

ANDREW SMYTH
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EDUCATION

UNIVERSITY OF SOUTHERN CALIFORNIA, Los Angeles, CA
Ph.D. in Civil Engineering, May 1998
Dissertation: *Experimental and Analytical Studies in Nonlinear System Identification and Modeling for Structural Control*
M.S. in Electrical Engineering (*Control Systems*), 1997
RICE UNIVERSITY, Houston, TX
M.S. in Civil Engineering, 1994
BROWN UNIVERSITY, Providence, RI
B.Sc. in Civil Engineering, 1992
B.A. in Architectural Studies, 1992

PROFESSIONAL EXPERIENCE

Professor, Columbia University, July 2010 to present
Chair, Smart Cities Center of the Data Science Institute, Columbia University, 2013 – present
Director of Research, Robert A.W. Carleton Laboratory, Columbia University, 2013 – 2018
Visiting Scholar, KU Leuven, Leuven, Belgium, March 2014 - July 2014.
Associate Professor, Columbia University, July 2003 to 2010
Visiting Researcher at Laboratoire Central des Ponts et Chaussées, Paris, Jan.-Aug., 2007
Assistant Professor, Columbia University, July 1998 to June 2003
Dept. of Civil Engineering and Engineering Mechanics
Research Associate, Univ. of Southern California, May & June 1998
Dept. of Civil & Environmental Engineering

PROFESSIONAL ACTIVITIES

Professional Society and Technical Committee Activities

Vice-President, ASCE Engineering Mechanics Institute, Oct. 2013 – Oct. 2014
President, US Panel for Structural Control and Monitoring (IASCM), 2016 - present
Board of Governors Member, Elected Governor of the ASCE Engineering Mechanics Institute, Oct. 2011 – Oct. 2014
Treasurer, Met Section ASCE Engineering Mechanics Institute Committee 2011 - 2014
Associate Editor, *Frontiers in Built Environment – Structural Sensing* 2015 - present
Associate Editor, *ASCE Lecture Notes on Mechanics* 2010 – present
Associate Editor, *ASCE Journal of Engineering Mechanics* 2006 – 2016

Associate Editor, *Structural Control and Health Monitoring* 2006 – 2012

Programs Committee Chair, ASCE Engineering Mechanics Division, 2003 to 2011

Executive Committee Member, US Panel for Structural Control and Monitoring, 2007 to 2016

News Correspondent & Webmaster, ASCE Engineering Mechanics Division, 1998-2003

Editor & Webmaster, Newsletter of the *International Association on Structural Control (IASC)*(1998-2007)

Committee Member & Technical Reviewer, ASCE Dynamics Committee

Committee Member & Technical Reviewer, ASCE Structural Control and Health Monitoring (ExCom contact member)

Committee Member & Technical Reviewer, ASCE Probabilistic Methods Committee

Member, American Society of Civil Engineers (ASCE)

Member, Earthquake Engineering Research Institute (EERI)

Member, Sigma Xi, The Scientific Research Society

Conference Activities

Conference Chair, 8th International Workshop on Structural Control, 2020 at Columbia University
Chair, Smart Cities Innovation Accelerator, Columbia University, May 2018.

Facilitator, Smart Cities Innovation Accelerator, Los Angeles, CA, Dec. 2017

Symposium Co-Chair, (7 Sessions) at the 6th World Conference on Structural Control and Monitoring (6WCSM), Barcelona, July, 2014

Conference Co-Chair, 4th Biot Conference on Poromechanics, 2009 at Columbia University (300+ attendees expected)

National Organizing Committee (ASCE Representative), 2009 Joint ASCE-ASME-SES Conference on Mechanics and Materials, Virginia Tech (300+ attendees expected)

Chair, Technical Program Committee, 4th World Conference on Structural Control and Monitoring, UCSD, July 2006 (325 attendees)

Conference Chair, ASCE Engineering Mechanics Conference 2002 (EM2002) at Columbia University (450 attendees)

Conference Co-Chair, 4th International Workshop on Structural Control, 2004 at Columbia University (limited to 130 attendees)

Program Committee, Sensors and Smart Structures Technologies for Civil, Mechanical, and Aerospace Systems, SPIE Smart Structures/NDE Joint Conference, 2004 - 2008

Working Group Co-Chair, “Educational Challenges and Opportunities,” 1st International Workshop on Advanced Smart Materials and Smart Structures Technology, Hawaii, 2004.

Invited Expert, and Working Group Recorder, OECD Ad Hoc Experts Meeting on Earthquake Safety in Schools, Paris, 2004

Invited Session Chair, Workshop on Mitigation of Earthquake Disaster by Advanced Technologies (MEDAT-1)

Invited Session Chair, 1st International Workshop on Advanced Smart Materials and Smart Structures Technology, Hawaii, 2004.

Invited Session Chair of session at 3rd World Conference on Structural Control (2002)

Session Chair, 2nd European Conference on Structural Control

Session Chair, Inaugural ASCE Engineering Mechanics Institute Conference, Minneapolis (2008)

Session Chair, 17th ASCE Engineering Mechanics Conference, Delaware (2004)

Session Chair at Probabilistic Mechanics Conference (2004)

Session Chair at 4th World Conference on Structural Control and Monitoring, UCSD, (2007)

Plenary Session Chair at 4th World Conference on Structural Control and Monitoring, UCSD, (2007)

Session Co-Chair, International Association for Bridge Maintenance and Safety (IABMAS'04), Kyoto, Japan, 2004.

Co-Chair of 2 Sessions at 13th ASCE Engineering Mechanics Conference (2000)

Co-Chair of session at Probabilistic Mechanics Conference (2000)

Co-Chair of session at MMC2001 the joint ASME/ASCE Conference (2001)

Co-Chair of 2 Sessions at 15th ASCE Engineering Mechanics Conference (2002)

Technical Reviewer

NSF Panel Reviewer, Civil & Mechanical Systems Division, May 2001 & 2002, Dec. 2002, Aug. 2003, January 2004, November 2004, April 2005, April 2008, April 2010, April 2011, NEES Site Review (2013), November 2014, 2015, 2016, April 2017

External Assessor, Trinity College, Dublin, on the selection committee for the SFI Professor of Sustainable Energy Systems, 2014.

Reviewer Earthquake Engineering & Structural Dynamics

Reviewer (& Guest Editor) Earthquake Spectra (EERI)

Reviewer Probabilistic Engineering Mechanics

Reviewer Measurements

Reviewer ASCE Engineering Mechanics Journal

Reviewer ASCE Structures Journal

Reviewer ASCE Aerospace Journal

Reviewer Journal of Sound and Vibration

Reviewer Computers and Structures

Reviewer Mechanical Systems and Signal Processing

Reviewer Nonlinear Dynamics

Reviewer International Jo. of Nonlinear Mechanics

Reviewer Journal of Structural Control and Health Monitoring

Reviewer *MECHANICS* Research Communications

INVITED PRESENTATIONS

Invited Presentations at Conferences & Workshops

Invited Panelist, White House (NSTC) Critical Infrastructure Security and Resilience Workshop, Washington DC., February 2018.

