Michael D. Todd, Ph.D., F. ASME, F. SEM

Distinguished Professor and Chair
Department of Structural Engineering
University of California San Diego
9500 Gilman Drive 0085 La Jolla, CA 92093-0085 USA
+1-858-534-5951 mdtodd@ucsd.edu

Previous Employment

Period of employment From: To:	Institution, firm or organization of employment	Location	Rank, title, or position
7/1/23 – present	UC San Diego	La Jolla, CA	Distinguished Professor and Chair
7/01/10 – 6/30/23	UC San Diego	La Jolla, CA	Professor
7/01/06 - 6/30/10	UC San Diego	La Jolla, CA	Associate Professor
3/01/03 - 6/30/06	UC San Diego	La Jolla, CA	Assistant Professor
8/01/00 - 2/15/03	U. S. Naval Research Lab	Washington, DC	Section Head
3/15/98 - 7/31/00	U. S. Naval Research Lab	Washington, DC	Research Engineer
9/2/96 - 3/14/98	U. S. Naval Research Lab	Washington, DC	A.S.E.E. Postdoctoral Fellow
8/1/93-9/1/96	Duke University	Durham, NC	N.S.F. Graduate Research Fellow

Education

School, college, university, or hospital (internship, residency, or fellowship)	Dates of attendance	Location	Major subject or field	Degrees or certificates	Date received
Duke University	8/88-5/92	Durham, NC	Mechanical engineering	B.S.E.	5/92
Duke University	8/92-12/93	Durham, NC	Mechanical engineering	M.S.	12/93
Duke University	12/93-9/96	Durham, NC	Mechanical engineering	Ph.D.	9/96

Research areas: structural health monitoring, nonlinear dynamics, vibrations, smart structures, structural dynamics, fiber optic sensors, optimization, uncertainty quantification, stochastic modeling, haptic sensing, structured light monitoring systems for MAM, digital twin model development, physics-constrained machine learning for structural health monitoring applications

Special qualifications: Passed Fundamentals in Engineering (FE) Exam (formerly EIT) in state of North Carolina (1992), Department of Energy "Q" clearance (2011-present)

University Service

UC System-wide Academic Senate service:

[1] Member, UC Systemwide Senate Committee: Academic Council Special Committee on Lab Issues (ACSCOLI), 8/15/09-8/15/15
[2] Chair, UC Systemwide Senate Committee: Academic Council Special Committee on Lab Issues (ACSCOLI), 9/15/17-6/30/23

UC System-wide other service:

[1] Member, Search Committee for UC Associate Vice President for UC National Laboratories, 5/25/18-present
[2] Member, Lawrence Berkeley National Lab Contract Assurance Council, 1/1/19 – present
[3] Member, Livermore National Laboratory Director Screening Task Force, 9/1/20-6/30/21
[4] Chair, Search Committee for UC Associate Vice President for Research and Innovation, 2/11/22-5/31/22
[5] Member, Research Data Backup Steering Committee, 9/1/2022-6/30/2023
[6] Member, Triad Science, Technology, and Engineering Committee, 10/1/23-present

UC San Diego Academic Senate service:

[1] Department Representative, UC San Diego Academic Senate, 5/1/10-6/30/12
[2] Department Representative, UC San Diego Council on Undergraduate Education (CUE), 12/30/03-9/15/13
[3] Member, UC San Diego Academic Senate Committee: Undergraduate Council, 10/1/11-9/30/12
[4] Chair, UC San Diego Academic Senate Committee: Undergraduate Council, 10/1/12-9/30/13
[5] Member, UC San Diego Enrollment Planning Committee, 10/1/12-9/30/13
[6] Member, Senate Administrative Council, 10/1/12-9/30/13
[7] Member, Senate Council, 10/1/12-9/30/13
[8] Member, Executive Vice Chancellor's Program Review Committee, 10/1/12-9/30/13
[9] Member, UC San Diego Academic Senate Committee: Committee and Campus and Community Environment, 10/1/09-9/30/10
[10] Member, UC San Diego Academic Senate Committee: Campus/Community Planning Committee, 10/1/09-9/30/10
[11] Member, Senate Working Group on Capacity-Based Admission Management, 10/1/13-6/30/15
[12] Member, UC San Diego Academic Senate Committee: Committee on Committees, 10/1/14-9/30/15
[13] Member, UC San Diego Academic Senate Committee: Undergraduate Scholarships and Honors, 10/1/15-9/30/16
[14] Member, UC San Diego Academic Senate Committee: Committee on Academic Performance (CAP), 10/1/16-9/30/17
[15] Vice Chair, UC San Diego Academic Senate Committee: Committee on Academic Performance (CAP), 10/1/17-9/30/18
[16] Member, UC San Diego Academic Senate Committee: Privilege and Tenure Panel of Advisors, 10/1/20-present

UC San Diego Muir College service

[1] Alternate, Muir College Representative, UC San Diego Academic Senate, 7/1/08-6/30/10, 10/1/18-present
[2] Alternate, Muir College Representative, UC San Diego Academic Senate, 10/1/18-present

Other Campus-level service

[1] Member, Chancellors' Advisory Committee for Gender, Identity, and Sexual Orientation Issues (CACGISOI), 10/1/06-9/30/09
[2] RPDS Director/Health Sciences Search Committee member, 2013-2014
[3] Warren College Provost Search Committee member, 2016
[4] Member, SIO Applied Ocean Sciences Search Committee, 2018-2019
[5] Member, UC San Diego Peer Review Committee, 2019-2021
[6] Member, Academic Integrity Review Board, 2021-present

Jacobs School of Engineering divisional service:

[1] Member, JSOE Education Committee, 1/8/06-6/30/08
[2] Co-Chair, JSOE School-Wide Initiatives and Faculty Thrusts (SWIFT) Committee, 9/1/08-9/1/13
[3] Director, SHM Master of Advanced Studies Program, 7/1/11-6/30/15
[4] Member, JSOE Strategic Planning Faculty Hiring and Growth Subcommittee, 5/15/2019-present
[5] Member, JSOE Systems Engineering Subcommittee, 5/15/2019-present
[6] Member, JSOE Excellence Search Committee, 10/1/2019-6/30/20202
[7] Member, Dean's Executive Faculty Committee, 11/1/2021-present
[8] Completed Research Mentor Training Workshop, 4/1/2022-5/20/2022
[9] Associate Director, Jacobs School Agile Center for Extreme Events Research (CEER), 6/10/22-present

[10] Faculty advisor, Tau Beta Pi Engineering Society, 10/1/2023-present

Departmental service:

[1] Vice Chair, Structural Engineering Department, 7/1/07-6/30/15
[2] Executive Committee, Structural Engineering Department, 7/1/15-6/30/18
[3] Chair, Structural Engineering Department Undergraduate Affairs Committee, 7/1/03-9/15/13
[4] Member, Structural Engineering Department Undergraduate Affairs Committee, 9/15/13-9/15/16
[5] Member, Structural Engineering Undergraduate Labs Committee, 9/15/13-current
[6] Member, ABET Subcommittee on Mechanics and Materials, 9/15/13-6/30/15
[7] Faculty advisor, Student Chapter of the Society of Civil and Structural Engineers, 7/1/05-6/30/10
[8] Ad Hoc Review Committees (annually)
[9] Member, Structural Health Monitoring Faculty Search Committee, 9/15/14-6/30/15
[10] Chair, Excellence Faculty Search Committee, 9/15/15-6/30/16
[11] Member, Department External Affairs Committee, 3/1/16-current
[12] Member, SHM/NDE Focus Area Curriculum Committee, 5/1/17-current
[13] Chair, Excellence Systems Engineering Faculty Search Committee, 10/1/19-6/30/20
[14] Chair, Structural Engineering Department, 7/1/23-present

Memberships

American Society of Mechanical Engineers
American Society of Civil Engineers
Society of Experimental Mechanics
American Society for Engineering Education
International Society for Structural Health Monitoring of Intelligent Infrastructure
Member, American Society of Civil Engineers (ASCE) Engineering Mechanics Institute
Society of Experimental Mechanics (SEM) International Board member (2017-2020)
IMAC Advisory Board (2023-present)
Society of Experimental Mechanics (SEM) Fellows Committee (2024-present)
SPIE NDE Lifetime Achievement Award Committee (2024-present)
American Association for the Advancement of Science (2025-present)

Honors and Awards

[1] National Academy for Nuclear Training Scholar, 1990
[2] Pi Tau Sigma Mechanical Engineering Honorary, 1991
[3] Tau Beta Pi Engineering Honorary, 1991
[4] Angier B. Duke Memorial Scholar, 1988-1992
[5] Mechanical Engineering Faculty Award (valedictory award), 1992
[6] National Science Foundation (NSF) Graduate Fellow, 1993-1996
[7] US Naval Research Laboratory Alan Berman Research Publication Award, 1998
[8] US Naval Research Laboratory Performance and Contribution Awards, 2001, 2002, 2003
[9] US Naval Research Laboratory Patent Award, 2003
[10] Nominated, Galbraith Distinguished Lectureship, National Academy of Engineering, November 2003
[11] Hellman Fellow, 2004-2005
[12] Nominated, Society of Experimental Mechanics Durelli Award, 2005
[13] Winner, Structural Health Monitoring Person of the Year, 2005
[14] AcademicKeys "Who's Who" in Engineering Education, 2005
[15] Best Student Paper for “Optimal Sensor Placement for Active Sensing,” 2008 ASME Conference on Smart Materials, Adaptive Structures, and Intelligent Systems, Ellicott City, MD, October 28-30, 2008
[16] EuReKA! poster winner for “Corrosion-Enabled Powering Approach for Structural Health Monitoring Sensor Networks, “(undergraduate researcher: Scott Ouellette), 2009
[17] Benjamin F. Meaker Visiting Professor Fellowship, Institute of Advanced Studies, University of Bristol, UK, 2009
[18] Best Paper Award for “Identifying Scatter Targets in 2D Space using In-Situ Phased Arrays for Guided Wave Structural Health Monitoring,” 8th International Workshop on Structural Health Monitoring, Stanford, California, September 13-15, 2011

[19] R&D 100 Award Winner for SHMTools software package, Las Vegas, Nevada, November 13, 2015.
[20] Society of Experimental Mechanics D. J. DeMichele Award, Orlando, Florida, January 25-28, 2016.
[21] UC San Diego Committee on Academic Performance Star Award, 2016
[22] 2017 ISHMII-8 "Best Presentation Award", 8th International Conference on Structural Health Monitoring of Intelligent Infrastructure, Brisbane, Australia, December 2017
[23] Best Student Paper Award for M. Vega, R. Madarshahian, T. Fillmore, and M. D. Todd, "Optimal Maintenance Decision for Deteriorating Components in Miter Gates using Markov Chain Prediction Model," 12th International Workshop on Structural Health Monitoring, Stanford, California, September 10-12, 2019
[24] Runner-up Best Paper Award for S. Gupta, H. Lee, K. Loh, M. D. Todd, J. Reed, and A. Barnett, "Noncontact Strain Monitoring of Osseointegrated Protheses," 2019 ASME Conference on Smart Materials, Adaptive Structures, and Intelligent Systems, Louisville, Kentucky, September 9-12, 2019
[25] Best Student Paper in Model Validation an Uncertainty Quantification for M. Ramancha, R. Astroza, J. P. Conte, J. I. Restrepo, and M. D. Todd, "Bayesian Nonlinear Finite Element Model Updating of a Full-Scale Bridge-Column using Sequential Monte Carlo," Proceedings of IMAC XXXVIII: A Conference on Structural Dynamics Houston, Texas, February 10-13, 2020
[26] Winner, SHM Lifetime Achievement Award, 2021
[27] Ferry Borges Award for the paper "Damage Detection in Railway Bridges Using Traffic-Induced Dynamic Responses" (A[147] below), November 2021
[28] International Society for Structural Health Monitoring of Intelligent Infrastructure Editorial Excellence Award, December 2022
[29] SPIE NDE Lifetime Achievement Award, 2023
[30] Roy Sharpe Prize for Outstanding Contribution to NDT, 2024
[31] Fellow, Society of Experimental Mechanics, 2024
[32] Elected Fellow of the American Society of Mechanical Engineers, 2024
[33] Best Paper Award in Model Validation an Uncertainty Quantification Technical Division for D. Najera-Flores, J. Jacobs, D. D. Quinn, A. Garland, and M. D. Todd, "A Probabilistic Reasoner Based on Bayes Risk for Damage Detection in Structural Systems," Proceedings of IMAC XLIII: A Conference on Structural Dynamics, Orlando, Florida, February 10-13, 2025
[34] Springer Nature Editorial Contribution Award for J. Civil Structural Health Monitoring, 2025
[35] Best Paper Award for "A Privacy-Preserving Framework Using Federated Learning for Structural Health Monitoring with Miter Gates Application," 15th International Workshop on Structural Health Monitoring, Stanford, California, September 9-11, 2025

