

IREM Y. TUMER, PH.D., ASME FELLOW

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CV Last Revision: 11/2020

RESEARCH EXPERTISE:

Risk and reliability based design
Model-based design
System analysis & engineering

Applications: aircraft, spacecraft, power grid,
nuclear systems, and renewable energy systems.

DEGREES EARNED:

Ph.D. in Mechanical Engineering, May 1998.
M.S.E. in Mechanical Engineering, May 1995.
B.S. in Mechanical Engineering, December 1991.

The University of Texas, Austin, Texas
The University of Texas, Austin, Texas
The University of Texas, Austin, Texas

POSITIONS HELD:

Oregon State University, Corvallis, OR

2006 to Present

Vice President for Research	2020-Present
Vice President for Research, Interim	2018-2020
Associate Dean for Research, College of Engineering	2013-2018
Professor, School of Mechanical, Industrial, and Manufacturing Engineering	2013-Present
Associate Professor with indefinite tenure, School of MIME	2010-2013
Associate Professor, School of MIME	2006-2010

NASA Ames Research Center, Moffett Field, CA

2000 to 2006

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

Caelum Research Corporation/Computer Sciences Corporation

1998 to 2001

Research Scientist, Computational Sciences Division, NASA ARC
Technical Lead, Integrated Health and System Monitoring Group

The University of Texas, Austin, TX

1993 to 1997

Graduate Research Assistant; Instructor

Houston Instrument, Austin, TX

1991 to 1992

Product Marketing Technician for Printer Accuracy and Reliability

ROLM Systems, Austin, TX

1988 to 1991

Assistant Mechanical Engineer

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.

DIRECTORSHIPS AND ADVISORY BOARDS:

- **Board Memberships.** 2018-Present
NSF National Nanotechnology Coordinated Infrastructure (NNCI) Advisory Board
Pan Pacific UAS Test Range Complex Advisory Board
Oregon Nano Science and Microtechnologies Institute (ONAMI) Board of Directors
Oregon Translational Research and Development Institute (OTRADI) Board of Directors
Virtue Labs Signature Research Center Board of Directors
SOAR Oregon Board of Directors
OSU Advantage Accelerator Board of Advisors
Regional Accelerator & Innovation Network (RAIN) Board of Directors
Executive Board for the Cooperative Institute for Marine Resources
- **OMIC R&D Governing Board member.** 2016-2019
Oregon Manufacturing Innovation Center
- **Technical Advisory Committee member.** 2015-2017
UI Labs Digital Manufacturing and Design Innovation Institute (DMDII)
- **Co-Director:** Oregon State University Advantage Accelerator Program
Enhancements Toward an NSF I-Corps Site 2015-Present
- **Director:** NSF I/UCRC Center for e-Design Site, Oregon State University 2014-Present
- **Memberships in Committees and Councils.** 2018-Present
Cascadia Higher Education/Research Excellence Advisory Committee
Oregon Innovation Council (Oregon INC)
Southern Willamette Valley Solutions Advisory Committee
Portland Initiative Advisory Council
Cooperative Institute for Marine Resources Studies Executive Committee (Chair)
Senior Research Officers Council (appointed by the Oregon Council of Presidents)
Academic Strategies Committee, OSU Board of Trustees (Ex-Officio member)
HIBAR Research Alliance Council
Futures Commission by Business Oregon

LEADERSHIP EXPERIENCE:

- **As Vice President for Research, Oregon State University (2018-Present):**
 - Leading the university's ~\$450M research enterprise
 - Increase of ~20% from FY18 (up ~60% since FY14)
 - FY20 funding press release: <https://today.oregonstate.edu/news/awards-totaling-nearly-450-million-oregon-state-sets-record-annual-research-funding>
 - Leading the offices of sponsored research and award administration (pre-award *and* post-award), research integrity (animal use and care, human research protection, conflict of interest, export controls, research conduct, boat and dive safety, research misconduct), commercialization and corporate development, and research development (~80 FTE), plus 20 interdisciplinary centers, institutes, and core facilities (~250 FTE), with an operating budget of ~\$20M/yr and 18 direct reports.
 - *Key Organizational Efforts:*
 - Leading the strategic reorganization and restructuring of the Research Office.
 - Leading the transformation of the culture and vision of the Research Office.
 - Leading the assessment and re-envisioning of core facilities.
 - Leading the signing of an MOU for shared used of facilities between Oregon's universities.
 - Leading the strategic transformation of the [Linus Pauling Institute](#); the NOAA [Cooperative Institute on Marine Resources Studies](#); the [Center for Genome Research and Biocomputing](#); the [Oregon Seagrant Program](#); [Hatfield Marine Sciences Center](#); [Center for the Humanities](#); the [STEM Research Center](#); and the [Pacific Marine Energy Center](#).
 - Leading the collaboration with Oregon Health Sciences University and Portland State University on building capacity for [inter-institutional space](#) for collaborative health research in Portland.
 - Partnering with the Office of Institutional Diversity and Office of Faculty Affairs to increase efforts on diversity, equity, and inclusion.
 - Partnering with College of Science and Public Health on a COVID-19 prevalence study ([TRACE](#))
 - Leading university's COVID-19 [Research Resumption](#) efforts.
 - *Innovation, Entrepreneurship, Economic Development:*
 - Member of the [Futures Commission](#) to develop a 10-year innovation plan for Oregon.
 - Leading the university [strategic plan](#) actions on supporting innovation and entrepreneurship and retooling our approach to university-industry relations.
 - Home for OSU's commercialization, tech transfer, and industry contract negotiations.
 - Leading the growth of the innovation and entrepreneurship program.
 - ⇒ Co-Director of [NSF I-Corps Site](#), Oregon State University
 - ⇒ Home of the [Advantage Accelerator Program](#) to assist startups in all stages
 - ⇒ Delivery of innovation days at OSU to provide resources and tools to faculty/students
 - Leading conversations on innovation and entrepreneurship in the promotion and tenure process.
 - ⇒ Co-PI on a national NSF-funded grant: Innovation and Entrepreneurship (I&E) [Summit: A Seismic Shift in Promotion and Tenure](#).
 - ⇒ Innovation & entrepreneurship roundtable discussions
 - Leading the transformation of the [Advanced Technologies and Manufacturing Institute \(ATAMI\)](#) into an incubator space, also housing OSU's [Advantage Accelerator program](#) in support of companies such as [Valliscor](#), [Agility Robotics](#), [E-MSion](#), [OnBoard Dynamics](#).
 - Continued engagement of notable OSU spun-puts such as [NuScale Power](#) and [Inpria](#).
 - Leading the signing of an MOU for shared intellectual property among Oregon's universities.
 - Partnering with Oregon's research universities to build a state-wide innovation program, including Pacific Northwest a regional NSF Icorps Hub proposal effort.
 - Co-leading the selection of awards for the university innovation research fund to provide cost share to federal grants for economic development (managed by [Business Oregon](#).)
 - Supporting the development of the Innovation Lab as part of [Hatfield Marine Science Center labs](#).
 - OSU Director for NSF I/UCRC [Center for edesign](#).
 - Partnering with OSU Foundation on developing a framework for industry relations.

- *Research Development and Advancement:*
 - Leading the university [strategic plan](#) actions on diversifying research and improving the research infrastructure.
 - Leading development of an NOAA strategy.
 - Leading the development of an NIH strategy.
 - Leading the development of large project institutional support process.
 - Providing equipment match and seed funding to acquire key research equipment.
 - Leading research development efforts to secure large federal grants (NSF ERC, STCs, AI Institute, NSF Big Ideas, etc.)
 - Leading research development efforts to secure key private foundation grants (Keck Foundation, Murdock Trust, etc.)
 - Partnering with OSU Foundation to increase gifts and grants from donors and private foundations in support of research.
 - Partnering with government relations and lobbying firm to secure directed funding through the appropriations process (ex: advanced manufacturing, marine robotics, marine renewable energy.)
 - Engaging federal agencies to increase the reputation and visibility OSU faculty and research.
 - Partnering with colleges to develop and deliver faculty development workshops around extramural fund raising, federal agency engagement, compliance, and innovation & entrepreneurship.
 - Engaging with potential donors on an endowment for an Assistant Professor Excellence Program.
 - Partnering with the Office of Faculty Affairs on new academic faculty orientation and academic leadership workshop series.