Keynote Lecture, Structural Health Monitoring Mini-Symposium at the Engineering Mechanics Institute Conference, UCSD, 2017

Invited Speaker, *2017 Smart Cities Innovation Accelerator*, Harvard Univ., January 2017

Invited Panelist/Speaker, FHWA Symposium on “Access to Smart City Transportation”, National Academies Keck Center, Washington DC January 2017

Invited Speaker, *Data-Driven Damage Identification Summer Workshop*, Purdue Univ., June 2015

Invited Speaker, *National GeoSpatial-Intelligence Agency – Geospatial Analytics Applied to Urban Environment Workshop*, Springfield, VA, September 2015.

Invited Speaker, *NSF – Smart Cities Workshop*, Arlington VA, December 2015.

Invited Speaker, *German American Smart Cities Symposium*, New York, NY, December 2014.

Invited Plenary Lecture, *Mini-Symposium on Uncertainty Quantification at the International Modal Analysis Conference*, Orlando FL February 2014

Invited Panelist and Speaker, the *Smart Cities World Congress and Expo*, Barcelona, Spain November 2013.

Invited Poster Presenter, the *National Academy of Engineering*, Japan/America Frontiers of Engineering, Irvine, CA, (October 2012)

Invited Speaker, Structural Engineers of New York (SEAoNY), short course at the NY Academy of Sciences, February 2012

Invited Speaker, ASCE Met Section Infrastructure Group, short course on Research Trends in Earthquake Engineering, March 2012

Keynote Lecture: 5th International Conference on Advances in Mechanical Engineering and Mechanics, Tunisia, December 2010.

Invited Speaker, NSF Workshop on Structural Health Monitoring and Control, Jordan, June 2010.

Keynote Lecture, International Conference on Sustainable Built and Natural Environment on January 10-11, 2008 at National Chung Hsing University, Taichung, Taiwan

Keynote Lecture, *Concrete Colloquia 2003*, University of Sao Paulo, Sao Carlos, Brazil (2003)

Invited Speaker, OECD Ad Hoc Experts Meeting on Earthquake Safety in Schools, Paris (2004)

Invited Speaker, American Geophysical Union, Fall Meeting, San Francisco (2003)

Invited Speaker, USGS Sponsored Workshop on Advanced National Seismic System – Northeast (Hartford)

Invited Speaker, 3rd International Workshop on Structural Control, Paris (2000)

Invited Speaker, 3rd US-Japan Workshop on Nonlinear System Identification and Structural Health Monitoring, Los Angeles (2001)

Plenary Speaker, 2nd European Conference on Structural Control, Paris (2000)

Invited Speaker, 2nd US-Japan Workshop on Nonlinear System Identification and Structural Health Monitoring

Invited Speaker, IUTAM Symposium on Nonlinear Stochastic Mechanics (2002)

Invited Speaker, World Bank/LDEO Workshop on Disaster Hotspots, (2001)

Invited Speaker, 2001 Fu Foundation School of Engineering Open-House, (School-Wide Presentation)

Invited Seminars

Invited Seminar at Georgia Tech (November 2017)

Invited Seminar at UC Berkeley (May 2014)

Invited Seminar at KU Leuven, Belgium (April 2014)

Invited Seminars at University of Rome (La Sapienza), Rome (February 2013)

Invited Seminar at Zhejiang University, China (May 2013)
Invited Seminar at Ningbo Institute of Technology, China (May 2013)
Invited Short Course at CISM: on “Identification Methods for Structural Health Monitoring and Residual Lifecycle Assessment”, at CISM, Udine Italy (June 2013)
Invited Seminar, L’École Polytechnique, Paris, June 2012
Invited Seminar, Électricité de France (EDF), Paris, June 2012
Invited Seminar, Los Alamos Dynamics Summer School, 2011
Invited Short Course at CISM: Monitoring, Control and Identification of Bridges by Dynamic Methods, Centre International des Science Mécaniques, Udine, May 24-28 2010
Invited Seminar, Oklahoma University Roundtable Presentation, Fall 2009
Invited Seminar, Oklahoma Dept. of Transportation, Fall 2009
Invited Seminar, Laboratoire Centrale des Ponts et Chaussées, Paris, Spring 2007
Invited Seminar, Laboratoire Centrale des Ponts et Chaussées, Nantes, Spring 2007
Invited Seminar, University of Connecticut, Fall 2006
Invited Seminar, Johns Hopkins University, Spring 2005
Invited Seminar, Duke University, Spring 2005
Invited Seminar, Cornell University, Spring 2005
Invited Seminar, Kandily Observatory, Bogazici University, Istanbul Turkey, 2004
Invited Seminar, Sandia National Laboratories, Albuquerque, NM, 2002
Invited Seminar, Univ. of Delaware, 2002
Invited Seminar, Univ. Mogi das Cruzes, Sao Paulo, Brazil, 2002
Invited Seminar, Univ. Sao Paulo at Campinas, Brazil, 2002
Invited Seminar, Univ. Sao Paulo at Sao Carlos, Brazil, 2002
Invited Seminar, Johns Hopkins University, February, 2001

DEPARTMENTAL ACTIVITIES & SERVICE

Courses Taught:

- Dynamics and Vibrations
- Advanced Mechanics
- Mechanics of Solids
- Nonlinear Vibrations
- Earthquake and Wind Engineering
- Computer-Aided Structural Design
- Structural Design
- Elastic & Plastic Structural Analysis
- Structural Design Projects
- Uncertainty and Risk in Civil Infrastructure Systems

Faculty Advisor to ASCE Student Chapter (1998-2006, 2011-present (Steel Bridge Team Advisor))

- National Student Steel Bridge Competition: 1st place in Bridge Aesthetic Design Category, 2003, San Diego.
- Regional Steel Bridge Competitions: 1st place in 2000, 2001 and 2004 and 2nd place in 2002, 1st place for lightness, 2009

Director of Research, Robert A.W. Carleton Laboratory, 2013 – 2018

Oversight Committee Member, Pao Laboratory, 2017- present

Member of the Dept. of CEEM ABET Committee, 2011-2013

Member of the Dept. of CEEM Undergraduate Committee, 2011-2013

Chair, CEEM Dept. Faculty Search Committee, 2013, 2017.

Chair of the Graduate Admissions Committee for CEEM, 2006 - 2007, member 2007- 2010, Chair 2010 - 2013

Director of Dept. of CEEM Computing Facilities, 1998-2006, 2007-present.

Carleton Lab Committee member, 1999-2007.

SERVICE TO THE SCHOOL AND UNIVERSITY

Chair of the Smart Cities Center of the DSI, 2013- present

Elected Faculty Representative to SEAS Executive Committee Fall 2015 - present

SEAS Task Group on Faculty Mentoring, 2010-2011

Faculty-in-Residence, Hartley-Wallach Living Learning Center, Fall 2007 - 2012

Committee on Instruction, Fu Foundation School of Engineering and Applied Science, (2003–2011).

Committee on Nominations, Fu Foundation School of Engineering and Applied Science, (2006–2010).

University & Student Life Activities: Commencement Ceremonies Marshal (1999-2012), 2-time Faculty Advisor for student *Urban New York* program.

Faculty Volunteer at almost all School of Engineering and Applied Science Open House Events for prospective undergraduate students, 1998-2012.

Speaker at 2006 SEAS Family Weekend, 2008 Reunion Weekend and 2008 Career Fair.

Ad Hoc Tenure & Promotions Committee for SEAS, 2006, 2015, 2016.

Ad Hoc Tenure Committee for Lamont Earth Observatory, 2006 & 2007.

HONORS & FELLOWSHIPS

Great Teacher Award, Society of Columbia Graduates, 2018.