Contracts and Grants

Title	Granting agency	Amount of total award (include indirect costs)	Time period of contract/grant	Role (e.g., PI, co-investigator, project leader, etc.) List co-PIs/corresponding share of total award (total must = 100%)
LANL/UC San Diego Engineering Institute Phase 1	Los Alamos National Laboratory	$165,600	6/01/03-9/30/04	Role: Co-P.I. Share: 50%
LANL/UC San Diego Engineering Institute Phase 2	Los Alamos National Laboratory	$500,000	4/01/04-9/30/05	Role: Co-P.I. Share: 20%
Using Noise to Actively Assess Structural Health	/UC SAN DIEGO Hellman Fellowship	$15,941	7/01/04-6/30/05	Role: P.I. Share: 100%
STTR Phase I: "Smart Tether"	Office of Naval Research	$30,259	7/01/04-6/30/05	Role: P.I. Share: 100%
"A Fiber-Optic Based Sensor System for Real-Time Shape Estimation of	Von Liebig Center	$50,000	7/01/05-6/30/06	Role: P.I. Share: 100%

Deformable Objects”				
LANL/UC San Diego Engineering Institute Phase 3	Los Alamos National Laboratory	$1,835,030	10/01/05-9/30/06	Role: Co-P.I. Share: 20%
LANL/UC San Diego Engineering Institute Phase 4	Los Alamos National Laboratory	$1,825,120	10/01/06-9/30/07	Role: co-P.I. Share: 20%
SBIR Phase I: Symbiotic Multi-Mode Structural Health Monitoring Utilizing Physics-Inspired Neural Networks	Quartus Engineering/ Air Force Research Laboratory	$30,045	2/01/07-7/30/07	Role: P.I. Share: 100%
Proof-of-Concept Studies in Novel Guided Wave Methods for Metallic Structural Condition	Office of Naval Research	$34,666	7/01/08-3/30/09	Role: P.I. Share: 100%
Global Monitoring and Sensing: Integration of Data, Communication, and Modeling	UK Government SETSquare program	$7,842	4/01/08-12/31/08	Role: P.I. Share: 100%
LANL/UC San Diego Engineering Institute Phase 5	Los Alamos National Laboratory	$1,825,120	10/01/07-9/30/08	Role: co-P.I. Share: 33%
In-Situ Adhesive Bond Assessment for Aerospace Structures	Air Force Office of Scientific Research	$316,675	12/01/06-6/30/10	Role: P.I. Share: 50%
LANL/UC San Diego Engineering Institute Phase 6	Los Alamos National Laboratory	$1,300,000	10/01/08-9/30/09	Role: Co-P.I. Share: 25%
LANL/UC San Diego Engineering Institute Phase 7	Los Alamos National Laboratory	$1,200,000	10/01/09-9/30/10	Role: Co-P.I. Share: 25%
LANL/UC SAN DIEGO Engineering Institute Phase 8	Los Alamos National Laboratory	$1,100,000	10/01/10-9/30/11	Role: Co-P.I. Share: 25%
A Bayesian Experimental Design Approach for Optimization and Uncertainty Quantification in Aerospace Structural Modeling and Analysis	Air Force Office of Scientific Research	$274,999	9/30/10-9/30/13	Role: P.I. Share: 100%
A Trained Network Solution for Structural Multi-State Awareness	Air Force Research Laboratory and Army Research Laboratory	$225,340	1/15/09-1/14/12	Role: P.I. Share: 100%

STTR Phase I: Trained Network Force Measurement for Aircraft/Store Interfaces	ATA Engineering, Inc./ NAVAIR	$31,360	9/1/09-12/31/10	Role: P.I. Share: 100%
STTR Phase II: Trained Network Force Measurement for Aircraft/Store Interfaces	ATA Engineering, Inc./ NAVAIR	$463,780	2/1/2011-9/30/13	Role: P.I. Share: 100%
STTR Phase I: Advanced Data Processing, Storage and Visualization Algorithms for Structural Health Monitoring Sensor Networks of Naval Assets	Metis Design Corp./ Office of Naval Research	$38,895	6/28/10-8/1/11	Role: P.I. Share: 100%
STTR Phase II: Advanced Data Processing, Storage and Visualization Algorithms for Structural Health Monitoring Sensor Networks of Naval Assets	Metis Design Corp./ Office of Naval Research	$348,075	8/1/11-9/30/13	Role: P.I. Share: 100%
Development of Software Modules for Damage Assessment with Laser Ultrasonic Propagation Imaging Equipment	Korea Ministry of Science and Technology	$46,000	11/1/11-9/30/13	Role: P.I. Share: 100%
"Evaluation of NDE Techniques for Detecting Damage in Composite Bond Panels"	United Technologies Aerospace Corporation	$25,706	3/1/14-9/30/14	Role: P.I. Share: 100%
LANL/UC San Diego Engineering Institute Phase 9	Los Alamos National Laboratory	$1,100,000	10/01/11-9/30/12	Role: Co-P.I. Share: 25%
LANL/UC SAN DIEGO Engineering Institute Phase 10	Los Alamos National Laboratory	$1,100,000	10/01/12-9/30/13	Role: Co-P.I. Share: 15%
LANL/UC SAN DIEGO Engineering Institute Phase 11	Los Alamos National Laboratory	$1,100,000	10/01/13-9/30/14	Role: co-P.I. Share: 15%
LANL/UC San Diego Engineering Institute Phase 12	Los Alamos National Laboratory	$834,874	10/1/14-9/30/15	Role: P.I. Share: 50%
LANL/UC San Diego Engineering Institute Phase 13	Los Alamos National Laboratory	$899,117	10/1/15-9/30/16	Role: P.I. Share: 68%

LANL/UC San Diego Engineering Institute Phase 14	Los Alamos National Laboratory	$1,801,792	10/1/16-9/30/17	Role: P.I. Share: 79%
Design of V&V Experiments for Modeling of Historic Masonry Buildings	Los Alamos National Laboratory	$44,710	6/30/14-9/30/15	Role: P.I. Share: 50%
SBIR Phase I: Structural Health Monitoring of Submersible Navy Composites	Hi-Test Labs Inc./Naval Surface Warfare Center	$25,977	8/12/11-2/13/12	Role: P.I. Share: 100%
SBIR Phase II: Structural Health Monitoring of Submersible Navy Composites	Hi-Test Labs Inc./ Naval Surface Warfare Center	$298,489	3/12/12-9/20/15	Role: P.I. Share: 70%
SBIR Phase II Option: Structural Health Monitoring of Submersible Navy Composites	Hi-Test Labs Inc./ Naval Surface Warfare Center	$53,600	10/1/16-2/28/17	Role: P.I. Share: 100%
SBIR Phase II Option 2: SHM Development on Fatigue Testing	Hi-Test Labs Inc./Naval Surface Warfare Center	$99,989	8/10/17-7/20/18	Role: P.I. Share: 100%
“Fly-by-Haptic” Wireless Haptic Interface for Smart Wings	Korea Agency for Defense Development	$184,569	10/1/13-8/31/16	Role: P.I. Share: 100%
“Evaluation of NDE Techniques for Detecting Damage in Composite Bond Panels: Phase II”	United Technologies Aerospace Corporation	$86,941	6/18/15-6/15/16	Role: P.I. Share: 100%
“Evaluation of NDE Techniques for Detecting Damage in Composite Bond Panels: Phase III”	United Technologies Aerospace Corporation	$32,248	1/1/17-4/30/17	Role: P.I. Share: 100%
“Evaluation of NDE Techniques for Detecting Damage in Composite Bond Panels: Phase IV”	United Technologies Aerospace Corporation	$99,270	2/1/18-12/31/18	Role: P.I. Share: 100%
“Structural Health Monitoring for Real-Time Condition and End-of-Life Assessment of U.S. Large Civil Infrastructure“	Army Corps of Engineers	$149,280	8/20/15-3/31/17	Role: P.I. Share: 100%
LANL/UC San Diego Engineering Institute Phases 15, 16, 17, 18, 19	Triad National Security LLC	$7,295,610	10/1/18-9/30/21	Role: P.I. Share: 72%

UC SAN DIEGO Engineering Institute (EI) Distance Learning Master Program – Original Program	Triad National Security LLC	$227,943.28	9/15/18-9/30/21	Role: P.I. Share: 100%
"Laser Ultrasonic Inspection of Metallic Multilayer Structures"	Lawrence Livermore National Laboratory	$19,777	7/1/2018-9/30/2018	Role: P.I. Share: 100%
"Data-Driven Prognostics with Uncertainty Quantification Using Positive Feedback Feature Rate Modeling"	Air Force Research Lab/Eglin AFB-University of Dayton Research Institute	$149,662	1/1/18-7/22/20	Role: P.I. Share: 100%
"A Low-Cost Structured Light Monitoring System for Additive Manufacturing Processes"	National Science Foundation	$50,00	3/1/21-2/28/22	Role: P.I. Share: 100%
"Evaluation of NDE Techniques for Detecting Damage in Composite Bond Panels: Phase V"	Rohr Inc. (Collins Aerospace)	$116,927	2/1/19-12/31/19	Role: P.I. Share: 100%
"Data-Driven Prognostics with Uncertainty Quantification Using Positive Feedback Feature Rate Modeling"	Air Force Research Lab/Eglin AFB-University of Dayton Research Institute	$102,278	8/1/19-4/30/20	Role: P.I. Share: 100%
"Physics-Constrained Autonomous Reasoning for Informed Predictive Maintenance"	Sandia National Laboratory	$77,701	11/18/20-9/30/21	Role: P.I. Share: 100%
LANL/UC San Diego Engineering Institute Phases 20, 21, 22, 23 and UC SAN DIEGO Engineering Institute (EI) Distance Learning Master's Program	Triad National Security LLC	$7,155,873	11/1/21-9/30/25	Role: P.I. Share: 72%
"Cybermodeling: A Digital Surrogate Approach for	US Army Engineer Research and	$9,663,668	9/15/17-9/15/22	Role: P.I. Share: 65%

Optimal Risk-Based Operations and Infrastructure Asset Management" (Phase 1)	Development Center			
"Cybermodeling: A Digital Surrogate Approach for Optimal Risk-Based Operations and Infrastructure Asset Management" (Phase 2)	US Army Engineer Research and Development Center	$9,663,668	9/30/22-9/15/27	Role: P.I. Share: 65%
"REU Site: Designing for Safety and Safety by Design"	National Science Foundation	$445,626	9/1/18-8/31/21	Role: Co-P.I. Share: 20% PI: Ken Loh
"Risk-Based Optimal Data Interrogation for Structural Health Monitoring"	Israeli Ministry of Defense	$450,208	2/1/18-12/31/22	Role: P.I. Share: 100%
"Data Science Supporting Sedimentation and Stream Flow Prediction" Phase 1	HBK LLC Inc. (flow-down from USACE)	$41,032	9/30/21-9/30/22	Role: P.I. Share: 100%
"Data Science Supporting Sedimentation and Stream Flow Prediction" Phase 2	HBK LLC Inc. (flow-down from USACE)	$41,032	9/30/21-9/30/22	Role: P.I. Share: 100%
"Data Science Supporting Sedimentation and Stream Flow Prediction" Phase 3	HBK LLC Inc. (flow-down from USACE)	$41,032	9/30/21-9/30/22	Role: P.I. Share: 100%
Phase 2 STTR: "Development of an Artificial Intelligence (AI)-based, Internet of Things (IoT)-Enabled System for Structural Health Monitoring"	Canetia Inc. (flow-down from National Science Foundation)	$376,011	6/1/2025-5/31/2027	Role: P.I. Share: 80%
LANL/UC San Diego Engineering Institute matching funds for Haptics Project	UC Office of the President	$160,000	Unrestricted dates	Role: P.I. Share: 100%

