "Condition Monitoring Methodology in Manufacturing and Design." *The ASME Design for Manufacturing Conference*. DETC98-DFM5824. Atlanta, GA. September 1998.
123. I.Y. Tumer, K.L. Wood, I.J. Busch-Vishniac, "Monitoring Fault Condition During Manufacturing Using the Karhunen-Loeve Transform." *The ASME Mechanical Vibration and Noise Conference*. DETC97-VIB4234. Sacramento, CA. September 1997.
124. I.Y. Tumer, K.L. Wood, I.J. Busch-Vishniac, "Improving Manufacturing Precision Using the Karhunen-Loeve Transform." *The ASME Design for Manufacturing Conference*. DETC97-DFM4347. Sacramento, CA. September 1997.
125. I.Y. Tumer, R.S. Srinivasan, K.L. Wood, "Characteristic Measures for the Representation of Manufactured Surfaces." *The ASME Design for Manufacturing Conference*. DETC96-DFM1275. Irvine, CA. 1996.
126. I.Y. Tumer, R.S. Srinivasan, K.L. Wood, I.J. Busch-Vishniac, "Fractal Precision Models of Lathe-Type Turning Machines." *The ASME Design Automation Conference*. Volume 65-2, pp.501-513. Albuquerque, NM. September 1993.

#### **Other Conference Articles:**

1. D. Jensen and I.Y. Tumer, "Modeling and analysis of Safety in early design." *Conference on Systems Engineering Research, CSER'13*. Atlanta, GA. March 2013.
2. C. Hsiao, R. Malak, I.Y. Tumer, T. Doolen, "Empirical findings about risk and risk mitigating actions from a legacy archive of a large design organization." *Conference on Systems Engineering Research, CSER'13*. Atlanta, GA. March 2013.
3. B.M. O'Halloran, R.B. Stone, I.Y. Tumer, "A Failure Modes and Mechanisms Naming Taxonomy." *RAMS 2012*.
4. B.M. O'Halloran, R.B. Stone, I.Y. Tumer, "A Method to Compute Early Design Risk Using Customer Importance and Function-Flow Failure Rates." *CIRP 2012*.
5. T. Doolen, D. VanScoter, I.Y. Tumer, R. Malak, D. VanBossuyt, C. Hsiao, "Empirically-Derived Risk Indicators in Large Design Organizations." *ASEM Conference*, Lubbock, TX. October 2011.
6. S. Uckun, T. Kurtoglu, P. Bunus, I.Y. Tumer, C. Hoyle, D. Musliner, "Model-Based Systems Engineering for the Design and Development of Complex Aerospace Systems." *SAE Aerotech Conference*. October 2011.
7. K.R. Haapala, K.R. Poppa, R.B. Stone, I.Y. Tumer, "Automating environmental impact assessment during the conceptual phase of product design." *AAAI Spring Symposia, AI in Sustainable Design*. Stanford, CA. March 2011.
8. Y. Zhang, T. Kurtoglu, I.Y. Tumer, B.M. O'Halloran, "System-level reliability analysis for conceptual design of electrical power systems." *Conf. on Systems Engineering Research, CSER'11*. Long Beach, CA. 2011.
9. C. Hoyle, A.F. Mehr, I.Y. Tumer, W. Chen, "On quantifying cost-benefit of ISHM in Aerospace systems." *2007 IEEE Aerospace Conference*. Big Sky, MN 2007.
10. T. Kurtoglu and I.Y. Tumer. "FFIP: A framework for early assessment of functional failures in complex systems." *The International Conference on Engineering Design, ICED2007*. Paris, France. 2007.
11. R.S. Hutcheson, D.A. McAdams, R.B. Stone, I. Y. Tumer, "Function based systems engineering (FuSE)". *The International Conference on Engineering Design, ICED2007*. Paris, France. 2007.
12. J. Vucovich, R.B. Stone, X. Liu, I.Y. Tumer. "Risk Assessment in Early Software Design Based on the Software Function-Failure Design Method," *31st IEEE Computer Society Signature Conference on Software Technology and Applications (COMPSAC)*, Paper #21, Beijing, China. 2007.
13. K. Grantham-Lough, R.B. Stone, I.Y. Tumer, "Failure prevention through effective cataloguing and utilization of failure events." *International Conference on Engineering Failure Analysis*. 2006.
14. L.P. Chao, I.Y. Tumer, "Risk assessment practices at NASA: Studies of design and review methods." In *IEEE Aerospace Conference*, Big Sky, MN, 2006.
15. J. Sauvageon, A. Agogino, A.F. Mehr, I.Y. Tumer, "Comparison of event detection methods for centralized sensor networks." *IEEE Sensors Applications Symposium*. Houston, TX. 2006.
16. I.Y. Tumer, "Towards ISHM Co-Design: Methods and practices for fault avoidance and management during early phase design". *1st Integrated Systems Health Engineering and Management Forum*. Napa, CA. November 2005.
17. L.P. Chao, I.Y. Tumer, and K. Ishii, "Design process error-proofing: Benchmarking of the NASA development cycle." *IEEE Aerospace Conference*. Big Sky, MN, 2005.
18. A.F. Mehr, I.Y. Tumer, E. Barszcz, "Optimal Design of Integrated Systems Health Management (ISHM) Systems for Improving the Safety of NASA's Exploration Missions: A Multidisciplinary Design Approach." *WCSMO'06*, Rio de Janeiro, Brazil, 2005.
19. F. Barrientos, E.R. Pedersen, I.Y. Tumer, "Towards Failure-Based Decision Making during Design: User-Centered Design Approach." *IEEE International Conference on Systems, Man, and Cybernetics*. 2005.
20. R. Hutcheson and I.Y. Tumer, "Function-based Co-design Paradigm for Robust Health Management." *The 5<sup>th</sup> International Workshop on Structural Health Monitoring*. Stanford, CA. 2005.