Fellow, Elected as Fellow of the ASCE Engineering Mechanics Institute (2013)

Elected member of the Board of Governors of the ASCE Engineering Mechanics Institute (2011-2013)

Walter L. Huber Prize, ASCE Society-wide prize for research, 2008

NSF CAREER Award, 2002

Phi Kappa Phi · Academic Honor Society Member (Graduated in Top 5% of All Graduate Students, USC)

USC Fellowship · Full Research Assistantship '97-'98, and 50% Research Assistantship and 50% Teaching Assistantship Award at USC 1994 to 1997.

Outstanding Teaching Assistant Award · USC Civil Engineering Department, 1996.

Rice Fellowship · Full Fellowship at Rice University 1992-1994.

Honors Thesis Prize · Best honors thesis submitted to the Architectural Studies Dept. at Brown University.

Tuition Scholarship · Brown University, 1988-1992.

Brown Scholar of London · Selected as the outstanding entrant to Brown from the British Isles.
Sigma Xi, Member of the Scientific Research Society

RESEARCH INTERESTS

Structural Dynamics, System Identification and Control
Health Monitoring and Damage Detection of Large Structures.
Smart Cities
Robust Adaptive Identification and Control of Nonlinear Structural Systems.
Nonstationary Random Vibration Analysis of Linear & Nonlinear Structural Systems.
Rocking of Objects on a Moving Base
Smart Materials and Structures.

JOURNAL PUBLICATIONS

Published Articles

1. Review of nonlinear filtering for SHM with an exploration of novel higher-order Kalman filtering algorithms for uncertainty quantification, Olivier, A., and Smyth, A.W., ASCE Jo. of Engineering Mechanics, vol. 143 (11), 2017.
2. A Data-based Probabilistic Approach for the Generation of Spectra-Compatible Time-History Records, Brewick, P.T., Hernandez-Garcia, M., Masri, S.F., Smyth, A.W., Jo. of Earthquake Engineering, April 2017.
3. Bayesian model updating of a full-scale finite element model with a sensitivity-based clustering, Jang, J., and Smyth, A.W., Jo. of Structural Control and Health Monitoring, 24(11),e2004, 2017
4. Framework of Data Acquisition and integration for the detection of pavement distress via multiple vehicles, Jang, J., Yang, Y., Smyth, A.W., Cavalcanti, D., Kumar, R., Jo. of Computing in Civil Engineering, vol. 31, no. 2, 2017.
5. Experimental validation of the Kalman-type filters for online and real-time state and input estimation, Azam, S.E., Chatzi, E., Papadimitriou, C., Smyth, A., JVC/Journal of Vibration and Control, Volume 23, Issue 15, 1 August 2017.
6. Examining the energy loss in the inverted pendulum model for rocking bodies, Chatzis, M.N., Espinosa, M.G., and Smyth, A.W., ASCE Jo. of Engineering Mechanics, vol. 143, no. 5, 2017
7. On the Performance of Online Parameter Estimation Algorithms in Systems with Various Identifiability Properties, Olivier, A., and Smyth, A.W., Frontiers in Built Environment, vol 3, 2017
8. Particle filtering and marginalization for parameter identification in structural systems, Olivier, A., and Smyth, A.W., Jo. of Structural Control and Health Monitoring, vol. 24, no. 3, 2017

9. Model updating of a full-scale FE model with nonlinear constraint equations and sensitivity-based cluster analysis for updating parameters, Jang, J., Smyth, A.W., *Mechanical Systems and Signal Processing*, 83, pp. 337-355, 2017.
10. Combining optimization methods with response spectra curve-fitting toward improved damping ratio estimation, Brewick, P.T., Smyth, A.W., *Structural Control and Health Monitoring*, article in press, 2017.
11. Increasing the efficiency and efficacy of second-order blind identification (SOBI) methods, Brewick, P.T., Smyth, A.W., *Structural Control and Health Monitoring*, 24(6), e1921, 2017.
12. Online Bayesian model assessment using nonlinear filters, Kontoroupi, T., and Smyth, A.W., *Journal of Structural Control and Health Monitoring*, 24(3), e1880, 2017.
13. Vibration Mitigation and Monitoring: A Case Study of Construction in a Museum, Journal of the American Institute for Conservation, Smyth, A.W., Brewick, P., Greenbaum, R., Chatzis, M., Serotta, A., Stunkel, I., 55 (1), pp. 32-55, 2016.
14. Exploration of the impacts of driving frequencies on damping estimates, Brewick, P.T., and Smyth, A.W., *ASCE Journal of Engineering Mechanics*, Volume 141, Issue 3, 2015.
15. Joint input-state estimation in structural dynamics, Maes, K., Smyth, A.W., De Roeck, G., Lombaert, G., *Mechanical Systems and Signal Processing*, vol. 70, pp. 445-466, 2016.
16. Trade-offs between accuracy and data reproduction in the generation of synthetic ground motions, Olivier, A., Smyth, A.W., *Probabilistic Engineering Mechanics*, vol. 43, pp. 36-49, 2016.
17. Experimental validation of the Kalman-type filters for online and real-time state and input estimation, Azam, S.E., Chatzi, E., Papadimitriou, C., Smyth, A.W., *Journal of Vibration and Control*, DOI: 1077546315617672, Dec., 2015.
18. A Monocular Computer Vision Method for the Experimental Study of Three Dimensional Rocking Motion, Greenbaum, R.J., Smyth, A.W., Chatzis, M.N., *ASCE Journal of Engineering Mechanics*, vol. 142, no. 1, . DOI: 10.1061/(ASCE)EM.1943-7889.0000972, 2015
19. Online Noise Identification for Joint State and Parameter Estimation of Nonlinear Systems, Kontoroupi, T., Smyth, A.W., *ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems*, 2015/9/24, doi: 10.1061/AJRUA6.0000839.
20. An experimental validation of time domain system identification methods with fusion of heterogeneous data, Chatzis, M.N., Chatzi E.N., and Smyth, A.W., *Earthquake Engineering and Structural Dynamics*, published online 28 Nov. 2014.
21. On the observability and identifiability of nonlinear structural and mechanical systems, Chatzis, M.N., Chatzi, E.N., Smyth, A.W., *Structural Control and Health Monitoring*, Article in Press (2014)
22. On the application of blind source separation for damping estimation of bridges under traffic loading, Brewick, P.T., Smyth, A.W., *Journal of Sound and Vibration*, 333 (26), pp. 7333-7351 (2013).
23. An investigation of the effects of traffic induced local dynamics on global damping estimates using operational modal analysis, P.T. Brewick and A.W. Smyth, *Mechanical Systems and Signal Processing* 41 (1-2) , pp. 433-453 (2013)
24. Particle filter scheme with mutation for the estimation of time-invariant parameters in structural health monitoring applications, E.N. Chatzi, A.W. Smyth , *Structural Control and Health Monitoring*, 20 (7) , pp. 1081-1095 (2013).
25. Modeling of the 3D Rocking Problem, Chatzis, M.N., and Smyth, A.W., *International Journal of Non-Linear Mechanics* 47 (4) , pp. 85-98 (2012)