External Professional Activities

Invited lectures/presentations:

[1] "Fiber Bragg Grating Sensor System for Civil Structure Monitoring: Applications and Field Tests," 13th International Conference on Optical Fiber Sensors, Kyongju, Korea (April 1999)

[2] “Fiber Optic Sensing Technology for Structural Monitoring Applications,” Los Alamos National Laboratory Damage Prognosis Workshop (March 2001)

[3] “Fiber Optic Sensing Technology for Structural Monitoring Applications,” University of Missouri (April 2001)

[4] “Fiber Optic Sensing Technology for Structural Monitoring Applications,” Lafayette College (October 2001)

[5] “Fiber Optic Sensing and Chaotic Attractor Property Analysis for Integrated Structural Health Monitoring,” University of California at San Diego (November 2001)

[6] “State-of-the-Art Sensing Technologies for Transportation Infrastructure Condition Management,” Transportation Review Board (January 2002)

[7] “Structural Monitoring Using a Novel, High-Performance Fiber Optic Measurement System," The International Society for Optical Engineering Smart Structures/NDE Conference (March 2002)

[8] “Development and Application of Chaotic Attractor Property Analysis for Vibration-Based Structural Damage Assessment,” 7th Experimental Chaos Conference, San Diego, CA (August 2002)

[9] "High Performance Fiber Optic Structural Sensing," Los Alamos Summer School Distinguished Guest Lecturer (June 2001,2002,2003,2004,2005,2006,2007,2008,2009,2010,2012)

[10] “Optical-Based Sensing,” National Science Foundation Pan American Advanced Studies Institute, Florianopolis, Brazil (October 2003)

[11] “Development and Deployment of Bragg Grating-Based Fiber Optic Sensing Solutions for Structural Monitoring,” San Diego State University Dept. of Mechanical Engineering Seminar Series (November 2003)

[12] “Development and Deployment of Bragg Grating-Based Fiber Optic Sensing Solutions for Structural Monitoring,” Purdue University Dept. of Mechanical Engineering Mechanics Seminar Series (November 2003)

[13] “State-of-the-Art in Optical-Based Sensing,” National Academy of Engineering Japan/America Frontiers of Engineering Symposium, Irvine, CA (November 2003)

[14] “Using Band-Limited Ambient Noise with Phase Space Model Building to Assess Structural Health,” Air Force Office of Scientific Research Invitational Workshop on Damage Sensing and Prognosis, Washington, DC (June 2004)

[15] Invited speaker, “Comparing Deterministic and Band-Limited Stochastic Excitation with State Space Models to Assess Frame Joint Integrity,” Advances in Structural Engineering and Mechanics Conference, Seoul, Korea (September 2004)

[16] "Progress and Some Future Directions in Using Attractor Geometry and Predictive Models for Structural Health Monitoring," Duke University Center for Nonlinear and Complex Systems Seminar Series (November 2004)

[17] Invited organizer and presenter, Society for Experimental Mechanics IMAC “Modal Topics: Sensors and Instrumentation,” Orlando, FL (January 2005)

[18] Conference Co-Organizer and Co-Chair, 1st Engineering Institute Workshop on the State of the Art in Energy Harvesting, Los Alamos, NM (June 2005) and presenter, “Sensor Modalities for Structural Health Monitoring”

[19] Invited by Skidmore, Owings, and Merrill LLP to give a lecture at the 2005 Building Science and Design Research Symposium (November 2005)

[20] “Analysis of Accuracy Error and Distortion in an Operationally Passive Interferometric Demodulation Technique,” SPIE Smart Structures/NDE Conference (March 2006)

[21] Conference Co-Organizer and Co-Chair, 2nd Engineering Institute Workshop on Nonlinear Methods in Structural Health Monitoring, Los Alamos, NM (July 2007) and presenter, "An Overview of Nonlinearity in Structural Health Monitoring"

[22] Keynote Lecture: "A Different Approach to Sensor Networking for SHM: Remote Powering and Interrogation with Unmanned Aerial Vehicles," 6th International Workshop on Structural Health Monitoring, Stanford, California. (September 2007)

[23] Invited State-of-the-Art Speaker, "Real-time Measurement of Soil Shear Profiles with Distributed Optical Sensing Probe," Optoelectronic Sensor-Based Monitoring in Geo-engineering, Nanjing, China, (October 2007)

[24] Invited Speaker, ""Using Evolutionary Algorithms to Tailor Dynamic Systems for Applications in Structural Health Monitoring," Dynamics Days 2008, Knoxville, Tennessee (January 2008).

[25] Invited Speaker, "Damage Condition Classification Using Ultrasonic Pattern Recognition in Composite Laminate Plates," 13th US-Japan Conference on Composite Materials, Tokyo, Japan (June 2008)

[26] Invited Speaker, "Using Evolutionary Algorithms to Tailor Dynamic Systems for Applications in Structural Health Monitoring," University of Sheffield, Sheffield, United Kingdom (July 7, 2008)

[27] Invited Speaker, "Data-Driven Damage Assessment with Generalized Notions of Correlation (and a Smattering of Related Strange Work)," University of Bristol, Bristol, United Kingdom (August 5, 2008)

[28] Invited Speaker, "A Bayesian Risk-Based Approach for Optimal Placement of Ultrasonic Sensors Used in Active Sensing," University of Bristol Meaker Fellowship Colloquium, Bristol, United Kingdom (October 7, 2009).

[29] Invited Keynote Speaker, "Towards a Multidisciplinary Approach for Developing Wirelessly Powered and Interrogated Structural Health Monitoring Systems," 8th International Conference on Civil and Environmental Engineering, Pusan, Korea (October 28, 2009).

[30] Invited Speaker, "A Bayesian Risk-Based Approach for Optimal Placement of Ultrasonic Sensors Used in Active Sensing," University of Michigan, Ann Arbor, Michigan (December 12, 2009).

[31] Invited Keynote Speaker, "Structural Health Monitoring: A Paradigm for Promoting Reliability-Driven Life Cycle Management," IRIS Summer Academy, Zell Am See, Austria (September 12-15, 2010)

[32] Invited Speaker, "Structural Health Monitoring: A Paradigm for Promoting Reliability-Driven Life Cycle Management," MPA University of Stuttgart, Stuttgart, Germany (September 16, 2010)

[33] Invited Speaker, "A Bayesian Experimental Design Approach to Structural Health Monitoring with Application to Optimal Sensor Arrangements for Online Crack Detection," Society of Naval Architects and Marine Engineers monthly meeting (November 16, 2010).

[34] Invited Speaker, "Towards a Multidisciplinary Approach for Developing Civil Infrastructure Monitoring Systems," Oklahoma Department of Transportation, Oklahoma City, Oklahoma (December 9, 2010).

[35] Invited Speaker, "A Bayesian Experimental Design Approach to Structural Health Monitoring," University of Oklahoma School of Engineering Multidisciplinary Lecture Series, Norman, Oklahoma (December 10, 2010).

[36] Invited Speaker, "A Bayesian Experimental Design Approach to Structural Health Monitoring With Specific Application to Ultrasonic Interrogation," Duke University Dept. of Civil and Environmental Engineering Seminar Series, Durham, North Carolina (February 3, 2011).

[37] Invited Speaker, "A Bayesian Experimental Design Approach to Structural Health Monitoring With Specific Application to Ultrasonic Interrogation," University of Illinois Urbana-Champaign Dept. of Civil and Environmental Engineering Seminar Series, Urbana, Illinois (February 21, 2011).

[38] Invited Speaker, “Noise propagation in a 3x3 Optical Demodulation Scheme used for Fiber Bragg Grating Interrogation,” SPIE Smart Structures/NDE Conference, San Diego, California (March 7, 2011).

[39] Invited Keynote Speaker, “A Bayesian Experimental Design Approach for Structural Health Monitoring,” 14th International Symposium on Dynamic Problems of Mechanics (DINAME 2011), Sao Sebastio, Brazil (March 16, 2011).

[40] Invited Speaker, “A Bayesian Experimental Design Approach to Structural Health Monitoring With Specific Application to Ultrasonic Interrogation,” Chonbuk National University, Jeongju, Korea (June 16, 2011).

[41] Invited Speaker, “A Bayesian Experimental Design Approach to Structural Health Monitoring With Specific Application to Ultrasonic Interrogation,” Scripps Institute of Oceanography, La Jolla, California (February 9, 2012).

[42] Invited Tutorial Speaker, “Nonlinear Behavior: Why We Can’t (and Shouldn’t Always) Think in a ‘Straight Line’”, Los Alamos Summer School 4-Day Tutorial Lecturer (every July) **(CONTINUING)**

[43] Invited Keynote Speaker, “Towards Optimal Design of Structural Health Monitoring Systems,” First International Conference on Advances in Structural Health Management and Composite Structures, Jeonju, Korea (August 29, 2012).

[44] Invited Keynote Speaker, “An Exact Shape Reconstruction Approach Using Material Basis Reference Frame: Application to Pipelines,” The 4th International Workshop on Opto-electronic Sensor-based Monitoring in Geo-engineering, Suzhou, China (October 12, 2012).

[45] Invited Speaker, “A Bayesian Experimental Design Approach to Structural Health Monitoring with Specific Application to Ultrasonic Interrogation,” National Taiwan University, Taipei, Taiwan (October 31, 2012).

[46] Invited Speaker, “A Locally Exact Strain-to-Displacement Approach for Shape Reconstruction of Slender Objects Using Fiber Bragg Gratings,” SPIE Smart Structures/NDE Conference, San Diego, California (March 11, 2013).

[47] Invited Keynote Speaker, “Chaos in Meteorology: Why We Need to Give the Weather Folks a Break (At Least a Little),” Commodity Weather Group Conference, San Antonio, Texas (April 13, 2013).

[48] Invited Speaker, “A Bayesian Experimental Design Approach to Structural Health Monitoring with Specific Application to Ultrasonic Interrogation,” University of Windsor, Windsor, Canada (May 11, 2013).

[49] Invited Keynote Speaker, “Uncertainty Quantification in Ultrasonic Guided Wave Interrogation Using Detection Theory,” IEEE International Ultrasonics Symposium, Prague, Czech Republic (July 23, 2013).

[50] Invited Keynote Speaker, “A Bayesian Experimental Design Approach to Structural Health Monitoring,” 2013 ASME Conference on Smart Materials, Adaptive Structures, and Intelligent Systems, Snowbird, Utah (September 16, 2013).

[51] Invited Speaker, “A Bayesian Experimental Design Approach to Structural Health Monitoring with Specific Application to Ultrasonic Interrogation,” Chonnam National University, Gwangju, Korea (November 18, 2013).

[52] Invited Speaker, “A Bayesian Experimental Design Approach to Structural Health Monitoring with Specific Application to Ultrasonic Interrogation,” Vanderbilt University, Nashville, Tennessee (December 2, 2013).

[53] Invited Presentation, “Evolution of Features for Numeric Sequence Classification,” University of Sheffield, Sheffield, United Kingdom (December 15, 2013).

[54] Invited Speaker, “A Bayesian Experimental Design Approach to Structural Health Monitoring with Specific Application to Ultrasonic Interrogation,” North Carolina State University, Raleigh, North Carolina (February 7, 2014).

[55] Invited Keynote Speaker, “Three-Dimensional Shape Reconstruction of Slender Objects from Distributed Strain Measurements”, 2014 Asia-Pacific Summer School on Smart Structures Technology (ANCRiSST 2014), National Taiwan University, Taipei, Taiwan (August 3, 2014).

[56] Invited Speaker, “A Bayesian Experimental Design Approach to Structural Health Monitoring with Specific Application to Ultrasonic Interrogation,” Korean Aerospace Research Institute, Daejon, Korea (September 1, 2014).