- *University Oversight:*
 - Partnering with Provost and Vice President of Finance and Administration to oversee management of and secure funds for OSU's research infrastructure.
 - Partnering with Vice President of Finance and Administration to review finance and administration revenue, fee structures, and core facilities support models, renovation and upkeep of research facilities (Hatfield Marine Science Center, Center for the Humanities, Large Animal Research Center, etc.)
 - Leading of the development of gift vs grant policy with OSU Foundation.
 - Chairing the oversight and management of the [Regional Class Research Vessel](#) project (NSF-funded) and the [Ocean Observatories Initiative](#).
 - Chairing the oversight and management of the DOE-funded full-scale [PacWave test facility](#) for wave energy conversion technologies.
 - Providing oversight and leading task force on consolidating and integrating marine operations.
 - Senior Leadership Member: Compliance Executive Committee; Policy & Standards Executive Committee; Union Executive Committee; Infrastructure Working Group; Global Engagement Compliance Working Group; Research Risk Committee.

- *Research Integrity and Compliance:*
 - Institutional Official (IO) for OSU.
 - Leading the assessment and restructuring of the Human Research Protection Program & IRB.
 - Leading the assessment and development of compliance processes for global engagement.
 - Leading the development of hemp policy and oversight of hemp research and compliance.
 - Developing university policy for research misconduct.
 - Partnering with university senior leadership to consolidate conflict of interest and conflict of commitment processes.
 - Partnering with university senior leadership to rethink risk appetite.
 - Leading the preparation for an AAALAC accreditation to evaluate OSU's use of animals in research, teaching, and outreach.

- **As Associate Dean for Research, College of Engineering, Oregon State University (2013-2018):**
 - Formed and led the Office of Research and Economic Development (Budget: ~\$2M/year; 5 direct reports.)
 - *Key accomplishments for the College:*
 - Doubled the research grants received.
 - Increased research expenditures by 50%.
 - Doubled the number of proposal awarded.