26. The 3D Dynamics of a Rigid Body with Wheels on a Moving Base”, Chatzis, M.N., and Smyth, A.W., *ASCE Jo. of Engineering Mechanics*, [Accepted, in press]
27. Robust modeling of the rocking problem. *ASCE Jo. of Engineering Mechanics*, E. Chatzis and A.W. Smyth., 138(3), 247-262
28. Rapid Evaluation and Damage Assessment of Instrumented Highway Bridges, Mosquera, V., Smyth, A.W., and Betti, R., *Earthquake Engineering & Structural Dynamics*, 41(4), 755-774., 2012.
29. Experimental application and enhancement of the XFEM-GA algorithm for the detection of flaws in structures, Chatzi, E.N., Hiriyur, B., Waisman, H., Smyth, A.W, *Computers and Structures*, 89 (7-8), pp. 556-570, 2011.
30. Toward constructive methods for sigmoidal neural networks - function approximation in engineering mechanics applications. Pei, J. -, Wright, J. P., Masri, S. F., Mai, E. C., & Smyth, A. W. , Paper presented at the *Proceedings of the International Joint Conference on Neural Networks*, 2513-2519. (Note: Refereed Conf. Proceedings; equivalent to Jo. publication).
31. Experimental Application of On-Line Parametric Identification for Nonlinear Hysteretic Systems with Model Uncertainty, E.N. Chatzi, A.W. Smyth and S.F. Masri, *Structural Safety and Reliability*, *Structural Safety* 32 (5), pp. 326-337, 2010.
32. Comparison of switching control algorithms effective in restricting the switching in the neighborhood of the origin, J. Joung, A.W. Smyth and L. Chung, *Smart Materials and Structures*, vol. 19, 2010.
33. Switching algorithms for the control of a primary structure through interaction with an auxiliary structure, J. Joung and A.W. Smyth, *Jo. of Structural Control and Health Monitoring*, tentatively accepted.
34. A Probabilistic Approach for the Construction of Regional Earthquake Response Spectra, E. Kallinikidou, S. F. Masri, R. Nigbor, A.W. Smyth , K. Olsen, *Probabilistic Engineering Mechanics*, Volume 24, Issue 4, October 2009, Pages 511-526
35. Detection and Quantification of Flaws in Structures by the Extended Finite Element Method and Genetic Algorithms, Waisman, H., Chatzi, E., and Smyth A.W., *Numerical Methods in Engineering*, *International Journal for Numerical Methods in Engineering* 82 (3), pp. 303-328, 2010.
36. Field Survey of Katrina Depth-Damage Relationships for New Orleans Housing, Franco, G., Green, R., Khazai, B., Smyth, A.W., Deodatis, G., *ASCE Natural Hazards Review*, Volume 11, Issue 1, pp. 7-18 (February 2010).
37. The unscented Kalman filter and particle filter methods for nonlinear structural system identification with non-collocated heterogeneous sensing, Chatzi, E. and Smyth A.W., *Structural Control and Health Monitoring*, Volume 16, Issue 1, Date: February 2009, Pages: 99-123.
38. Current Directions of Structural Health Monitoring and Control in the USA, Nagarjaiah, S., Dyke, S., Lynch, J., Smyth, A.W., Agrawal, A., Symans, M. and Johnson, E., *CIMTEC 2008 - Proceedings of the 3rd International Conference on Smart Materials, Structures and Systems - Embodying Intelligence in Structures and Integrated Systems* 56, pp. 277-28, 2008
39. Load Response on a Large Suspension Bridge during the NYC Marathon Revealed by GPS and Accelerometers, Mikhail G. Kogan, Won-Young Kim, Yehuda Bock, and Andrew W. Smyth, *Seismological Research Letters*, vol. 79, no. 1, January/February 2008.
40. Failures associated with the 2004 Mindulle Typhoon in Taiwan. Wang, J-J., Ling, H.I., and Smyth, A., *Geotechnical and Geological Engineering*, 26(1), 79-90, 2008.

41. A Robust Online Parametric Identification Method for Non-Deteriorating Distributed Element Models with Viscous Damping, *Int. Jo. of Nonlinear Mechanics*, Ashrafi, S.A. and Smyth, A.W. Volume 42, Issue 10, December 2007, Pages 1194-1203.
42. An Adaptive Parametric Identification Scheme for a Class of Non-Deteriorating and Deteriorating Nonlinear Hysteretic Behavior, Ashrafi, S.A., and Smyth, A.W., *ASCE Jo. of Engineering Mechanics*, vol. 134, no. 6, 482-494 (2008).
43. Real-time parameter estimation for degrading and pinching hysteretic models, Wu, M., Smyth, A., *International Journal of Non-Linear Mechanics*, 43 (9), pp. 822-833, 2008.
44. Application of the unscented Kalman filter for real-time nonlinear structural system identification, Wu., M., and Smyth, A.W., *Jo. of Structural Control and Monitoring*, vol. 14 no. 7, pp. 971-990 (2007).
45. Impediments to recovery in New Orleans' upper and lower ninth ward: One year after Hurricane Katrina, Green, R., Bates, L.K., Smyth, A., *Disasters* 31 (4) , pp. 311-335, (2007).
46. Multi-rate Kalman filtering for the data fusion of displacement and acceleration response measurements in dynamic system monitoring, *Mechanical Systems and Signal Processing*, Smyth, A.W. and Wu, M., vol. 21, no. 2, pp. 706-723, Feb. 2007.
47. Generalized Masing Approach to Modeling Hysteretic Deteriorating Behavior, Ashrafi, S.A. and Smyth, A.W. , *ASCE Jo. of Engineering Mechanics*, vol. 133, no. 5, pp. 495-505 (May 2007).
48. A New Approach to Designing Multilayer Feedforward Neural Network Architectures for Modeling Nonlinear Restoring Forces: Part I – Formulation, Pei, J.-S. and Smyth, A.W., *ASCE Jo. of Eng. Mech.*, 2007
49. A New Approach to Designing Multilayer Feedforward Neural Network Architectures for Modeling Nonlinear Restoring Forces: Part II – Applications, Pei, J.-S. and Smyth, A.W., *ASCE Jo. of Eng. Mech.*, 2007
50. An Energy Capacity Criterion for Design Against Buckling, A.W. Smyth and A.Gjelsvik, *ASCE Jo. of Engineering Mechanics*, vol. 132, no. 6, pp. 594-599, June 2006.
51. A parametric identification scheme for non-deteriorating and deteriorating non-linear hysteretic behaviour, Ashrafi SA, Smyth AW, Betti R, *Structural Control and Health Monitoring*, 13 (1): 108-131 Jan-Feb 2006.
52. Data-based model-free representation of complex hysteretic MDOF systems, Masri SF, Tasbihgoo F, Caffrey JP, Smyth AW, Chassiakos AG., *Structural Control and Health Monitoring*, 13 (1): 365-387 Jan-Feb 2006.
53. A General Data-Based Approach for Developing Reduced-Order Models of Nonlinear MDOF Systems, S.F. Masri, Caffrey, J.P., Caughey, T.K., Smyth, A.W. and Chassiakos, A.G., *Nonlinear Dynamics*, 39 (1-2): 95-112 Jan 2005.
54. Mapping Polynomial Fitting into Feedforward Neural Networks for Modeling Nonlinear Dynamic Systems and Beyond, J.-S. Pei, J. Wright and A.W. Smyth, *Computer Methods in Applied Mechanics and Engineering* 194 (42-44): 4481-4505 2005.
55. A Re-Configurable Test Apparatus for Nonlinear Dynamic Systems, Caffrey, J.P., Masri, S.F., Tasbihgo, F., Smyth, A.W., Chassiakos, A.G., *Nonlinear Dynamics*, 36 (2-4): 181-201 June 2004.
56. Probabilistic Benefit-Cost Analysis for Earthquake Damage Mitigation: Evaluating Measures for Apartment Houses in Turkey, A. W. Smyth, G. Altay, G. Deodatis, M. Erdik, G. Franco, P. Gülkan, H. Kunreuther, H. Luş, E.Mete, N. Seeber, and Ö. Yüzügülü, *Earthquake Spectra*, February, 2004.