[57] Invited Keynote Speaker, M. D. Todd, M. Yeager, C. Key, and W. Gregory, “Structural Health Monitoring of Composite Structures with Embedded Fiber Bragg Gratings,” The 5th International Workshop on Opto-electronic Sensor-based Monitoring in Geo-engineering, Nanjing, China (October 13, 2014).

[58] Invited Seminar Speaker, “A Bayesian Experimental Design Approach to Structural Health Monitoring with Specific Application to Ultrasonic Interrogation,” Nanjing University of Aeronautics and Astronautics, Nanjing, China (October 14, 2014).

[59] Distinguished Invited Speaker Series, M. D. Todd “A Bayesian Experimental Design Approach to Structural Health Monitoring with Specific Application to Ultrasonic Interrogation,” Virginia Polytechnic Institute and State University, Blacksburg, Virginia (May 7, 2015).

[60] Invited Seminar Speaker, “A Bayesian Experimental Design Approach to Structural Health Monitoring with Specific Application to Ultrasonic Interrogation,” University of New Mexico, Albuquerque, New Mexico (September 23, 2015).

[61] Invited Seminar Speaker, “Three-Dimensional Shape Reconstruction of Slender Objects from Distributed Strain Measurements,” Army Research Laboratory, Aberdeen, Maryland (November 17, 2015).

[62] Invited Seminar Speaker, “A Bayesian Experimental Design Approach to Structural Health Monitoring with Specific Application to Ultrasonic Interrogation,” University of Massachusetts Lowell, Lowell, Massachusetts (November 18, 2015).

[63] Invited Seminar Speaker, “Structural Health Monitoring and Damage Prognosis,” University of Strathclyde, Glasgow, United Kingdom (December 2, 2015).

[64] Invited Seminar Speaker, “A Bayesian Experimental Design Approach to Structural Health Monitoring with Specific Application to Ultrasonic Interrogation of Structures,” Lehigh University, Bethlehem, Pennsylvania (April 8, 2016).

[65] Invited Seminar Speaker, “A Bayesian Experimental Design Approach to Structural Health Monitoring with Specific Application to Ultrasonic Interrogation of Structures,” Purdue University, West Lafayette, Indiana (April 19, 2016).

[66] Invited Plenary Speaker, “Structural Health Monitoring and Prognosis: Using Cybermodels to Enable Asset Management,” 4th Biennial TRB-CMTS Research and Development Conference, Washington D.C. (June 20-23, 2016).

[67] Invited Keynote Speaker, “Towards a Risk-Based Design Paradigm for Structural Health Monitoring Systems,” 8th European Workshop on Structural Health Monitoring, Bilbao, Spain (July 5-7, 2016).

[68] Invited Keynote Speaker, “The Synergy Between Structural Health Monitoring (SHM) and Control: Can SHM Be Cast as a Controls Problem?”, 6th European Conference on Structural Control, Sheffield, United Kingdom (July 11-13, 2016).

[69] Invited Seminar Speaker, “A Bayesian Experimental Design Approach to Structural Health Monitoring with Specific Application to Ultrasonic Interrogation of Structures,” Chongqing University, Chongqing, China (October 18, 2016).

[70] Invited Seminar Speaker, “Advanced Infrastructural Monitoring Concepts,” Chongqing Research Institute of Traffic Science, Chongqing, China (October 19, 2016).

[71] Invited Seminar Speaker, “A Bayesian Experimental Design Approach to Structural Health Monitoring with Specific Application to Ultrasonic Interrogation of Structures,” Chongqing Jiaotong University, Chongqing, China (October 21, 2016).

[72] Invited Seminar Speaker, “Fiber Optic Sensing for Structural Monitoring,” CALTRANS Monthly GEQC, Sacramento, California (December 1, 2016).

[73] Invited Keynote Speaker, “Ultrasonics Research in the UC San Diego-Los Alamos Engineering Institute: From Sparse Arrays to Lasers,” Sixth Asia-Pacific Workshop on Structural Health Monitoring,” Hobart, Australia (December 9, 2016).

[74] Invited Keynote Speaker, “Ultrasonic Wave-Based SHM”, University of Sheffield Workshop on DRG-LANL SHM Interactions, Sheffield, United Kingdom (March 28, 2017).

[75] Invited Keynote Speaker, “Impact Detection, Localization, and Characterization in Composite Laminates with Embedded Fiber Bragg Gratings,” 25th Optical Fiber Sensors Conference, Jeju, Korea (April 24, 2017).

[76] Invited Distinguished Seminar Speaker, “The Use of Advanced Sensing Concepts in Structural Health Monitoring,” Korea Research Institute of Standards and Science, Daejeon, Korea (April 25, 2017).

[77] Invited Seminar Speaker, “The Use of Advanced Sensing Concepts in Structural Health Monitoring,” Korea Advanced Institute of Science and Technology (KAIST), Daejeon, Korea (April 25, 2017).

[78] Invited Keynote Speaker, M. D. Todd, M. Yeager, C. Key, and W. Gregory, “Impact Detection and Localization in Composite Laminates with Embedded Fiber Bragg Gratings,” The 6th International Workshop on Opto-electronic Sensor-based Monitoring in Geo-engineering, Nanjing, China (November 4, 2017).

[79] Invited Seminar Speaker, “Ultrasonics in SHM/NDE: Sparse Arrays to Lasers,” Nanjing University of Aeronautics and Astronautics, Nanjing, China (November 6, 2017)

[80] Invited Keynote Speaker, “Probabilistic Signal Processing in Various Ultrasonic Architectures,” 9th International Symposium on NDT in Aerospace, Xiamen, China, (November 9, 2017).

[81] Invited Seminar Speaker, “Sparse Arrays to Lasers: Ultrasonic SHM/NDE at UC San Diego,” Lawrence Livermore National Laboratory, Livermore, California (March 12, 2018).

[82] Invited Session Keynote Speaker, “Uncertainty Quantification in the Failure Forecast Method,” 7th World Conference on Structural Control and Monitoring, Qingdao, China (July 23, 2018).

[83] Invited External Speaker, “The Value and Design of Structural Health Monitoring Systems,” European Union COST TU1402 Summer School, Trogir, Croatia (September 27, 2018).

[84] Invited Seminar Speaker, “The Failure Forecast Method as a Prognostic Extension of Structural Health Monitoring,” Georgia Institute of Technology, Atlanta, Georgia (October 29, 2018).

[85] Invited Session Keynote Speaker, “Fatigue Prognosis Using the Uncertainty-Quantified Failure Forecast Method,” Seventh Asia-Pacific Workshop on Structural Health Monitoring,” Hong Kong, China, (November 12, 2018).

[86] Invited Seminar Speaker, “Detection Theory and its Role in Applications in Structural Health Monitoring,” Denmark Technical University, Copenhagen, Denmark (March 28, 2019).

[87] Invited Session Keynote Speaker, “Structural Health Monitoring and Prognosis: Using “Digital Twin” Capabilities to Enable Risk-Based Asset Management,” 4th ISEA of the Future Forum, Naval Surface Warfare Center, Carderock, Maryland (June 20, 2019).

[88] Invited Keynote Speaker, “The Failure Forecast Method as a Fatigue Prediction Model,” Advances in Aerospace and Mechanical Engineering 2019, Incheon, Korea (July 10, 2019)

[89] Invited Distinguished Seminar Series Speaker, “The Mechanics and Dynamics of Single-Manifold Structures,” Distinguished Dynamics Colloquium at ETH Zurich, Zurich, Switzerland (October 14, 2019)

[90] Invited Seminar Speaker, “The Failure Forecast Method as a Prognostic Extension of Structural Health Monitoring,” Nanyang Technological University, Singapore (December 5, 2019).

[91] Invited Speaker, “Advanced Sensing Concepts for Structural Health Monitoring,” BP Advanced Technology Workshop, Naperville, Illinois (February 25, 2020)

[92] Invited Speaker, “A Bayesian Experimental Design Approach to Structural Health Monitoring with Specific Application to Ultrasonic Interrogation of Structures,” Tianjin University, Tianjin, China (May 14, 2020)

[93] Invited Webinar Speaker, “Nonlinearity and Uncertainty: Why We Should Continue to Let Meteorologists Keep Their Jobs,” Commodity Weather Group national webinar series, Bethesda, Maryland (July 22, 2020)

[94] Invited Seminar Speaker, “Is it a Signal or is it Noise? The Application of Detection Theory in Signal Statistical Signal Processing,” Los Alamos National Laboratory ISR Division Seminar Series, Los Alamos, New Mexico (July 23, 2020)

[95] Invited Speaker, “Towards a Digital Twin for Life Cycle Asset Management: Example of Lock Gates,” Transportation Review Board 6th Biennial Marine Transportation System Innovative Science and Technology Conference, Washington D.C. (March 17, 2021)

[96] Invited Seminar Speaker, “The Role of Risk Profile in Structural Health Asset Management,” PipeBots Team Colloquium Series, United Kingdom (April 29, 2021)

[97] Invited Seminar Speaker, “The Failure Forecast Method as a Prognostic Extension of Structural Health Monitoring,” TUM Institute for Advanced Study Online Speaker Series: Frontiers in monitoring-supported decision making for structures and infrastructures, ETH-Zurich, Switzerland (June 17, 2021)

[98] Invited Plenary Speaker, “The Role of Risk Profile in State Determination of Structures,” Proceedings of the 10th International Conference on Structural Health Monitoring of Intelligent Infrastructure (SHMII-10), Porto, Portugal (July 1, 2021)

[99] Invited Seminar Speaker, “Machine Learning: What it Is, and Can it Be a Tool for Weather Science?”, Invited Webinar Speaker, “Nonlinearity and Uncertainty: Why We Should Continue to Let Meteorologists Keep Their Jobs”, Commodity Weather Group national webinar series, Bethesda, Maryland (July 28, 2021)

[100] Invited Seminar Speaker, “A Bayesian Experimental Design Approach to Structural Health Monitoring with Specific Application to Ultrasonic Interrogation of Structures,” Technology Innovation Institute, Abu Dhabi, United Arab Emirates (August 3, 2021)

[101] Invited Keynote Speaker, “Towards a Digital Twin for Life Cycle Asset Management of Inland Waterway Navigation Infrastructure,” Mechanistic Machine Learning and Digital Twins for Computational Science, Engineering and Technology (MMLDT-CSET) Conference, San Diego, California (September 28, 2021)

[102] Invited Keynote Speaker, “The Role of Behavioral Psychology in Affecting the Perception of Risk in SHM Decision-Making,” 3rd INFRASTAR Training School, Nantes, France (October 26, 2021)

[103] Invited Seminar Speaker, “The Use of Detection Theory and Bayesian Experimental Design in Sparse-Array Ultrasonic Structural Health Monitoring,” Norwegian University of Science and Technology, Trondheim, Norway (December 2, 2021)

[104] Invited Seminar Speaker, “Towards a Digital Twin for Life Cycle Asset Management of Inland Waterway Navigation Infrastructure,” Chongqing National University, Chongqing, China (April 6, 2022)

[105] Invited Seminar Speaker, “Towards a Digital Twin for Life Cycle Asset Management of Inland Waterway Navigation Infrastructure,” Sandia National Laboratory, Albuquerque, New Mexico (July 27, 2022)

[106] Invited Seminar Speaker, “A Decision-Supportive Digital Fringe Projection Monitoring System for Powder Bed-Based Additive Manufacturing,” University of Bristol, Bristol, United Kingdom (November 8, 2022)

[107] Invited Seminar Speaker, “Is it a Signal or is it Noise? The Application of Detection Theory in Signal Statistical Signal Processing,” Air Force Academy, Colorado Springs, Colorado (April 7, 2023)

[108] Invited Seminar Speaker, “The Use of Detection Theory and Bayesian Experimental Design in Ultrasonic Structural Health Monitoring,” Distinguished Speaker Series, University of Michigan, Ann Arbor, Michigan (October 26, 2023)

[109] Invited Seminar Speaker, “The ‘Art’ and Science of Decision Making in Structural Life Cycle Asset Management,” North Carolina State University, Raleigh, North Carolina (February 9, 2024)