- Quadrupled the number of large proposal submissions.
 - Tripled NSF CAREER and Young Investigator awards .
 - Led the partnering with 4 Manufacturing USA Institutes and a robotics and AI institute.
 - Led the relationship with government relations to secure funds for Marine Robotics and Advanced Manufacturing through the federal appropriations process.
 - Facilitated and supported the formation of an NSF Engineering Research Center team.
- *Mentoring and Faculty Development:*
- Formed and hosted New Faculty Development Workshop internal series. 2013-2018.
Topics: Promotion and tenure, Time management, budget management, grant writing, federal agencies, teaching, NSF CAREER proposals, industry partnering, mentoring.
 - Hosted grant writing seminar and 1-on-1 coaching workshops from *Grant Writers' Seminars & Workshops*. 2016-2018.
 - Hosted grant writing workshop by *Grant Writing Central*. 2014.
 - Hosted mentoring workshop by Kerry Ann Rockquemore from the [National Center for Faculty Development and Diversity](#). 2015.
 - Hosted quarterly networking meetings with engineering women faculty. 2015-2017.
 - Hosted the NSF CAREER Proposal Writing Workshop at Oregon State University. 2017.
 - Participated in the Deans' Convening on Faculty Mentoring Workshop at ASU. 2018.
 - Training by OSU [NSF ADVANCE](#) on Difference, Power, Discrimination. 2015.
- *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 interdisciplinary initiatives:*
- OSU Lead for the state-wide Oregon Manufacturing Innovation Center ([OMIC](#)) initiative.
 - Co-lead on the development of a multidisciplinary initiative on [engineering design for society](#).
 - Formation of two new large institute/center efforts ([CORIS](#) Institute for collaborative robotics and intelligent systems; [RAPID](#) Institute for the advancement of process intensification.)
 - Formation of strategic partnerships with national labs (PNNL, NETL, INL.)
 - Partnering on 8 NNMI institute proposal efforts (Partners in two winning NNMI institutes.)
 - Partnering with Oregon Health Sciences University (OHSU) on a joint seed funding initiative.
 - Support for the development of multiple NSF ERC and NSF STC proposals.
 - Support for the multidisciplinary Humanitarian Engineering Program.
- *Industry development initiatives:*
- Establishment of industry partnerships (Boeing, HP, NuScale Power, Precision Cast, Daimler USA Trucks, Autodesk, Adidas, Nike.)
 - Establishment of multi-year, multi-PI seed funding program with HP.
 - Establishment of consortium of companies for the NSF I/UCRC Center for e-design.
 - Support for the formation of two additional I/UCRC efforts in the College of Engineering.
 - Facilitation of proposal match from the Oregon Metals Initiative (OMI.)
 - Facilitation of partnerships with international companies in Thailand and in Turkey.
- *Leadership training and activities:*
- [Academy for Innovative Higher Education Leadership](#). 2015-2016.
 - Executive Coaching by Kate Ebner. The Nebo Company. 2015-2016.
 - Communication. Executive Coaching by Dave Yewman. Elevator Pitch, Inc. 2015-2016.
 - Fund-raising. Optimizing Philanthropic Opportunities by Advancement Resources. 2015-2018.
 - 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.
 - OSU [NSF ADVANCE](#) intensive training on Difference, Power, Discrimination. 2015.
 - ASEE Engineering Research Council Conferences. 2016-2018.

- **As Faculty, Mechanical, Industrial, & Manufacturing Engr., Oregon State University (2007-2012).**
 - Area Lead for Design and Mechanics Technical Area.
 - Lead, Complex Engineered Systems Design Laboratory.
 - Lead in >\$7M in funding at OSU (Faculty Researcher Award in 2010).
 - Mentored 24 undergraduate assistants, 12 PhD students, 17 MS students, and 5 postdocs at OSU.
 - Placed 5 Ph.D. Students and 2 Postdocs 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.
 - Established long term international collaborations in Finland, France, Australia.

- **As Senior Research Scientist, Lead, and Program Manager, NASA Ames Research Center (2001-2006):**
 - Lead in >\$5M in funding from NASA programs.
 - Formed and led a research group in complex system design (10+ direct reports; ~\$2.5M/year budget).
 - Supervised 14 graduate students are interns or postdocs.
 - Deputy area lead, Diagnostics and Systems Health, Intelligent Systems (50+ people).
 - Deputy Project Lead, Integrated Systems Health Management (ISHM), ESMD (~\$8M/year budget).
 - Program Management in 3 different NASA programs:
 - Deputy Program Manager, SRRM/Engineering for Complex Systems Program (Level 2; ~\$7M/year budget)
 - Program Manager, CRR/Engineering for Complex Systems Program (Level 3; ~\$4M/year budget)
 - Program Manager, Intelligent Systems Program (Level 3; ~\$1M/year budget)

PROFESSIONAL ACTIVITIES:

Funding:

2007-2018 as Faculty at Oregon State University (Total: >\$7.6M)