57. The Robustness of an Efficient Probabilistic Data-Based Tool for Simulating the Nonstationary Response of Nonlinear Systems, Smyth, A.W. and Masri, S.F., *Int. Jo. of Nonlinear Mechanics*, vol. 39, no. 9, pp. 1453-1462, 2004.
58. Identification of the State Equation in Complex Nonlinear Systems, S.F. Masri, J. Caffrey, T.K. Caughey, and A.W. Smyth, *International Jo. of Nonlinear Mechanics*, vol 39, 2004.
59. Analysis and Modification of Volterra/Wiener Neural Networks for the Adaptive Identification of Nonlinear Hysteretic Dynamic Systems, Pei, J.-S., Smyth, A.W., and Kosmatopoulos, E.B, *Jo. Sound and Vibration*, vol. 275, pp. 693-718, 2004.
60. System Identification of the Vincent Thomas Bridge Based using Earthquakes Records, Smyth, A.W., Pei, J.-S., and Masri, S.F., *Earthquake Engineering and Structural Dynamics*, Vol. 33, 2003.
61. Development of Adaptive Modeling Techniques for Nonlinear Hysteretic Systems, Smyth, A.W., Masri, S.F., Kosmatopoulos, E.B., Chassiakos, A.G., and Caughey, T.K., *Int. Journal of Nonlinear Mechanics*, an invited paper for a special issue, Vol. 37, 2002.
62. Nonstationary Response of Nonlinear Systems Using Equivalent Linearization with a Compact Analytical Form of the Excitation Process, Smyth, A.W., and Masri, S.F., *Probabilistic Engineering Mechanics*, Vol. 17, no. 1, 2002.
63. Robust Adaptive Neural Estimation of Restoring Forces in Nonlinear Structures, Kosmatopoulos, E.B., Smyth, A.W., Masri, S.F. and Chassiakos A.G., *ASME Jo. of Applied Mechanics*, Vol. 68, no. 6, November, 2001.
64. On-Line Identification of Hysteretic Systems, *ASME Journal of Applied Mechanics*, A.G. Chassiakos, S.F. Masri, A.W. Smyth, and T.K. Caughey, March, 1998.
65. Probabilistic Representation and Transmission of Nonstationary Processes in Linear MDOF Systems, *ASME Journal of Applied Mechanics*, S.F. Masri, A.W. Smyth and M.-I. Traina, June 1998.
66. On-Line Parametric Identification of MDOF Non-Linear Hysteretic Systems, *ASCE Journal of Engineering Mechanics*, A.W. Smyth, S.F. Masri, & A.G. Chassiakos, February, 1999.
67. Training Neural Networks by Adaptive Random Search Techniques, *ASCE Journal of Engineering Mechanics*, S.F. Masri, A.W. Smyth, A.G. Chassiakos, M. Nakamura & T.K. Caughey, February, 1999.
68. Surveillance of Intricate Mechanical Systems on the Basis of Vibration Signature Analysis, *ASME Jo. of Applied Mechanics*, A.W. Smyth, S.F. Masri, T.K. Caughey, and N.F. Hunter, September, 2000.
69. Application of Neural Networks to Detect Changes in Nonlinear Systems, A.W. Smyth, S.F. Masri, et al., *ASCE Jo. of Engineering Mechanics*, July, 2000.
70. Online identification of non-linear hysteretic structural systems using a variable trace approach, J.-W. Lin, Betti, R., Smyth, A.W., and Longman, R.W., *Earthquake Engineering & Structural Dynamics*, vol. 30, 2001.
71. Nonstationary Excitation Data Condensation for Analytical Nonstationary Probabilistic Dynamic Response Analysis: An Application using the 1999 Chi-Chi Earthquake Ground Motion Recordings, A.W. Smyth, S.F. Masri, and C.-H. Loh, [accepted to *Earthquake Engineering & Structural Dynamics*.]

Articles in Preparation

1. How Random is the Throw of a Die?, Chatzis, M.N., and Smyth, A.W.

BOOKS & OTHER PUBLICATIONS

1. *Encyclopedia of Earthquake Engineering*, Chapter on Nonlinear System Identification: Particle-Based Methods, Eleni N Chatzi, Andrew W Smyth, pp. 1-18, Springer, 2014.
2. Special Issue of the *ASCE Jo. of Engineering Mechanics* (2013) on Advances in Analysis and Modeling of Large-Scale Structural Systems. Co-editor with R. Betti.
3. *Proceedings of the Fourth World Conference on Structural Control and Monitoring (4WCSCM)*, edited by Erik Johnson and Andrew Smyth , 2007
4. *Proceedings of the Fourth International Workshop on Structural Control (4IWSC)*, edited by A.W. Smyth, *DesTech Press*, 2004
5. *Proceedings of EM2002*, the 15th ASCE Engineering Mechanics Conference, edited by A.W. Smyth.
6. Proceedings of the Dimaggio Symposium: Constitutive Modeling of Geomaterials, co-edited with H. Ling, CRC Press, 2002.
7. “Integrating Mitigation with Risk Transfer Instruments,” with H. Kunreuther and G. Deodatis, an invited chapter in *Catastrophe Risk and Reinsurance: A Country Management Perspective*, Risk Books, 2004.
8. M.S. Thesis: *Experimental System Identification of Model Frames*, Rice University, 1994
9. B.A. Thesis: *Efforts to Obtain an Economical Solution to Housing Utilizing Primarily Compressive Structural Elements*, Brown University, 1992

SELECTED CONFERENCE & WORKSHOP PROCEEDINGS

1. Increasing the Efficiency of Blind Source Separation Methods for Improved Modal Parameter Estimation, Brewick, P.T., and Smyth, A.W., *Structural Health Monitoring 2015*, doi: 10.12783/SHM2015/164.
2. Road surface condition monitoring via multiple sensor-equipped vehicles, Jang, J., Smyth, A.W., Yang, Y., and Cavalcanti, D., *2015 IEEE Conference on Computer Communications (INFOCOM WKSHP)*, 43-44, 2015/4/26
3. Uncertainty quantification for joint input-state estimation in structural dynamics, Kristof Maes, AW Smyth, Guido De Roeck, Geert Lombaert, Proceedings of the 1st International Conference on Uncertainty Quantification in Computational Sciences and Engineering, UNCECOMP 2015.
4. Experimental Validation of the Dual Kalman Filter for Online and Real-Time State and Input Estimation, Saeed Eftekhari Azam, Eleni Chatzi, Costas Papadimitriou, Andrew Smyth, *Model Validation and Uncertainty Quantification*, Volume 3, pp. 1-13, 2015.
5. Managing Construction-Induced Vibration in the Museum Environment, Smyth, A.W., and Serotta, A., American Institute for Conservation Annual Meeting, San Francisco, 28-31 May 2014.
6. Modeling of the 3-Dimension Rocking Problem, Chatzis, M.N., and Smyth, A.W., ASCE Engineering Mechanics Conference, Northeastern University, Boston, 2011.
7. Dynamic Sensor Data Fusion: Developments for Structural and Mechanical Systems using Dual State Parameter Estimation Techniques, Smyth, A.W., 5th International Conference on Advances in Mechanical Engineering and Mechanics, Tunisia, December 2010.
8. Development and Application of Dual Estimation Techniques for Data Fusion and Structural System Identification, Smyth, A.W., NSF Workshop on Structural Health Monitoring and Control, Amman, Jordan, June 2010.