[110] Invited Seminar Speaker, “The Use of Detection Theory and Bayesian Experimental Design in Ultrasonic Structural Health Monitoring,” Rensselaer Polytechnic University, Rensselaer, New York (February 28, 2024)

[111] Invited Seminar Speaker, “The ‘Art’ and Science of Decision Making in Structural Life Cycle Asset Management,” University of Notre Dame, Sound Bend, Indiana (March 8, 2024)

[112] Invited Seminar Speaker, “The ‘Art’ and Science of Decision Making in Structural Life Cycle Asset Management,” University of Texas Arlington, Arlington, Texas (April 29, 2024)

[113] Invited Seminar Speaker, “The Use of Detection Theory and Bayesian Experimental Design in Ultrasonic Structural Health Monitoring,” Sungkyunkwan University, Seoul, Korea (May 28, 2024)

[114] Invited Speaker, “Bayesian Experimental Design”, Sandia National Laboratory, Albuquerque, New Mexico (online) (June 5, 2025)

[115] Roy Sharpe Prize for Outstanding Contribution to NDT Lecture, “Data-to-Decision in SHM/NDT: How Detection Theory Transforms SHM/NDT Data into an Actionable Decision Space,” British Institute of Nondestructive Testing, Telford, United Kingdom (September 4, 2024)

[116] SP100+ Lecture, “The Use of Detection Theory and Bayesian Experimental Design in Ultrasonic Structural Health Monitoring,” Technical University of Dresden, Dresden, Germany (October 22, 2024)

[117] TU Dresden Lecture Series, “The ‘Art’ and Science of Decision Making in Structural Life Cycle Asset Management,” Technical University of Dresden, Dresden, Germany (October 22, 2024)

[118] Keynote Plenary Lecture for SPIE Lifetime Achievement in NDE, “The Use of Detection Theory to Inform Decision Making in SHM/NDE,” 2025 SPIE Smart Structures and Nondestructive Evaluation, Vancouver, Canada (March 20, 2025)

[119] Invited Lecture, “The Use of Detection Theory to Inform Decision Making in SHM/NDE,” Hong Kong Polytechnic University, Hong Kong, China (August 13, 2025)

[120] Invited Distinguished Seminar Series Speaker, “The Use of Detection Theory to Inform Decision Making in SHM/NDE,” Nanyang Technical University, Singapore (July 16, 2025)

[121] Invited Speaker, “The Use of Detection Theory to Inform Decision Making in SHM/NDE,” Thornton Tomasetti NDT Community of Practice (November 12, 2025)

[122] Invited Plenary Speaker, “The Use of Detection Theory for Informing Optimal Structural Health Monitoring Decisions,” 1st International Conference on Infrastructural Monitoring and Protection 2025 (CIMP1-2025), Perth, Australia (December 3, 2025)

[123] Invited Keynote Speaker, “The Use of Detection Theory for Informing Optimal Structural Health Monitoring Decisions,” 2nd Latin-American Workshop on Structural Health Monitoring, Santiago, Chile (January 7, 2026)

[124] Invited Speaker, “Can Aircraft Structural Health Monitoring Be an Enabler for the Future of Air Traffic Control?”, National Academy of Engineering Regional Meeting, Duke University, Durham, North Carolina, (May 20, 2026)

[125] Invited Keynote Speaker, “The Evolution of Structural Health Monitoring from Qualitative Observation to Digital Twin,” SMAR2026, Dresden, Germany (August 26, 2026)

Other Professional Activities:

(1) Editorial boards and editorships

- Associate editor, *Structural Health Monitoring: An International Journal* (2006-present)
- Managing Editor, *Structural Health Monitoring: An International Journal* (2016-present)
- Associate Editor, *Journal of Civil Structural Health Monitoring*, (2018-present)
- Associate Editor, *Journal of Infrastructure Intelligence and Resilience*, (2021-present)
- Guest Editor for Special Issue, *Shock and Vibration* (2016)
- Co-Founder and North America Regional Editor, *International Structural Health Monitoring Newsletter* (2008-2014)
- International Editorial Board**,** *Sensing and Actuation Technologies for Infrastructure* (2009-2014)
- Editorial Board member, *Structural Monitoring and Maintenance* (2014-2018)

(2) Proposal reviewing, steering panels, and journal reviewing

- Steering committee member, National Workshop on Future Sensing Systems (2002)
- Panel reviewer, NSF Sensor Technology panel (2001,2002)
- External proposal reviewer, Hong Kong Research Council (2004; 2009; 2012; 2014)
- External proposal reviewer, Dept. of Defense Experimental Program to Stimulate Competitive Research (2005)
- External proposal reviewer, Air Force Office of Scientific Research (2010; 2012)
- External proposal reviewer, Dept. of Army Research Program (2006, 2010, 2012; 2015; 2016; 2025)
- External proposal reviewer, USDOT National Center for Transportation Systems Productivity and Management (2013)
- External proposal reviewer, Australia Research Council (2012; 2014; 2015; 2016)
- Panel reviewer, National Science Foundation CAREER program (2018-present)
- Los Alamos National Laboratory Weapons Capabilities External Reviewer
- External proposal reviewer, UK Engineering and Physical Sciences Research Council (2015; 2016; 2017)
- International Advisory Board, UK Centre for Research in Nondestructive Evaluation (RCNDE), (2014-present)
- Member, JASON (2015-2019)
- Referee for the following journals: *Measurement Science and Technology, Smart Materials and Structures, Journal of Vibration and Acoustics, Photonics Technology Letters, NDT&E International, Journal of Sound and Vibration, Journal of Intelligent Materials and Systems, Journal of Research in Nondestructive Evaluation, Mechanical Systems and Signal Processing, Experimental Mechanics, Applied Sciences, Journal of Marine Sciences and Application, Engineering Optimization, Ultrasonics, IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control Journal of Engineering Mechanics, Engineering Structures, Review of Scientific Instruments, Structural Health Monitoring: An International Journal*

(3) Conference organization and program committees

- Abstract/paper external reviewer, 8th National Conference on Earthquake Engineering (100th Anniversary Earthquake Conference) (2005)
- IMAC Special Topics Organizer: “Sensors and Instrumentation” Chair (2005)
- Co-Organizer and Co-Chair, First Engineering Institute Workshop on the State of the Art in Energy Harvesting” (2005)
- Co-Organizer and Co-Chair, Second Engineering Institute Workshop on Nonlinear System Identification for Damage Detection” (2006)
- Technical Organization Committee, 2nd Asia-Pacific Workshop on Structural Health Monitoring, Melbourne, Australia (2008)
- Organization Committee, Dynamics Days 2009 Conference, San Diego, California (2009)
- International Scientific Advisory Committee, *International Conference on Design in Civil and Environmental Engineering*, Seoul, Korea (2011)
- International Scientific Advisory Committee, *MEMSCON: Towards Intelligent Civil Infrastructure*, Athens, Greece (2012)
- SPIE Program Committee, "Health Monitoring and Smart NDE of Structural and Biological Systems", 2005-2018
- SPIE Program Committee, "Smart Sensor Monitoring Systems and Applications" (2005-2018)
- Technical Division Secretary, Sensors and Instrumentation IMAC Modal Topics Division of the Society of Experimental Mechanics (2006-2016)
- Conference Track Co-Organizer, “Assessment on the Value of Structural Health Information,” International Workshop on Structural Health Monitoring (2019, 2021)
- Minisymposium Track Co-Organizer, “Machine Learning and Hybrid Simulation for Civil Infrastructures,” Mechanistic Machine Learning and Digital Twins for Computational Science, Engineering and Technology (MMLDT-CSET) Conference (2021)
- Technical Organization Committee, Asia-Pacific Workshop on Structural Health Monitoring (2012, 2014, 2016, 2018, 2022, 2024)
- Technical Organization Committee, Latin American Workshop on Structural Health Monitoring (2023, 2026)
- Scientific Committee, 13th International Conference on Structural Health Monitoring of Intelligent Infrastructure (SHMII-13) (2025)
- Scientific Committee, 1st Conference on Infrastructure Monitoring and Protection (CIMPI-2025) (2025)
- Minisymposium Co-Organizer, U.S. National Congress on Theoretical and Applied Mechanics (USNCTAM) (2026)
- Scientific Committee, 1st International Workshop on Scientific Machine Learning and Large Models in Civil Engineering (SMLLM 2026) (2026)
- Scientific Committee, International Conference on Experimental Vibration Analysis for Civil Engineering Structures (EVACES 2027) (2027)

(4) Other External Activities

- Los Alamos Dynamics Summer School invited student mentor (2003)
- Los Alamos Dynamics Summer School invited tutorial presenter (2004-present)
- Guest Lecturer, Los Alamos Judges’ Science School (2015-present)
- Guest presenter at Los Alamos Advanced Studies Institute (2015-present)
- Member, Search Committee for LANL-UCSD Engineering Institute Leader (2023-2024)

Courses Taught

SE 203 Structural Dynamics
SE 204 Advanced Structural Dynamics
SE 205 Nonlinear Mechanical Vibrations
SE 163/263 Nondestructive Evaluation
SHM 165/265 SHM Principles/Intro. to SHM
SE 168/268 Structural Model/Test Correlation
SE 110A Solid Mechanics I

SE 101B Mechanics II: Dynamics
SE 111B Steel Bridge Design Competition
SE 101C Mechanics III: Vibrations

Undergraduate Research Student Supervision:

[1] Christopher Vandette (research advisor), U.S. Naval Research Laboratory, 1998
[2] Michael Hunter (research advisor), U.S. Naval Research Laboratory, 2002
[3] Fanny Carlet (SE 199 mentor), 2003-2004
[4] Scott Ouellette (Calit2 Summer Research Fellowship mentor), SU 2008; project: "Corrosion-Enabled Powering Approach for Structural Health Monitoring Sensor Networks"
[5] Colin Haynes (SE 299 mentor), SP 2009; project: "Sensor Optimization Strategies"
[6] Matteo D'Orio (SE 199 mentor), SP 2010; project: "Scaled Bolted Joint Design/Testing for Alamosa Canyon Bridge"
[7] Matteo D'Orio (research advisor), SU 2011; project: "STTR: Design of 6-DOF Load Cell for Missile In-Situ Resultant Force Measurement"
[8] Richard Do (research advisor), SP 2012-SU 2012; project: "Guided Wave Optimal Sensor Design for Complex Structural Interrogation"
[9] Jennifer Cheng (research advisor), SP 2012; project: "Load Cell Design Validation and Uncertainty Quantification"
[10] Cory Youngdale (research advisor), SP 2012-SU 2012; project: "Ultrasonic Testing Strategies for Geometrically Complex Structures"
[11] Joao Cheong (research advisor), SP 2012-SU 2012; project: "Ultrasonic Testing Platform for Optimal Localization"
[12] Jeffrey Friesen (research advisor), SP 2012-SU 2012; project: "Open- and Closed-Loop Shaker Control for Energy Harvesting Applications"
[13] Steven Rodriquez (research advisor), SP 2013-SU 2013; project: "Computational Modeling of SHM Benchmark Testbed"
[14] Mimi Ngo (research advisor), SU 2013-SP 2014; project: "Fiber Optic Connectors for Embeddable Composite Sensing"
[15] Vincent Dao (research advisor), FA 2013-SU 2014; project: "SHM for High-Performance Composite Submersibles"
[16] Tingyu Chen (research advisor), SP 2014-SU 2014; project: "MATLAB Coding of SHM Algorithms"
[17] Dana Lozon (SE 99 mentor; Regents Scholar), SP 2014, project: "Fiber Optic Connectors for Embeddable Composite Sensing"
[18] Mark Case (research advisor), SP 2016-SU 2016; project: "Optimal SHM of Army Corps Bridges"
[19] Jon Soh (research advisor), SU 2016-FA 2016; project: "Fiber Optic Connectors for Embedded Arrays"
[20] Kwanyin Tuet (SE 199 mentor), FA 2016-WI 2016; project: "3D Printed Piezoelectric Sensor Caps for Ultrasonic Interrogation"
[21] Wenshen Li (SE 199 mentor), FA 2016-WI 2016; project: "Optimal Laser Ultrasonic Excitation"
[22] Haiyun Wang (SE 199 mentor), SP 2017; project: "Development of Ultrasonic Wavefield Analyzer (UWA) in MATLAB GUI"
[23] Angel Gonzalez (SE 99 mentor; Regents Scholar), FA 2017, project: "Visualization of Imaged Ultrasonic Data from LUI System"
[24] Izabela Batista (research advisor), FA 2017-WI 2018; project: "Feasibility Study for Acousto-Ultrasonic Characteristics Based on Acoustic Emission Sources and a Laser Ultrasonic Generator"
[25] Arnolda Buelna and
[26] Elizabeth Diaz (ENLACE paired mentorees), SU 2018; project: "A Comparative Study of Damage Detection via Variation of Laser Scanning Patterns"
[27] Lourdes Vellve Cruz and
[28] Dominique Hernandez (ENLACE paired mentorees), SU 2019; project: "Structured Light System Development"
[29] Madeleine Maltais (NSF REU mentoree), June-Aug 2019; project: "Damage Detection in Linear Systems Using Vibration Signals"
[30] Joshua Garcia (NSF REU mentoree), Jun-Aug 2019; project: "World Coordinate Estimation Through Fringe Projection"
[31] Justin Dalton (research advisor), FA 2020-SP 2021; project: "Laser Ultrasonic Defect Characterization Using Feature Gradients"
[32] Kailey Krausz (NSF REU mentoree), Jun-Aug 2022; project: "Analysis of Different Strategies to Model a Bolt Using a Finite Element Software"