21. M. VanWie, M. Bohm, R.B. Stone, I.Y. Tumer, and F. Barrientos, "Learning from failures: archiving and designing with failure and risk." *Computer Aided Industrial Design and Conceptual Design Conference*. Delft, Netherlands, May 2005.
22. A.F. Mehr and I.Y. Tumer, "Two-Level Optimization of Systems Health Monitoring in Systems with Top-Down Hierarchical Architecture." *The 5<sup>th</sup> International Workshop on Structural Health Monitoring*. Stanford, CA. September 2005.
23. K.V. Ngo and I.Y. Tumer, "Impact of variations on 1-D flow in gas turbine engines via MC simulations." *IEEE Aerospace Conference*. March 2004.
24. I.Y. Tumer, R.B. Stone, D.G. Bell, "Requirements for a failure mode taxonomy for use in conceptual design." *International Conference on Engineering Design, ICED2003*, Paper No. 1612, Stockholm, Sweden. August 2003.
25. N. Oza, I.Y. Tumer, K. Tumer, E.M. Huff, "Classification of aircraft maneuvers for fault detection." *Multiple Classifier Systems Workshop*. Surrey, England, July 2003.
26. I.Y. Tumer and E.M. Huff, "Principal components analysis of triaxial vibration data from helicopter transmissions." *The 56th Meeting of the Society for Machinery Failure Prevention Technology*, pp. 331-341. Virginia Beach, VA, April 2002.
27. E.M. Huff, I.Y. Tumer, M. Mosher, "An Experimental Comparison of Transmission Vibration Responses from OH-58c and AH-1 Helicopters." *The Vertical Flight Society's 57th Annual Forum*, American Helicopter Society. Washington, D.C., May 2001.
28. E.M. Huff, I.Y. Tumer, E. Barszcz, D. Lewicki, H. Decker, "Experimental Analysis of Mast Lifting and Bending Forces on Vibration Patterns before and after Pinion Reinstallation in an OH-58 Transmission Test Rig." *The Vertical Flight Society's 56th Annual Forum*. Virginia Beach, VA. May 2000.
29. E.M. Huff, E. Barszcz, I.Y. Tumer, M. Dzwonczyk, J. McNames, "Experimental Analysis of Steady-State Maneuvering Effects on Transmission Vibration Patterns Recorded in an AH-1 Cobra Helicopter." *The Vertical Flight Society's 56th Annual Forum*, American Helicopter Society. Virginia Beach, VA. 2000.
30. I.Y. Tumer and A. Bajwa, "A Survey of Aircraft Engine Health Monitoring Systems." *1999 Joint Propulsion Conference*, Aerospace Systems Condition Monitoring session. Los Angeles, CA. 1999.
31. D.A. McAdams, I.Y. Tumer, and K.L. Wood, "An Overview of Tolerance Design for Function and Manufacturing Precision in Product Design." *1998 NSF Design and Manufacturing Conference*. Monterrey, Mexico, January 5-8, 1998.
32. K.L. Wood, R.S. Srinivasan, I.Y. Tumer, R. Cavin, "Fractal-Based Tolerancing: Theory, Dynamic Process Modeling, Test Bed Development and Experiments." *The 1993 NSF Design and Manufacturing Systems Conference*, Volume 1, pp.731-740. Charlotte, NC. September 1993.
33. I.Y. Tumer, K.L. Wood, I.J. Busch-Vishniac, "Extraction of Fault Features on SLS Part Surfaces Using the Karhunen-Loeve Expansion Technique." *The 1996 Solid Freeform Fabrication Symposium*, pp. 575-585. Austin, TX. August 1996.
34. I.Y. Tumer, D.C. Thompson, R.H. Crawford, K.L. Wood, "Quantification of Part Surface Quality: Application to Selective Laser Sintering." *The 1996 World Automation Conference*, pp. 731-736. Montpellier, France. May 1996.
35. I.Y. Tumer, D.C. Thompson, R.H. Crawford, K.L. Wood, "Surface Characterization of Polycarbonate Parts in Selective Laser Sintering." *The 1995 Solid Freeform Fabrication Symposium*, pp.181-188. Austin, TX. August 1995.
36. I.Y. Tumer, I.J. Busch-Vishniac, K.L. Wood, "Modeling of Dynamic Errors Caused by the Beam Delivery System in Selective Laser Sintering." *The 1995 Solid Freeform Fabrication Symposium*, pp.353-361. Austin, TX. August 1995.