9. Toward Robust Modeling of the Rocking Problem, M.N. Chatzis, and Smyth, A.W., ASCE Engineering Mechanics Conference, Univ. of So. California, 2010.
10. Experimental Application of On-Line Parametric Identification for Nonlinear Hysteretic Systems with Model Uncertainty, Chatzi, E.N., Smyth, A.W. and Masri S.F., ASCE Engineering Mechanics Conference, Virginia Tech, 2009.
11. The Unscented Kalman filter and Particle Filter Methods for Nonlinear Structural System Identification with Non-Collocated Heterogeneous Sensing, E. Chatzi, A.W. Smyth, Inaugural Conference of the Engineering Mechanics Institute, Univ. of Minnesota, June 2008.
12. The Unscented Kalman Filter and Particle Filter Methods for Nonlinear Structural System Identification with Non-Collocated Heterogeneous Sensing, Keynote Lecture, International Conference on Sustainable Built and Natural Environment on January 10-11, 2008 at National Chung Hsing University, Taichung, Taiwan.
13. Neural Network Initialization with Prototypes - Function Approximation in Engineering Mechanics Applications, Jin-Song Pei, Eric C. Mai, Joseph P. Wright, and Andrew, W. Smyth, Int. Joint Conf. on Neural Networks, 2007.
14. The Fifty Percent Bar: Damage assessments and recovery in low income neighborhoods of New Orleans, Rebekah Green, Bijan Khazai, Guillermo Franco, Andrew Smyth, George Deodatis, Lynn Seirup and Liling Choo, NSF Katrina Symposium, New Orleans, 2006.
15. Disaster Vulnerability in Relation to Poverty in the Katrina Event: Reconnaissance Survey and Preliminary Analysis, A. Smyth, R. Green, B. Khazai, G. Franco, G. Deodatis, L. Seirup (Columbia University, New York), C. Taylor (Tulane University, New Orleans), NSD Annual HSD PI Meeting, Washington, 2006
16. Multi-rate Kalman filtering for the data fusion of GPS displacement and acceleration response measurements, Smyth. A.W., Wu, M., and Kogan, M., 4th World Conf. on Structural Control and Monitoring, UCSD, July 2006.
17. Developments in Parametric Modeling and Identification of Nonlinear Hysteretic Behavior with Degradation, Smyth. A.W., Ashrafi, S.A., and Wu, M., 4th World Conf. on Structural Control and Monitoring, UCSD, July 2006.
18. Adaptive Parametric Identification of a class of Deteriorating Hysteretic Behavior, Ashrafi, S.A., and Smyth, A.W., 15th US National Congress on Theoretical and Applied Mechanics, CU Boulder, June 2006.
19. Generalized Masing Modeling of Hysteretic Deteriorating Behavior, Ashrafi, S.A., and Smyth, A.W., 15th US National Congress on Theoretical and Applied Mechanics, CU Boulder, June 2006.
20. Multi-rate Kalman filtering for the data fusion of displacement and acceleration response measurements in dynamic system monitoring, Smyth, A.W., and Wu., M., SPIE Conference on Smart Structures and Materials, 2006: Smart Systems and Nondestructive Evaluation of Civil Infrastructures, San Diego, March, 2006.
21. The Potential of GPS and other Displacement Sensing for Enhancing Acceleration Sensor Monitoring Array Data by Solving Low Frequency Integration Problems, Smyth, A.W., International Association for Bridge Maintenance and Safety (IABMAS'04), Kyoto, Japan, 2004.
22. Data Condensation for Analytical Nonstationary Probabilistic Dynamic Response Analysis: An Application using the 1999 Chi-Chi Earthquake Ground Motion Recordings, A.W. Smyth and S.F. Masri, 13th World Conference on Earthquake Engineering, Vancouver, 2004.

23. Evaluating Earthquake Retrofitting Measures for Schools: A Demonstration Cost-Benefit Analysis, A.W. Smyth, G. Deodatis, G. Franco, Y. He, and T. Gurchich, OECD Ad Hoc Experts Meeting on Earthquake Safety in Schools, Paris, 2004
24. Structural Monitoring Sensor Requirements and Challenges for Nonlinear System Identification, Smyth, A.W., 1st International Workshop on Advanced Smart Materials and Smart Structures Technology, Hawaii, 2004.
25. Can Seismic Early-Warning Information Help Engineers?: The Benefits to, and the Information Requirements for Structural Control and Monitoring Applications, Smyth, A.W., Invited Presentation to American Geophysical Union 2003 Fall Meeting, San Francisco.
26. The Robustness of an Efficient Probabilistic Data-Based Tool for Simulating the Nonstationary Response of Nonlinear Systems, A.W. Smyth and S.F. Masri, 5th International Conference on Stochastic Structural Dynamics (SSD03), China, 2003.
27. A Near-Parameterized Neural Network Approach for Modeling Nonlinear Hysteretic Systems, Pei J.-S. and Smyth, A.W., ASCE Engineering Mechanics Conf., Seattle, 2003.
28. Benefit-Cost Analysis for Mitigating Seismic Losses: Probabilistic Evaluation of Retrofit Measures for Residential Buildings in Turkey, Smyth, A.W., Deodatis, G., Franco, G., Kunreuther, H. Lus, H., ICASP9, Int. Conf. on Applications of Statistics and Probability in Civil Engineering, San Francisco, July, 2003.
29. Structural Monitoring Motion Sensors: A User Perspective, A. Smyth, Caltrans/UCSD Workshop on Structural Health Monitoring and Diagnostics of Bridge Infrastructure, San Diego, March 2003
30. More Transparent Neural Network Approach for Modeling Nonlinear Hysteretic Systems, J.S. Pei, and A.W. Smyth, SPIE Conference on Smart Structures and Materials, 2003: Smart Systems and Nondestructive Evaluation of Civil Infrastructures, San Diego, March, 2003.
31. Nonstationary Excitation Data Condensation for Analytical Probabilistic Dynamic Response Analysis:
32. An application using the 1999 Chi-Chi earthquake ground motion recordings, A.W. Smyth & S.F. Masri, SIAM Conference on Computational Science and Engineering, CSE'03, San Diego, Feb., 2003.
33. Benefit-Cost for Earthquake Mitigation: Evaluating Measures for Apartment Houses in Turkey, G. Altay, G. Deodatis, G. Franco, P. Gülkan, H. Kunreuther, H. Luş, E. Mete, L. Seeber, A. Smyth, and O. Yüzügüllü, 2nd Annual IIASA-DPRI Meeting, Integrated Disaster Management, Laxenberg, Austria, July, 2002.
34. System Identification of the Vincent Thomas Long-Span Suspension Bridge using Earthquake Records, A.W. Smyth, Pei, J.S., and Masri, S.F., EM2002, the 15th ASCE Engineering Mechanics Conference, Columbia University, June 2002.
35. Analysis and Modification of Volterra/Wiener Neural Networks for Adaptive Identification of Nonlinear Hysteretic Systems, Pei, J.S., A.W. Smyth, E.B. Kosmatopoulos and Masri, S.F., EM2002, the 15th ASCE Engineering Mechanics Conference, Columbia University, June 2002.
36. Nonstationary Response of Nonlinear Systems Using Equivalent Linearization with a Compact Analytical Form of the Excitation Process, Smyth, A.W., and Masri, S.F., 4th International Conf. On Computational Stochastic Mechanics, Corfu, June 2002.
37. Robust Neural Estimation of Internal Forces in Nonlinear Structures Under Arbitrary Excitation, Smyth, A.W., Kosmatopoulos, E.B., Masri, S.F., Chassiakos, A.G., 3rd World Conference on Structural Control, Como, Italy, April, 2002.