[33] Jeffrey Liu (NSF REU mentoree), Jun-Aug 2022; project: “PCA-Based Clustering for Damage Detection with Laser Ultrasonic System”
[34] Edward Yu and
[35] Henry Nguyen (NSF REU mentorees), Jun-Aug 2023; project: “Structural Health Monitoring for Rigid Steel Panels: Vibration-Based Damage Detection and Frequency Analysis”
[36] Peter Le (NSF REU mentoree), Jun-Aug 2023; project: “Structural Damage Localization with Lamb Waves Based on the Reassigned Smoothing Pseudo Wigner-Ville Distribution”
[37] Kieran Elrod (SE 199 mentor), Sep 2023-Mar 2024; project: “Frequency Domain Model Updating for Detecting Boundary Condition Damage in a Plate”
[38] Peter Le and
[39] Edward Yu (SE 199 mentor), Jan-Mar 2024; project: “Laser Ultrasonic-Based Dispersion Estimation in Plate Structures”
[40] Nile Kim (SE 197/199 mentor), Aug 2024-Jun 2025; project: academic internship at Nous

Masters Student Supervision:

[1] Jonathan Nichols (external M.S. thesis advisor), M.S. (Duke University, Dept. Mechanical Engineering and Materials Science), 1998-1999; Master’s Thesis: “Classification of Experimental Dynamical Systems Through Time Series Analysis”
[2] Christina Nichols (external M.S. thesis advisor), M.S. (Duke University, Dept. Mechanical Engineering and Materials Science), 2002-2003; Master’s Thesis: “Structural Health Monitoring and Signal Analysis of Damaged Beams”
[3] David Mascarenas (M.S. thesis advisor), M.S., 2004-2005; Master’s Thesis: “Development of an Impedance Method-Based Wireless Sensor Node for Monitoring of Bolted Joint Preload”
[4] Zhu Mao (M.S. thesis advisor), M.S., 2006-2007; Master’s Thesis: “Comparison of Shape Reconstruction Strategies in a Complex Flexible Structure”
[5] Greg Jarmer (M.S. thesis advisor), M.S., 2007-2009; Master’s Thesis: “Crack Detection Diagnostics Using Ultrasonic Insonification”
[6] Sandra Ward (M.S. project supervisor), M.S., 2008-2009; project: “Means of Regenerative Chatter Suppression in Single-Point Boring Using MR Fluid”
[7] Luke Robinson (M.S. thesis advisor), M.S., 2011-2013; Master’s Thesis: “A Performance Comparison of Condition Based Monitoring Damage Features Used in Rotating Machines Under Variable Conditions”
[8] Luke Zsiga (M.S. thesis advisor), M.S., 2011-2013; Master’s Thesis: “A Performance Comparison of Features Used in Vibration-Based Health Monitoring of a Complex Mechanism”
[9] Richard Do (M.S. thesis advisor), M.S., 2012-2014; Master’s Thesis: “Active and Passive Sensing Technologies for Structural Health Monitoring”
[10] Rachael Musser (M.S. project supervisor) SP 2013-FA 2013; project “Low-Power Electronics for Corrosion Batteries”
[11] Shangheng Li (M.S. project supervisor) 2015-2016; project “Temperature Compensation Methods for Ultrasonic Guided Waves”
[12] Anthony Whittaker (M.S. thesis co-advisor with Hyonny Kim), M.S., 2015-2016; Master’s Thesis: “Structural Health Monitoring of Composite Structures Using Fiber Optic Sensors”
[13] Benhang Shi (M.S. project supervisor), M.S., SP 2016-SP 2017; project: “Singularity Detection Using Holder Exponent”
[14] Brittany Ouellette (M.S. thesis advisor), M.S., 2016-2018; Master’s Thesis: “In-Situ Printing of Conductive Polylactic Acid (cPLA) Embedded Strain Sensors into Additively Manufactured Parts using Fused Deposition Modeling”
[15] Yichao Yang (M.S. project supervisor), M.S., 2015-2017; project: “Structural Health Monitoring for Real-Time Condition and End-of-Life Assessment of U.S. Large Civil Infrastructure”
[16] Jordan Ye (M.S. thesis advisor), M.S., 2018-2019; Master’s Thesis: “Damage Prognosis with Embedded Fiber Bragg Gratings”
[17] Matthew Scheel (M.S. thesis advisor), M.S., 2018-2019; Master’s Thesis: “A Thermo-Hydraulic Experimental Validation of the Unprecedented TMRS Upper Neutron Spallation Target”
[18] Zihan Wu (M.S. project supervisor), M.S., 2019; project: “Damage Detection with the ‘Spatial Gradient’ Method”

[19] Yifan Fu (M.S. project supervisor), M.S., 2020; project: “Prediction of Miter Gate Strain Based on Machine Learning Algorithms”
[20] Casey Gardner (M.S. project supervisor), M.S., 2020; project: “Fitting Off-Axis Wavepath Dispersion Curves”
[21] Guofeng Qian (M.S. project supervisor), M.S., 2020; project: “A Surrogate Model for a Cantilever Beam with Neural Networks”
[22] Peter Fickenwirth (M.S. thesis advisor), M.S., 2020-2023; project: “Electrodynamic Shaker Capability Estimation Through Experimental Dynamic Substructuring”
[23] Riley Jones (M.S. project supervisor), M.S., 2021-2022; project: “Time and Frequency Domain Feature Selection for Detecting Fastener Loss in Corrugated Paneling”
[24] Yinyan Bu (M.S. project supervisor), M.S., 2021-2022; project: “Fastener Loss Detection Using Machine Learning in Corrugated Paneling”
[25] Yu-Tung Huang (M.S. project supervisor), M.S., 2022; project: “Machine Learning Application to Laser-Induced Wavefield Data for Defect Detection”
[26] Michael Skeate (M.S. project supervisor), M.S., 2023; project: “Detection of System Drift for the Health Monitoring of an X-ray CT Scientific Instrument”
[27] Ting-Ya Chang (M.S. project supervisor), M.S., 2023; project: “A Statistical Image Processing Approach for Damage Detection in Laser Ultrasonic Imaging”
[28] Cayman Rogers (M.S. project supervisor), M.S., 2025; project: “Monitoring the Structural Health of the Stage-Four Gibbs Resistor”
[29] Joshua Dyer (M.S. project supervisor), M.S., 2025; project: “Investigation of Preload Modeling Methods for an Impact Capabilities Testbed”
[30] Jackson McFall (M.S. project supervisor), M.S., 2025; project: “Review of Interferometry Measurement Techniques”
[31] Clint Kallenbach (M.S. project supervisor), M.S., 2025; project: “Automated Image Processing for Quality Acceptance Visual Inspections”
[32] Gavyn Pendleton (M.S. project supervisor), M.S., 2025; project: “Feasibility of an Accelerometer-Based Structural Health Monitoring System for the LANL Blast Tube”
[33] Mateo Sanchez (M.S. project supervisor), M.S., 2025; project: “Copula based Damage Detection for Structural Health Monitoring”
[34] Xavier Dennison (M.S. project supervisor), M.S., 2025; project: “Snap-Through Buckling Pressure Prediction of Spherical Caps: A Comparison of Analytical, Implicit, and Explicit Methods”
[35] Samuel Hinnerman (M.S. project supervisor), M.S., 2025; project: “Finite Element Analysis of the TRUST Nonlinear Dynamics Testbed”

Doctoral Students:

[1] Jonathan Nichols (external dissertation advisor), Ph.D. (Duke University, Dept. Mechanical Engineering and Materials Science), 1999-2002; Doctoral Dissertation: “Attractor-Based Approaches to Structural Health Monitoring”
[2] Colin Olson (dissertation advisor), Ph.D., 2003-2008; Doctoral Dissertation: “Evolutionary Algorithms, Chaotic Excitations, and Structural Health Monitoring: On Global Search Methods for Improved Damage Detection via Tailored Inputs”
[3] Luke Overbey (dissertation advisor), Ph.D., 2003-2008; Doctoral Dissertation: “Time Series Analysis and Feature Extraction Techniques for Structural Health Monitoring Applications”
[4] David Mascarenas (dissertation advisor) Ph.D., 2005-2008; Doctoral Dissertation: “’Mobile Host Wireless Sensor Networks—A New Sensor Network Paradigm for Structural Health Monitoring Applications”
[5] Tim Fasel (dissertation advisor), Ph.D., 2003-2009; Doctoral Dissertation: “Chaotic Ultrasonic Excitation and Statistical Pattern Recognition for Structural Damage Classification”
[6] Eric Flynn (dissertation advisor), Ph.D., 2005-2010; Doctoral Dissertation: “A Bayesian Experimental Design Approach to Structural Health Monitoring with Application to Ultrasonic Guided Waves”
[7] Zhu Mao (dissertation advisor), Ph.D., 2007-2012; Doctoral Dissertation: “Uncertainty Quantification in Vibration-Based Structural Health Monitoring for Enhanced Decision-Making Capability”
[8] Erik Moro (dissertation advisor), Ph.D., 2008-2012; Doctoral Dissertation: “Modeling and Validation of Performance Limitations for the Optimal Design of Interferometric and Intensity-Modulated Fiber Optic Displacement Sensors”