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)**: 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 I/UCRC**. Center for e-Design. PIs: **Irem Y. Tumer**, Robert Stone. February 2013-March 2014. Total Funding: **\$13,000** (Planning Grant).
 - **NSF IIP-1362167**. I/UCRC Center for e-Design: IT-Enabled Design and Realization of Engineered Products and Systems. PIs: **Irem Y. Tumer**, Robert Stone. March 2014-February 2019. Funding: **\$300,000** (NSF), **\$150,000/year** (Membership).
 - **Keck Foundation**. New Shape Shifting Materials for Energy Storage and Conversion. PIs: A.P. Greaney, B. Gibbons, **Irem Y. Tumer**, Robert Stone. February 2014-January 2017. Funding: **\$1,000,000**.
 - **NSF CMMI-1363509**. Collaborative Research: Improving the Safety of Complex Engineered Systems by Identifying Failure Paths Early in the Design Process. PIs: **Irem Y. Tumer**, Chris Hoyle, OSU, and David Jensen, University of Arkansas. August 2014. Total Funding: **\$400,000**.
 - **NSF CMMI-1363411**. Designing Complex Engineering Systems using Multi-Agent Coordination Approaches. PIs: Irem Y. Tumer, Kagan Tumer. August 2014-July 2016. Total Funding: **\$200,000**.
 - **NSF IIP-1450424**. I-Corps Site: Oregon State University Advantage Accelerator Program Enhancements Toward an NSF I-Corps Site. PIs: Karl Mundorff, **Irem Y. Tumer**. March 2015-February 2018. Total Funding: **\$300,000**.
 - **NASA NNX15AQ90G**. Tools to Support Autonomy in Aviation. PI: Robert Stone, Chris Hoyle, **Irem Y. Tumer**. September 2015-August 2016. Total Funding: **\$80,000**.
 - **NSF CMMI-1562027**. Designing Failure-Tolerant Complex Engineering Systems. PI: **Irem Y. Tumer**. September 2016-August 2019. Total Funding: **\$466,430**.
 - **NSF CMMI-167179**. Workshop: Designing Systems to Address Global Challenges. PI: **Irem Y. Tumer**. September 2016-August 2018. Total Funding: **\$49,999**.
 - **NSF CMMI-1627179**. NSF CAREER Faculty Early Career Development Workshop. PI: Brad Kramer (KSU), co-PI: **Irem Y. Tumer**. April 2017. Total Funding: **\$49,999**.
 - **NASA NS295A**. Center for edesign: Distributed Optimization to Support Complex System Design. PI: Chris Hoyle, co-PI: **Irem Y. Tumer**. September 2017. Total Funding: **\$40,000**.
 - **NASA NS294A**. Center for edesign: Verification and Validation of Human Centric Operations in Large Scale Systems. PI: Onan Demirel, co-PI: **Irem Y. Tumer**. September 2017. Total Funding: **\$40,000**.
 - **NASA NS302A**. Identification and Validation of Human Errors in Large-Scale Complex Systems. PI: Onan Demirel, co-PI: **Irem Y. Tumer**. June 2018. Total Funding: **\$149,965**.
 - **NASA NS308A**. Resilient Design Methodology to Support On-Demand Mobility. PI: Chris Hoyle, co-PI: **Irem Y. Tumer**. August 2018. Total Funding: **\$125,000**.
 - **SGT**. Center for edesign membership: Resilient Design Methodology. PI: Chris Hoyle, co-PI: **Irem Y. Tumer**. September 2018. Total Funding: **\$32,000**.
 - **NSF IIP**. Innovation and Entrepreneurship (I&E) Summit: A Seismic Shift in Promotion and Tenure. PI: Rich Carter. co-Pis: **Irem Y. Tumer**, Tuba Ozkan-Haller, Karl Mundorff, Jana Bouwma-Gearhart. August 2019. Total Funding: **\$438,440**.
 - **NSF IIP-1450424**. Supplement to I-Corps Site: Oregon State University Advantage Accelerator Program Enhancements Toward an NSF I-Corps Site. PIs: Karl Mundorff, **Irem Y. Tumer**. March 2020-August 2020. Total Funding: **\$50,000**.