38. Report on Working Group 2: Monitoring and Identification, A.W. Smyth, 3rd World Conference on Structural Control, Como, Italy, April, 2002.
39. Monitoring the “Structural Health” of Long-Span Bridges, Smyth, A.W., and Betti, R., 5th NSF Workshop on Bridge Research in Progress, Minneapolis, MN, October 8-10, 2001
40. Nonstationary Response of Nonlinear Systems with a Compact Analytical Form of Data-Based Excitation Process, Smyth, A.W., and Masri, S.F., Proceedings of the IUTAM Symposium on Nonlinear Stochastic Mechanics, Univ. of Illinois at Urbana-Champaign, August, 2002.
41. Nonstationary Probabilistic Response of Nonlinear Systems Using an Orthogonal Decomposition Approach, A.W. Smyth, S.F. Masri, PACAMVII (Seventh Pan American Congress of Applied Mechanics), Temuco, Chile, January 2-5, 2002
42. Surveillance of Intricate Mechanical Systems on the Basis of Vibration Signature Analysis, A.W. Smyth, S.F. Masri, T.K. Caughey, and N.F. Hunter, ASME/ASCE Joint Conference MMC2001, San Diego, CA, June 2001.
43. Nonlinear System Identification and Structural Health Monitoring of Bridges Through the Use of Reduced-Order Models, Smyth, A.W. and Masri, S.F., 2001 IABSE Conference, Seoul Korea.
44. Adaptive Parametric and Nonparametric Identification of Nonlinear Hysteretic Systems, Smyth, A.W., Kosmatopoulos, E.B., Masri, S.F., Chassiakos, A.G., 2001 ASME International Adaptive Structures and Materials Systems Symposium, November 11-16 in New York, New York USA.
45. Probabilistic Characterization of the Chi-Chi Earthquake Ground Motion, Smyth, A.W., Masri, S.F., and Loh, C.H., International Workshop on Annual Commemoration of Chi-Chi Earthquake, Taipei, Taiwan, R.O.C., September 18-20, 2000.
46. Reduced Order Nonlinear Modeling of the Vincent Thomas Bridge Based on Measurements of its Dynamics Response to Earthquakes, Smyth, A.W. and Masri, S.F., ASCE Engineering Mechanics Conference, Austin TX, May 2000.
47. Adaptive Neural Identification of Nonlinear Structural System, Kosmatopoulos, E.B., Smyth, A.W., Masri, S.F. and Chassiakos A.G., ASCE Engineering Mechanics Conference, Austin TX, May 2000.
48. Parametric and Nonparametric Adaptive Identification of Structural Systems, Smyth, A.W. , Kosmatopoulos, E.B., Masri, S.F. and Chassiakos A.G., American Control Conference, Chicago, June, 2000.
49. Representation and Transmission of Stochastic Loads for Nonlinear Systems Response and Control, Smyth, A.W. and Masri, S.F., International Congress on Theoretical and Applied Mechanics, Chicago, Aug., 2000.
50. Robust Neural Estimation of Internal Forces in Nonlinear Structures under Random Excitation, , Kosmatopoulos, E.B., Smyth, A.W., Masri, S.F. and Chassiakos A.G., International Congress on Theoretical and Applied Mechanics, Chicago, Aug., 2000.
51. Global Health Monitoring and Damage Detection of the Vincent Thomas Bridge, Smyth, A.W., Betti, R., Lus, H., and Masri, S.F., Structural Materials Technology: A Nondestructive Testing Conference, Atlantic City, 2000.
52. Deterioration of Mechanical Properties of Wires in Suspension Bridge Cables, Betti, R. Smyth A.W., Testa, R.B., DUBY, P. and West, A.C., Structural Materials Technology: A Nondestructive Testing Conference, Atlantic City, 2000.
53. Detection of Cracks with Closure, Testa, R.B., Zhang, W., Smyth, A.W., and Betti, R., Structural Materials Technology: A Nondestructive Testing Conference, Atlantic City, 2000.

54. System Identification and Damage Detection of a Long-Span Suspension Bridge based on its Dynamic Response to Major Earthquake Excitations, 12th World Conference on Earthquake Engineering, Auckland, New Zealand, Oct. 2000, A.W. Smyth, S.F. Masri, A.M. Abdel-Ghaffar and R.N. Nigbor.
55. An Overview of Several Nonlinear System Identification Approaches for detecting Structural Changes, International Conf. of Monitoring and Control of Marine and Harbour Structures, Genoa, Italy 1999, S.F. Masri, A.W. Smyth, and A.G. Chassiakos.
56. An Efficient Parametric Identification Method for the Detection of Changes in Nonlinear Systems, 1st Romanian-American Workshop on Structural Engineering, (Information Processing for Damage Assessment), 1999, A.W. Smyth, S.F. Masri, A.G. Chassiakos, & T.K. Caughey.
57. On-Line Parametric Identification of MDOF Non-Linear Hysteretic Systems, ASCE 13th Engineering Mechanics Conference, A.W. Smyth, S.F. Masri, and A.G. Chassiakos, Baltimore, June, 1999
58. A Compact Probabilistic Representation of Nonstationary Input Processes for MDOF Analytical Random Vibration Studies, Proceedings of the Sixth Pan-American Congress on Applied Mechanics, Rio de Janeiro, Brazil, January, 1999, S.F. Masri, A.W. Smyth.
59. Probabilistic Representation of Dynamic Forces for Structural Control Applications, Proceedings of the Second World Conference on Structural Control, Kyoto, Japan, June, 1998, S.F. Masri, A. Smyth, and M.I. Traina.
60. Robust Neural Control of Unknown Structures, Proceedings of the 12th Engineering Mechanics Conference, ASCE, 1998, La Jolla, CA, 1998, A.G. Chassiakos, E.B. Kosmatopoulos, S.F. Masri, and A.W. Smyth.
61. Detection of Structural Changes through Nonlinear System Identification Approaches, Asian Pacific Workshop on Seismic Design and Retrofit of Structures, 1998, S.F. Masri, A.W. Smyth and A.G. Chassiakos.
62. Probabilistic Representation and Transmission of Earthquake Ground Motion Records in the Los Angeles Region, Proceedings of the 11th World Conference on Earthquake Engineering, Acapulco, Mexico, 1996, S.F. Masri and A. Smyth.
63. Adaptive Identification for the Control of Systems Incorporating Hysteretic Elements, Proceeding of the conference on Micro-Intelligence and Micro-Robotics, 1995, Sendai, Japan, S.F. Masri, A. Smyth, A.G. Chassiakos.
64. On-line Identification for the Control of Inelastic Structures, Proceedings of XIXth International Congress of Theoretical and Applied Mechanics, Kyoto, Japan, 1996, S.F. Masri, A. Smyth, A.G. Chassiakos, and T.K. Caughey.