[9] Greg Jarmer (dissertation advisor), Ph.D., 2009-2013; Doctoral Dissertation: “Damage Detection in Plate Structures Using Guided Ultrasonic Waves”
[10] Stuart Taylor (dissertation advisor), Ph.D., 2008-2013; Doctoral Dissertation: “A Multi-Scale Approach to Statistical and Model-Based Structural Health Monitoring with Application to Embedded Sensing for Wind Energy”
[11] Shahab Torkamani (external dissertation co-advisor), Ph.D. (New Mexico State University), 2009-2013; Doctoral Dissertation: “Hyperchaotic and Delayed Oscillators for System Identification with Application to Damage Assessment”
[12] Colin Haynes (dissertation advisor), Ph.D., 2009-2014; Doctoral Dissertation: “Effective Health Monitoring Strategies for Complex Structures
[13] Dustin Harvey (dissertation advisor), Ph.D., 2010-2014; Doctoral Dissertation: “Automated Feature Design for Time Series Classification by Genetic Programming”
[14] Scott Ouellette (dissertation advisor), Ph.D., 2009-2015; Doctoral Dissertation: “Energy Harvesting Paradigms for Autonomously-Powered Sensor Networks”
[15] Tim Edwards (dissertation advisor), Ph.D., 2010-2015 (withdrew)
[16] Eric Kjolsing (dissertation advisor), Ph.D., 2012-2016; Doctoral Dissertation: “Investigations Supporting the Development of a Downhole Energy Harvesting System”
[17] Michael Yeager (dissertation advisor), Ph.D., 2014-2017; Doctoral Dissertation: “Health Monitoring of Composites with Embedded Fiber Bragg Gratings”
[18] Will Warren (dissertation advisor), Ph.D., 2014-2016 (withdrew)
[19] Mayank Chadha (dissertation advisor), Ph.D., 2016-2019; Doctoral Dissertation: “Theoretical Development of Framed Space Curve and its Applications to Higher-Order Geometrically Exact Rod Theory, Shape Sensing, Path Estimation, and Computer Graphics”
[20] Manuel Vega Loo (dissertation advisor), Ph.D., 2017-2020; Doctoral Dissertation: “Diagnosis, Prognosis, and Maintenance Decision Making for Civil Infrastructure”
[21] Niall O’Dowd (dissertation advisor), Ph.D., 2017-2021; Doctoral Dissertation: “Design and Development of an Uncertainty-Quantified Digital Fringe Projection Monitoring System for Powder Bed Based Additive Manufacturing”
[22] Yichao Yang (dissertation advisor), Ph.D., 2017-2021; Doctoral Dissertation: “An Optimal Sensor Design Framework for Structural Health Monitoring”
[23] Adrielly Razzini (dissertation advisor), Ph.D., 2017-2023; Doctoral Dissertation: “Risk-Based Optimal Data Interrogation for Structural Health Monitoring of a Composite UAV Wing”
[24] Brian West (dissertation advisor), Ph.D., 2018-2023
[25] Zihan Wu (dissertation advisor), Ph.D., 2019-2024; Doctoral Dissertation: “Optimized Structural Health Monitoring for Inland Waterways Infrastructure Using Model-Based Diagnostics and Prognostics,”
[26] Guofeng Qian (dissertation advisor), Ph.D., 2021-2023; Doctoral Dissertation: “Diagnostics and Prognostics of Pitting Corrosion in Large Civil Infrastructure Using Multi-Scale Simulation and Machine Learning,”
[27] David Najera (dissertation advisor), Ph.D., 2020-2024; Doctoral Dissertation: “Physics-Constrained, Structure-Preserving Machine Learning Models for Structural Health Applications,”
[28] Joshua Dyer (dissertation advisor), Ph.D., 2022-2025 (transitioned to M.S.)
[29] Erica Jacobson (dissertation co-advisor, with Hyonny Kim), Ph.D., 2022-present
[30] Haiwei Lin (dissertation advisor), Ph.D., 2023-present

Postdocs:

[1] Tim Fasel (post-doctoral research advisor), UC San Diego, 2010
[2] Eric Flynn (post-doctoral research advisor), UC San Diego, 2010-2011
[3] Zhu Mao (post-doctoral research advisor), UC San Diego, 2012-2015
[4] See Yen (Andy) Chong (post-doctoral research advisor), UC San Diego, 2015-2020
[5] Michael Yeager (post-doctoral research advisor), UC San Diego, 2017-2018
[6] Ramin Madarshahian (post-doctoral research advisor), UC San Diego, 2018-2019
[7] Long Wang (post-doctoral research advisor), UC San Diego, 2019-2020
[8] Mayank Chadha (post-doctoral research advisor), UC San Diego, 2019-2023
[9] Yichao Yang (post-doctoral research advisor), UC San Diego, 2022-2023
[10] Guofeng Qian (post-doctoral research advisor), UC San Diego, 2023-present
[11] Lin Sun (post-doctoral research advisor), UC San Diego, 2024-present

[12] Evan Cheok (post-doctoral research advisor), UC San Diego, 2026-present
[13] Peixiang Wang (post-doctoral research advisor), UC San Diego, 2026-present

Other Mentoring:

[1] Mentored and advised a research group of 3 undergraduates at the Los Alamos Dynamics Summer School (June-August 2003) over the duration of a research project that I put together (Lillian Chang, Stanford; Karl Erickson, UCLA; Kenton Lee, Embry-Riddle).
[2] Mentored undergraduate student Anthony Whitaker in the NextStep mentoring program, 2012-2013
[3] Supervised graduate research of Hua-Ping Wan, visiting graduate student from Central South University (China), 2013-2015
[4] Supervised graduate research of Fahit Gharibnezhad, visiting graduate student from Technical University of Catalunya (Spain), 2013; project: "Considering Temperature Effects on Robust PCA Orthogonal Distance as a Damage Detector"
[5] Hosted and collaborated with Prof. Gang Liu, Assoc. Professor of Civil Engineering at Chongqing University (China), 2012-2013
[6] Supervised and mentored research of Sebastian Lotz, visiting post-baccalaureate from Technical University of Munich (Germany), 2013; project "Ultrasonic Testing of Scaled Composite Wing Spar"
[7] Hosted and collaborated with Prof. Wenzhong Qu, Professor of Civil Engineering at Wuhang University (China), 2014
[8] Supervised and mentored research for Fulbright Scholar Ming Hong from Hong Kong Polytechnic University (China), 2014-2015; project: "Uncertainty Quantification for Acoustic Nonlinearity Parameter in Lamb Wave-Based Prediction of Barely Visible Impact Damage in Composites"
[9] Served as external Ph.D. committee advisor and "opponent" (Danish educational system term) for Mads Hovgaard, Aarhus University, Aarhus, Denmark, for dissertation "Incorporating Structural Health Monitoring in the Design of Slip-Formed Concrete Wind Turbine Towers", 2015
[10] Hosted and collaborated with Dr. Jae-yeul Shim, Korea Aerospace Research Institute, 2015
[11] Served as external Ph.D. committee reviewer/examiner for Chandarin Ung, Monash University, Melbourne, Australia, for dissertation "Energy Harvesting for Heavy Haul Rail Application", 2015
[12] Hosted and collaborated with Dr. Kamila Kustron, Warsaw University of Technology (Poland), 2015
[13] Supervised research project for visiting Ph.D. student Bruce Shiki, University of Sao Paulo Ilha Solteira Campus (Brazil), 2015; project "Evaluation and Uncertainty Quantification of Damage Indexes for Structural Health Monitoring Using Volterra Kernels"
[14] Supervised and mentored M.S. research of Sebastian Lotz, visiting M.S. student from Technical University of Munich (Germany), 2015-2016; project "Optimal Full-Field Scanning of Honeycomb Core Composite Aerospace Materials for Defect Detection"
[15] Supervised graduate research project of Yuyao Cheng, visiting Ph.D. student from Southeast University (China), 2015-2016; project: "Optimal Damage Detection Using Information Geometry"
[16] Served as external Ph.D. committee reviewer/examiner and "opponent" for Matteo Corbetta, Politecnico di Milano, Milan, Italy, for dissertation "Probabilistic Modeling of Airframe Damage Propagation for Real-Time Prognosis", 2016
[17] Supervised graduate research project of Angel Morales, visiting Ph.D. student from Madrid Polytechnical University (Spain), 2016; project: "Modeling of Complex Honeycomb Core Laminate Composite Structures Used in Engine Nacelles"
[18] Hosted and collaborated with Dr. Rob Barthorpe, Professor of Mechanical Engineering at University of Sheffield (UK), 2016
[19] Hosted and collaborated with Prof. Chiang-Jiang Liu, Professor of Civil Engineering at Chengdu University of Technology (China), 2016-2017
[20] Supervised graduate research project of Yuntong Dai, visiting Ph.D. student from Southeast University (China), 2016-2017; project: "Digital Image Correlation for Imaging Flexible Circuitry"
[21] Supervised graduate research project of Andreia Meixedo, visiting Ph.D. student from University of Porto (Portugal), 2016-2017; project: "Data-Driven Approaches for Operational and Environmental Nonstationarity Removal from Train Bridge SHM Data"
[22] Supervised graduate research project of Duhwan Kim, visiting Ph.D. student from Chonnam National University (Korea), 2017; project: "Optimal Processing of Full-Field Laser Ultrasonic Data Used in Composite Defect Detection"

[23] SE 296 mentor, Neha Madulika, 2017; project “Implementation of an ABAQUS Model for a Honeycomb Core Composite Sandwich Structure”
[24] Supervised graduate research project of Dong Li, visiting Ph.D. student from Chongqing University (China), 2017-2018; project: “Implementation of a Pretension Reliability Model for Membrane Structures”
[25] Supervised graduate research project of Hongyuan Wang, visiting Ph.D. student from Nanjing University of Aeronautics and Astronautics (China), 2017-2018; project: “Bayesian Approach to Optimal Scanning of Composite Structures”
[26] Supervised graduate research project of Wee Hoe Ng, visiting Ph.D. student from National University of Singapore (Singapore), 2018; project: “Bayesian Detection of Arrival Time in Sparse Array Ultrasonics”
[27] Hosted and collaborated with Prof. Sebastian Thons, Professor of Civil Engineering at Denmark Technical University (Denmark), 2018
[28] Served as external Ph.D. committee reviewer/examiner and “opponent” for Denise Bolognani, University of Trento, Trento, Italy, for dissertation “Advances in Decision Theory Based on Structural Health Monitoring”, 2019
[29] Hosted and supervised graduate research for visiting Ph.D. student Luis Villani, Sao Paulo State University, Ilha Solteira, Brazil, 2018-2019; project: “On the Development of a Unified Framework for Load and Structural Health Monitoring”, 2020
[30] Served as external Ph.D. committee reviewer/examiner for Roya Cody, University of Waterloo, Waterloo Canada, for dissertation “Acoustic Monitoring for Leaks in Water Distribution Systems”, 2020
[31] Hosted and collaborated with Professor Jung-Hwan Lee, Professor of Mechanical Engineering at Kunsan National University (Korea), 2020-2021
[32] Supervised graduate research project and then served as external Ph.D. committee reviewer/examiner and “opponent” for visiting Ph.D. student Luca Colombo, Politecnico di Milano, Milan, Italy, for dissertation “On the Development of a Unified Framework for Load and Structural Health Monitoring”, 2020
[33] Served as external Ph.D. committee reviewer/examiner for Elia Favarelli, University of Bologna, Bologna, Italy, for dissertation “Machine Learning for Structural Health Monitoring and Anomaly Detection”, 2021
[34] Served as external Ph.D. committee reviewer/examiner for Lijia Long, Aalborg University, Aalborg, Denmark, for dissertation “Quantification of the Value of Monitoring Information for Deteriorated Structures”, 2021
[35] Served as external Ph.D. committee reviewer/examiner for Bjørn Thomas Svendsen, Norwegian University of Science and Technology, Trondheim, Norway, for dissertation “Numerical and Experimental Studies for Damage Detection and Structural Health Monitoring of Steel Bridges,” 2021
[36] Served as external Ph.D. committee reviewer/examiner for Xintian Chi, University of Bristol, Bristol, UK, for dissertation “Modal-Based Vibrothermography for Damage Detection and Structural Health Monitoring,” 2022
[37] Served as external Ph.D. committee reviewer/examiner for Paul Mucchielli, University College Dublin, Dublin, Ireland, for dissertation “Eigenperturbation-Based Detection of Features of Interest and the Importance of Stochastic Differential Equations in Understanding the Behavior and Control of Dynamical Systems,” 2022
[38] Supervised graduate research project of Yang Han, visiting Ph.D. student from Dalian University of Technology, Dalian, China, 2022-2023; project: “A Novel Methodology for Quantitative Identification of Pipeline Leakage and Negative Pressure Wave Velocity”
[39] Hosted and collaborated with Dr. Pawel Malinowski, Polish Academy of Sciences (Poland), 2022
[40] Hosted and collaborated with Dr. Leandro Maio, Fulbright Fellow, University of Naples “Federico II” (Naples, Italy), 2023
[41] Served as external Ph.D. committee reviewer/examiner for Thomas Simpson, ETH Zurich, Zurich, Switzerland, for dissertation “Developing Hybrid Simulation for Virtualisation,” 2023
[42] Hosted and collaborated with Dr. Rafael Holdorf Lopez, Universidade Federal de Santa Catarina, Brazil, 2024
[43] Supervised graduate research project of Jan-Hauke Bartels, visiting Ph.D. student from Technical University of Dresden, Dresden, Germany, 2024; project: “Distinguishing Sensor Faults from Structural Damage Indicators Using Matched Filtering”
[44] Supervised graduate research project of Pei-xiang Wang, visiting Ph.D. student from Zhejiang University, Hangzhou, China, 2024-2025; project: “Bayesian Experimental Modal Analysis and its Uncertainty Laws”
[45] Served as external Ph.D. committee reviewer/examiner for Qingsong Xiong, Hong Kong Polytechnic University, Hong Kong, China, for dissertation “Real-Time Structural Seismic Damage Assessment Integrating Physics-Based and Machine Learning Algorithms” 2025

[46] Supervised graduate research project of Gabriel Padilha Alves, visiting Ph.D. student from Universidade Federal de Santa Catarina, Brazil, 2026; project: “Risk-Based Value of Information Inference in SHM”
[47] Served as external Ph.D. committee reviewer/examiner for Aliakbar Yaghoubzadehfard, University of Melbourne, Australia, for dissertation “Integrative Radar Technique for Analysing Damage and Predicting the Remaining Service Life of Corroded RC Bridges,” 2026

PRIMARY PUBLISHED OR CREATIVE WORK

I. **Refereed Journal Articles**

[1] M. D. Todd and L. N. Virgin, “The Nonstationary Transition Through Resonance,” *Nonlinear Dynamics*, **10**, 31-48, 1996.