Gifts, Seed Grants, Supplemental Grants:

- **Autodesk.** Integration of Autodesk into Computational Design Curriculum. PIs: **Irem Y. Tumer.** September 2017. Total Funding: **\$50,000.**
- **Autodesk.** Developing a Computational Design Framework. PIs: **Irem Y. Tumer** and Matthew Campbell. May 2016. Total Funding: **\$50,000.**
- **Oregon BEST:** Developing a System Analysis and Integration Framework for Early Design Trades in Sustainable Building Design. **PI: Irem Y. Tumer,** Ihab Elyazadi (Co-PI at U. of Oregon). NEAA/Better Bricks through BEST. Total Funding Requested: **\$25,000.** December 2010. OSU Share: **\$10,647.**
- **MIME School:** 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 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 Group Lead: ~\$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. 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. 2012-2018.
- **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.
- **VP for Continuing Development**, Society of Women Engineers, Willamette Valley Chapter. 2018-Present.
- **Member of Executive Committee**, Society of Women Engineers, Willamette Valley Chapter. 2018-Present.
- **Section Representative**, Society of Women Engineers, Willamette Valley Chapter. 2017-2018.
- **Scholarship Committee co-Chair**, Society of Women Engineers, Willamette Valley Chapter. 2014-2016.
- **Scientific Committee**, NTNU (Norway) - Department of Engineering Design and Materials. 2015-Present.

- **Member of the Systems Engineering Consortium**, University of Alabama and NASA Marshall. 2010-2012.
- **Invited Reviewer**, NSF Review Panels. 2007-Present.
- **Invited Reviewer**, DMDII Review Panels. 2015-2017.
- **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; NASA Research Announcement proposals

University Service at OSU 2006-2018:

- Member, Search Committee for Dean of College of Business, Oregon State University. 2019-2020.
- College of Engineering Liaison, ARCS Foundation. 2016-2018.
- Organizer, New Faculty Development Workshops, College of Engineering. 2013-2018.
- 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, Director for OSU Accelerator, College of Business. 2015.
- Member, Faculty Search Committee. MIME, Oregon State University. 2014-2015.
- Ex-Officio Member, Engineering Research Council. 2014-2017.
- 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. 2013-2014.
- College of Engineering Research Council, MIME representative. 2011-2013.
- Member, Faculty Search Committee, IME. 2011-12.
- New Faculty Mentor, Chris Hoyle, MIME. 2011-2018.
- New Faculty Mentor, Matt Campbell, MIME. 2013-2018.
- 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. 2006-2013.
- Member, Faculty Search Committee, IME. 2007-2008.
- Yearly Participation in MIME's Industry Advisory Board meetings. 2007-2010.
- Lead for MIME seminar series or ME 519, ME 516 seminars (invited external speakers). 2007-2012.
- Organized student teams for the ASME Student Design Competition as part of ME 382. 2008-09.

NASA Service 1998-2006:

- 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. 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, 4th 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:

- Fellow of the American Society of Mechanical Engineers (ASME).
- Member of American Society of Mechanical Engineers (ASME).
- Member of Pi Tau Sigma Honor Society.
- Member, Society of Women Engineers (SWE).
- Member, ARCS Foundation.
- Member, American Society of Engineering Education (ASEE).
- Ex-member of IEEE.
- Ex-member of Design Society.
- Ex-member of Society of Manufacturing Engineers.
- Ex-member of American Helicopter Society.
- 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.
- Undergraduate Fellowships and Recognition: Dean's Honor Roll; Dean's List; Jesse Jones Scholarship, Mechanical Engineering Departmental Scholarship, Physics Department Scholarship.
- University Continuing Fellow. The University of Texas, Austin. 1996-1997.
- NSF Undergraduate Research Experiences (REU) Fellow. The University of Texas, Austin. 1992-1996.

EDUCATIONAL AND SUPERVISORY ACTIVITIES:

Courses Taught:

- *ME 302: Introduction to Mechanical Engineering.* 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.* 2007.
Oregon State University.
Fundamentals of planar and 3D kinematics and equations of motion. Junior level required course.
- *ME 382: Introduction to Design.* 2008.
Oregon State University.
Junior level required course on the fundamentals of the engineering design process.
- *ME 516: Complex System Design.* 2007-2013.
Oregon State University.
Graduate course on systems engineering and model based design for complex systems.
- *ME 515: Risk and Reliability Based Design.* 2008-2013.
Oregon State University.
Graduate course on the modeling, analysis, and quantification of risk in system design.
- *ME 383: Mechanical Component Design.* 2008-2013.
Oregon State University.
Junior level required course on the fundamentals of failure analysis in mechanical components.