#### **Engineering Education Related Articles:**

37. I.Y. Tumer and A. Bajwa, "Learning about how Aircraft Engines Work and Fail". *The 1999 Joint Propulsion Conference*, Propulsion Education session. Los Angeles, CA. June 1999.
38. I.Y. Tumer and L.F. Arthur, "Benefits of Team-Teaching for Doctoral Students Preparing for an Academic Career." *The 1998 ASEE Annual Conference*, Graduate Studies Division. Seattle, Washington. June 1998. *Best Paper Award*.
39. E. Matsumoto, L.F. Arthur, I.Y. Tumer, J. Gray, "How to Establish an ASEE Student Chapter?" *The 1997 ASEE Annual Conference*, Paper No.2312. Milwaukee, WI. June 1997.
40. R. Cavin, I.Y. Tumer, M.W. Foohey, "Design of Work Jigs to Assist the Disabled in Sheltered Workshops in the Production of Sample Display Chains." *The 1995 Rehab. Engineering Society of North America Conference (RESNA '95)*, pp.725-727. Vancouver, BC, Canada. June 1995. *Winner of the Design Competition*.



### **Book Chapters/Dissertation/Technical Reports & Articles:**

1. R. Arlitt, R.B. Stone, I.Y. Tumer, "Impact of Function-Related Research on Education and Industry." Invited book chapter, *Impact of Design Research on Industrial Practice: Tools, Technology and Training*, edited by Amaresh Chakrabarti and Udo Lindemann. Springer. 2015.
2. I.Y. Tumer, R.S. Srinivasan, K.L. Wood, "Analysis and Synthesis of Engineering Surfaces to Bridge Manufacturing and Design." Invited book chapter, *Computer Aided and Integrated Manufacturing Systems Techniques and Applications*, Volume VI: Manufacturing Systems Processes. pp. 1:1-45. CRC Press. 2001.
3. I.Y. Tumer, "System Design Methods for Effective Fault Prevention and Management." Invited book chapter, *Systems Health Monitoring*. 2010.
4. I.Y. Tumer, "Foundations of Condition Monitoring for Design and Manufacturing." Doctoral Dissertation. The University of Texas at Austin. May 1998.
5. S. Hayden, I.Y. Tumer, "Preliminary report of mission design and operations for critical events." NASA CR-2005-213472. 2005.
6. K. Ngo and I.Y. Tumer, "Impact of variations on 1-D flow in gas turbine engines." NASA TM 2004-212844.
7. L. Chao and I.Y. Tumer, "Case study of engineering peer meetings in JPL's ST-6 project." NASA TM 2004-212842.
8. L. Chao, I.Y. Tumer, and D.G. Bell, "A study of technical engineering peer reviews at NASA." NASA TM 2004-212843.
9. I.Y. Tumer. Invited article, *Advanced Manufacturing Technology Newsletter*. Vol.21, No.8, 2002.