[2] M. D. Todd and L. N. Virgin, “Natural Frequency Considerations of an Impact Oscillator,” *Journal of Sound and Vibration*, **194**(3), 452-460, 1996.

[3] M. D. Todd and L. N. Virgin, “An Experimental Impact Oscillator,” *Chaos, Solitons, and Fractals*, **8**(4), 699-714, 1997.

[4] M. D. Todd and L. N. Virgin, “An Experimental Verification of Basin Metamorphoses in a Nonlinear Mechanical Oscillator," *International Journal of Bifurcations and Chaos*, **7**(6), 1337-1357, 1997.

[5] L. N. Virgin, M. D. Todd, C. J. Begley, S. T. Trickey, and E. H. Dowell, “Basins of Attraction in Experimental Nonlinear Oscillators,” *International Journal of Bifurcations and Chaos*, **8**(3), 521-533, 1998.

[6] M. D. Todd and S. T. Vohra, “Transient Dynamics of a Lightly-Damped, Roll-Forced Pendulum," *Dynamics and Stability of Systems*, **13**(1), 95-115, 1998.

[7] M. D. Todd and S. T. Vohra, “Measurement and Analysis of Complex Modulated Motions in a Weakly Nonlinear System," *Physica D*, **120**, 329-345, 1998. **(NRL Research Publication Award)**

[8] M. D. Todd, G. A. Johnson, B. A. Althouse, and S. T. Vohra, “Flexural Beam-Based Fiber Bragg Grating Accelerometers," *IEEE Photonics Technology Letters*, **10**(11), 1605-1607, 1998.

[9] M. D. Todd and S. T. Vohra, “An Alternative Approach to Poincare Sectioning in Weakly Nonlinear Systems," *International Journal of Bifurcations and Chaos*, **9**(5), 953-962, 1999.

[10] M. D. Todd and S. T. Vohra, “Shear Deformation Correction to Transverse Shape Reconstruction from Distributed Strain Measurements," *Journal of Sound and Vibration*, **225**(3), 581-594, 1999.

[11] M. D. Todd, G. A. Johnson, and C. C. Chang, “A Passive, Light Intensity-Independent Interferometric Method for Fiber Bragg Grating Interrogation," *IEEE Electronics Letters*, **35**(22), 1970-1971, 1999.

[12] S. T. Vohra, G. A. Johnson, M. D. Todd, B. A. Danver, and B. A. Althouse, “Distributed Strain Monitoring with Arrays of Fiber Bragg Grating Sensors on an In-Construction Steel Box-Girder Bridge,*" IEICE Transactions on Electronics*, **E83-C**(3), 454-461, 2000.

[13] G. A. Johnson, M. D. Todd, B. L. Althouse, and C. C. Chang, “Fiber Bragg Grating Interrogation and Multiplexing with a 3x3 Coupler and a Scanning Filter," *Journal of Lightwave Technology*, **18**(8), 1101-1105, 2000.

[14] M. D. Todd, G. A. Johnson, and S. T. Vohra, “Deployment of a Fiber Bragg Grating-Based Measurement System in a Structural Health Monitoring Application," *Smart Materials and Structures*, **10**(3), 534-539, 2001.

[15] T. L. Carroll, M. D. Todd, F. J. Rachford, and L. M. Pecora, “Spatiotemporal Nonlinear Dynamics of a Magnetoelastic Ribbon," *Physical Review E*, **63/056205**, 1-9, 2001.

[16] M. D. Todd, G. A. Johnson, and B. L. Althouse, “A Novel Bragg Grating Sensor Interrogation System Utilizing a Scanning Filter, a Mach-Zehnder Interferometer, and a 3x3 Coupler," *Measurement Science and Technology*, **12**(7), 771-777, 2001.

[17] M. D. Todd, J. M. Nichols, L. M. Pecora, and L. N. Virgin, “Vibration-Based Damage Assessment Utilizing State Space Geometry Changes: Local Attractor Variance Ratio," *Smart Materials and Structures*, **10**(5), 1000-1008, 2001.

[18] J. M. Nichols, S. T. Trickey, M. D. Todd, and L. N. Virgin, “Structural Health Monitoring Through Chaotic Interrogation," *Meccanica*, **38**(2), 239-250, 2003.

[19] M. D. Todd, M. Seaver, and F. Bucholtz, “Improved, Operationally-Passive Interferometric Demodulation Method Using a 3x3 Coupler,” *Electronics Letters*, **38**(15), 784-786, 2002.

[20] J. M. Nichols, M. D. Todd, M. Seaver, and L. N. Virgin, “Use of Chaotic Excitation and Attractor Property Analysis in Structural Health Monitoring,” *Physical Review E*, **67/016209**, 2003.

[21] J. M. Nichols, M. D. Todd, L. N. Virgin, and J. D. Nichols, “On the Use of Attractor Dimension as a Feature in Structural Health Monitoring,” *Mechanical Systems and Signal Processing*, **17**(6), 1305-1320, 2003.

[22] J. M. Nichols, M. D. Todd, and J. R. Wait, “Using State Space Predictive Modeling with Chaotic Interrogation in Detecting Joint Preload Loss in a Frame Structure Experiment,” *Smart Materials and Structures*, **12**(4), 580-601, 2003.

[23] L. Moniz, T. Carroll, L. Pecora, and M. D. Todd, “Assessment of Damage in an 8-Oscillator Circuit Using Dynamical Forcing,” *Physical Review E*, **68/036215**, 2003.

[24] J. M. Nichols, M. D. Todd, M. Seaver, S. T. Trickey, L. M. Pecora, and L. M. Moniz, “Controlling System Dimension: A Class of Real Systems that Obey the Kaplan-Yorke Conjecture,” *Proceedings of the National Academy of Sciences*, **100**(26),15299-15303, 2003.

[25] J. M. Nichols, C. J. Nichols, M. D. Todd, M. Seaver, S. T. Trickey, and L. N. Virgin, “Use of Data Driven Phase Space Models in Assessing the Strength of a Bolted Connection in a Composite Beam,” *Smart Materials and Structures*, **13**(2), 241-250, 2004.

[26] M. D. Todd, K. Erickson, L. Chang, K. Lee, and J. M. Nichols, “Using Chaotic Interrogation and Attractor Nonlinear Cross-Prediction Error to Detect Fastener Preload Loss in an Aluminum Frame,” *Chaos: An Interdisciplinary Journal of Nonlinear Science*, **14**(2), 387-399, 2004.

[27] L. Moniz, L. Pecora, J. M. Nichols, M. D. Todd, and J. Wait, “Dynamical Assessment of Structural Damage Using the Continuity Statistic,” *Structural Health Monitoring: An International Journal*, **3**(3), 199-212, 2004.

[28] M. D. Todd, J. M. Nichols, C. J. Nichols, and L. N. Virgin, “An Assessment of Modal Property Effectiveness in Detecting Bolted Joint Degradation: Theory and Experiment,” *Journal of Sound and Vibration*, **275**(3-5), 1113-1126, 2004.

[29] L. Moniz, J. M. Nichols, C. J. Nichols, M. Seaver, S. T. Trickey, M. D. Todd, L. M. Pecora, and L. N. Virgin, “A Multivariate, Attractor-Based Approach to Structural Health Monitoring,” *Journal of Sound and Vibration*, **283**(1-2), 295-301, 2005.

[30] J. M. Nichols, M. D. Todd, C. Olson, L. A. Overbey, M. Seaver, and S. T. Trickey, “Detecting Nonlinearity in Structural Systems Using the Transfer Entropy,” *Physical Review E*, **72/046117**, 2005.

[31] C. R. Farrar, G. Park, D. W. Allen, and M. D. Todd, “Sensor Network Paradigms for Structural Health Monitoring,” *Structural Control and Health Monitoring*, **13**, 210-225, 2006.

[32] M. D. Todd, J. M. Nichols, S. T. Trickey, M. Seaver, C. J. Nichols, and L. N. Virgin, “Bragg Grating-Based Fibre Optic Sensors in Structural Health Monitoring,” *Philosophical Transactions of the Royal Society of London A*, **365**, 317-343, 2007.

[33] L. Overbey and M. D. Todd, “Analysis of Local State Space Models for Feature Extraction in Structural Health Monitoring”, *Structural Health Monitoring: An International Journal* **6**(2), 145-172, 2007.

[34] M. D. Todd, “Output-Noise Statistical Characterization for Digital-Phase-Demodulation Systems with Intensity-Based Input Noise,” *Journal of Lightwave Technology*, **25**(3), 747-756, 2007.

[35] C. Olson, M. D. Todd, K. Worden, and C. Farrar, “Improving Excitations for Active Sensing in Structural Health Monitoring via Evolutionary Algorithms”, *Journal of Vibration and Acoustics* **129**, 784-802, 2007.

[36] L. Overbey, C. Olson, and M. D. Todd, "A Parametric Investigation of State-Space-Based Prediction Error Methods with Stochastic Excitation for Structural Health Monitoring," *Smart Materials and Structures* **16**(5)*,* 1621-1638, 2007.

[37] D. Mascarenas, M. D. Todd, G. Park, and C. R. Farrar, “Development of an Impedance-Based Wireless Sensor Node for Structural Health Monitoring,” *Smart Materials and Structures* **16**(6)*,* 2137-2145*,* 2007.

[38] G. Park, T. Rosing, M. D. Todd, C. R. Farrar, and W. Hodgkiss, “Energy Harvesting for Structural Health Monitoring Sensor Networks,” *ASCE Journal of Infrastructure Systems* **14**(1), 64-79, 2008.

[39] K. Worden, C. R. Farrar, J. Haywood, and M. D. Todd, “A Review of Nonlinear Dynamics Applications to Structural Health Monitoring,” *Structural Control and Health Monitoring*, **15**(4), 540-567, 2008.

[40] L. A. Overbey and M. D. Todd, “Damage Assessment Using Generalized State Space Correlation Features,” *Structural Health Monitoring: An International Journal*, **7**(4), 347-363, 2008.

[41] M. D. Todd, “On the Probability Structure of Output Noise from a Digital Phase Demodulation System Subject to Biased Intensity-Based Input Noise,” *Journal of Lightwave Technology*, **26**(14), 2291-2300, 2008.

[42] D. Mascarenas, E. Flynn, M. D. Todd, G. Park, and C. R. Farrar, “Wireless Sensor Technologies for Monitoring Civil Structures,” *Sound and Vibration*, April 2008, 16-20.

[43] C. C. Olson, L. A. Overbey, and M. D. Todd, “An Experimental Demonstration of Tailored Excitations for Improved Damage Detection in the Presence of Operational Variability,” *Mechanical Systems and Signal Processing*, **23**(2), 344-357, 2009.

[44] L. A. Overbey and M. D. Todd, “Dynamic System Change Detection Using a Modification of the Transfer Entropy,” *Journal of Sound and Vibration*, **322**, 438-453, 2009.

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IV. Additional Products of Major Research

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