Postdoctoral Fellows Supervised (2009-2016):

- Bryan O'Halloran (June-August 2013)
- David Jensen (June-August 2012)
- Scott Proper (April 2012-2016)
- Christopher Hoyle (December 2010-August 2011)
- Matt Bohm/Co-Supervised (2009-2010)

Graduate Students Supervised (2007-Present):

PhD Students (12):

- Lukman Mohamed Irshad, PhD Student (Start Date: Fall 2017)
- Daniel Hulse, PhD Student (Graduated: Fall 2020; Research Scientist, NASA Ames Research Center)
- Hannah Walsh, PhD Student (Graduated: Fall 2020; Research Scientist, NASA Ames Research Center)
- Nicolas Soria, PhD Student (Graduated, Spring 2019; Postdoc, Pennstate University)
- Charlie Manion, PhD Student (Graduated, Spring 2017; Postdoc, Carnegie Melon University)
- Joe Piacenza, PhD Student (Graduated, Spring 2014; Faculty, Univ. of West Florida)
- Hoda Mehrpouyan, PhD Student (Graduated, Spring 2014; Faculty, Boise State University)
- Bryan O'Halloran, PhD Student (Graduated: Spring 2013; Faculty, Naval Postgraduate School)
- David Jensen, PhD Student (Graduated, Spring 2012; Faculty, University of Arkansas)
- Douglas Van Bossuyt, PhD Student (Graduated, Spring 2012; Faculty, Colorado School of Mines)

- Sarah Oman, PhD Student (Graduated, Spring 2012; Instructor, Northern Arizona University)
- Kerry Poppa, PhD Student (Graduated, Spring 2011; Senior Engineer, ESI Group)

MS Students (17):

- Daniel Hulse, MS Student (Graduated: Spring 2018; Employed by NASA Ames Research Center)
- Nicolas Soria, MS Student (Graduated: Spring 2016; Employed by Pennstate University)
- 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 Tesla Motors)
- 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 Farhang Mehr, MS Student (Graduated, Spring 2009; Co-Founder & CEO, AnalytixHub)
- 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 (6 PhD students, 2 Postdocs):

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

Undergraduate Students Supervised (24):

- 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 2014-2019)

- Valerie Bryxbe (Summer 2016-2018)
- Elizabeth Marie Parker (Spring 2018-Summer 2020; Honors Thesis Defense Spring 2020)

PhD Thesis Committee Member (2007-Present):

- Salman Ahmed, Oregon State University (TBD, Mechanical Engineering)
- Caity Clark, Oregon State University (TBD, Mechanical Engineering)
- Ada Rhodes-Short, Oregon State University (Summer 2017, Mechanical Engineering)
- Elham Keshavarzi, Oregon State University (Summer 2017, Mechanical Engineering)
- Ryan Arlitt, Oregon State University (Summer 2015, Mechanical Engineering)
- Goknur Sirin, Ecole Centrale, Paris (Spring 2015, Mechanical Engineering)
- Raul Avelar, Oregon State University (Spring 2012, Civil Engineering)
- Delvin Peterson, Oregon State University (Fall 2011, Mechanical Engineering)
- Diane Van Scoter, Oregon State University (Fall 2011, Industrial Engineering)
- Sarah Gallops, Oregon State University (Summer 2011, Material Science)
- Robert Nagel, Oregon State University (Spring 2010, Mechanical Engineering)
- Jacquelyn Stroble, Oregon State University (Spring 2010, Mechanical Engineering)
- Murat O. Hamutcuoglu, Oregon State University (Spring 2010, Civil Engineering)
- Nantakrit Yodpijit, Oregon State University (Spring 2009, Industrial Engineering)
- Ryan Hutcheson, Texas A&M University (Spring 2007, Mechanical Engineering)
- Nina Robson, University of California, Irvine (Summer 2008, Mech. Engineering)
- Larry Chao, Stanford University (Spring 2005, Mechanical Engineering)

MS Thesis Committee Member (2007-2013):

- 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 (2000-2006 while at NASA):

- Tolga Kurtoglu from the University of Texas at Austin as intern at NASA ARC, 2006 (CEO at PARC).
- Christopher Hoyle from Northwestern University as intern at NASA, 2006 (Faculty at Oregon State).
- Alex F. Mehr as postdoc at NASA ARC, 2005 (Co-Founder and CEO of MentorBox).
- Thesis research supervisory role: Matt Bohm, Scott Uder, Jason Vuchovich, Katie Grantham-Lough from the University of Missouri at Rolla. 2000-2005.
- Supervision of summer interns (2000-2005): Ryan Hutcheson, Jeremy Johnson, Matt Bohm, Mike VanWie, Scott Uder (all four from the University of Missouri at Rolla), Julien Sauvageon (UC Berkeley), Paul Constantine (Stanford), Larry Chao (Stanford), Andy Roberts (UC Irvine).
- Educational Associates Program, NASA Ames Research Center. Supervising and funding two PhD students, 2005-2006.
- MUSE Program at Santa Clara University, CA. Mentor for first-year undergrad student, 2000.

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. D. Hulse, H. Walsh, A. Dong, C. Hoyle, I.Y. Tumer, C. Kulkarni, K. Goebel, "fmdtools: A Fault Propagation Toolkit for Resilience Assessment in Early Design." *In Review*. 2020.
2. H.S. Walsh, A. Dong, I.Y. Tumer, "A theory for unintended consequences in engineering design." Invited paper. *In review*. 2020.
3. L. Irshad, H.O. Demirel, I.Y. Tumer, G. Brat, "Automated Generation of Fault Scenarios to Assess Potential Human Errors and Functional Failures in Early Design Stages." **Invited Paper**. *ASME Journal of Computing and Information Science in Engineering*, 20(5).
4. D. Hulse, C. Hoyle, K. Goebel, I.Y. Tumer, "How Uncertain is Too Uncertain? Validity Tests for Early Resilient and Risk-based Design Processes." *ASME Journal of Mechanical Design*. 2020. 143(1).
5. B. O'Halloran, C. Hoyle, I.Y. Tumer, R.B. Stone, "The Early Design Reliability Prediction Method." *Research in Engineering Design*. 30, 486-508. 2019.
6. D. Hulse, C. Hoyle, K. Goebel, I.Y. Tumer, "Quantifying the Resilience-Informed Scenario Cost Sum: A Value Driven Design Approach for Functional Hazard Assessment." **Invited paper**. *ASME Journal of Mechanical Design*. 141(2). 2019.
7. H.S. Walsh, A. Dong, I. Y. Tumer, "An Analysis of Modularity as a Design Rule Using Network Theory." **Invited paper**. *ASME Journal of Mechanical Design*. 141(3). 2019.
8. L. Irshad, S. Ahmed, H.O. Demirel, I.Y. Tumer, "Computational Functional Failure Analysis To Identify Human Errors During Early Design Stages." **Invited paper**. *ASME Journal of Computing & Information Sciences in Engineering*. 19(3). 2019.
9. L. Irshad, S. Ahmed, H.O. Demirel, I.Y. Tumer, "Using Rio-Paris Flight 447 Crash To Assess Human Error And Failure Propagation Analysis Early In Design." *ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems, Part B: Mechanical Engineering*. 6(1). 2020.
10. N. Soria, R.B. Stone, H.O. Demirel, I.Y. Tumer, "Identification of Human-System Interaction Errors During Early Design Stages Using a Functional Basis Framework." *ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems, Part B: Mechanical Engineering*. 6(1). 2020.
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