PHD STUDENTS

Jinsong Pei (2001)–Assoc. Prof. at Univ. of Oklahoma (tenured)

Seyed Ali Hashemi Nezhad Ashrafi (2006) – Thornton Tomasetti

Meiliang Wu (2006) – Director, Credit Suisse

Yuhong He (2006) – Risk Manager, Citi

Eleni Chatzi (2010) – Assoc. Prof. at ETH, Switzerland 2010 – (tenured)

JinWook Joung (2008) – Dankook Univ., S. Korea

Virginia Mosquera(2010) – Associate, Thornton Tomasetti

Emmanouil Chatzis (2012, Presidential Fellowship) (Associate Professor at Oxford, UK, 2013 -)

Patrick Brewick (May 2014) (Selected for USC Postdoctoral Fellowship, 2014)
Raphael Greenbaum (February 2014) – Operations Research Specialist, Florida International University
Thaleia Kontoroupi (2016) - Machine Learning and Physical Model Design Engineer at ASML
Jinwoo Jang (2016) – Asst. Prof. at Florida Atlantic University
Audrey Olivier (207, currently Postdoctoral Fellow)
Daniel Bartilson (current, Presidential Fellow)
Patrick Alrassy (current)

POST-DOCTORAL STUDENTS

Jinwoo Jang (2016 – 2017)
Raphael Greenbaum (2015-2016) – Research Specialist, International Hurricane Center, Florida International University.
Emmanouil Chatzis (2013) – Associate Professor, Oxford University, UK
Rebekah Green (2005-2007) –Director, Resilience Institute, Western Washington Univ.
Guillermo Franco (2004-2006) – Managing Director & Global Head of CAT Risk Research, Guy Carpenter (Reinsurance), Dublin Ireland.
Hilmi Luş (2003) - Asst. Prof. at Bogazici University, Istanbul (Turkey)

DOCTORAL DISSERTATION DEFENSE COMMITTEES

Jiangcheng Bao, Mechanical Engineering, Columbia University, Columbia University, 2010
Ah Lum Hong, Civil Engineering & Engineering Mechanics, Columbia University, 2010
Zhibo Zheng, Mechanical Engineering, Columbia University, Columbia University, 2008
Jie Zhao, Mechanical Engineering, Columbia University, Columbia University, 2004
Wanlong He, Civil Engineering, City College of New York, 2003
Grant Warner, Mechanical Engineering, Columbia University, Columbia University, 2003
Gregor Vilkner, Civil Engineering & Engineering Mechanics, Columbia University, 2003
Guillermo Franco, Civil Engineering & Engineering Mechanics, Columbia University, 2003
Keh-Yang Lee, Mechanical Engineering, Columbia University, 2002
Jin Cheng, Mechanical Engineering, Columbia University, 2002
Jen-Wen Lin, Civil Engineering & Engineering Mechanics, Columbia University, 2001
Hilmi Luş, Civil Engineering & Engineering Mechanics, Columbia University, 2001
Hong-Jen Chen, Mechanical Engineering, Columbia University, 2001
Hao-Ping Wen, Mechanical Engineering, Columbia University, 2001
Andre Publico, Civil Engineering & Engineering Mechanics, Columbia University, 2000
Ryoung Kyu Lim, Mechanical Engineering, Columbia University, 1998

RESEARCH FUNDING AWARDS

Metropolitan Museum of Art: “Monitoring and Analysis of Construction Vibrations during the Skylight Renovation Project”, \$232,615 (PI, single investigator) 2018-2021.
NYCDOT/AECOM: “Driver Safety Behavior Index”, \$80,000, (PI, single investigator) 2017-2018.

Metropolitan Museum of Art: “Monitoring and Analysis of Construction Vibrations during the British Galleries Renovation Project”, \$70,852 (PI, single investigator) 2017-2018.

Penn Museum: “Monitoring of Demolition and Construction Vibrations at the University of Pennsylvania Museum”, \$79,123 (PI, single investigator) 2017-2018.

Rockefeller Group: “Monitoring of Construction Vibrations during the Time/Life Lobby Renovation Project”, \$39,748 (PI, single investigator), 2017-2018.

NSF: “Development of High Fidelity Probabilistic Structural Health Monitoring”, \$337,002 (PI, single investigator) 2016-2019.

NYHS: “Monitoring and Analysis of Test Construction Vibrations at the New York Historical Society Museum during the Luce Center Renovation Project”, \$53,095 (PI, single investigator), 2015-2016.

Penn Museum: “Monitoring of Demolition and Construction Vibrations at the University of Pennsylvania Museum”, \$163,938 (PI, single investigator) 2015-17.

Metropolitan Museum of Art: “Monitoring and Analysis of Construction Vibrations in the Ptolemaic/Asian Art Galleries”, \$29,456 (PI, single investigator) 2015-16.

Penn Museum: “Monitoring of the Pilot Test of Construction Vibration at the Penn Museum”, \$47,617, (PI, single investigator). (2015)

Metropolitan Museum of Art: “Monitoring of Construction Vibrations for the Sackler Wing HVAC Upgrade”, \$41,607, (PI, single investigator). (2015)

Metropolitan Museum of Art: “Monitoring and Analysis of Test Construction Vibrations in the Egyptian Galleries at the Metropolitan Museum of Art (Extension)”, \$70,307, (PI, single investigator). (2013)

Metropolitan Museum of Art: “Monitoring and Analysis of Construction Vibrations in the Metropolitan Museum of Art during Plaza Renovation Project ,” \$156,695, (PI, single investigator). (2012-2013).

H&H/Maryland Transportation Authority, “Rapid Ambient Vibration Monitoring Program for the Chesapeake Bay Bridge using Accelerometer Network,” \$35,655 (PI, single investigator), 2013.

NSF, “Chain Structured Strain and Fracture Sensor for Bridge Structural Health Monitoring,” \$349,388 (co-PI with Prof. Yin) 3 year grant (2013-2015).

H&H/Maryland Transportation Authority, “GPS Motion Instrumentation of the WB Chesapeake Bay Bridge,” \$87,685 (PI, single investigator), 2013.

NSF: “Enhanced Modeling of the Rocking and Overturning of Objects on a Moving Base”, \$312,634, (PI, single investigator) 3-year grant. (2012-2015)

Metropolitan Museum of Art: “Monitoring and Analysis of Test Construction Vibrations in the Egyptian Galleries at the Metropolitan Museum of Art (Pilot Phase)”, \$112,677, (PI, single investigator) 1-year grant. (2011-2012)

Metropolitan Museum of Art: “Monitoring and Analysis of Test Construction Vibrations in the Egyptian Galleries at the Metropolitan Museum of Art (Active Demolition Phase)”, \$124,321, (PI, single investigator) 1-year grant. (2012)

NSF: "Data Fusion of Heterogeneous Sensor Measurements for Enhanced Structural Modeling", \$306,478.00 (PI, single investigator) 3-year grant. (2011 – 2015)

NSF, Research Experience for Undergraduates Award Supplement, PI, \$6,000 (2012)

Parsons/MTA, "Ambient Vibration Monitoring of the Verrazano-Narrows Bridge," \$41,000, (2010).

University of Oklahoma/ODOT, "Vibration Monitoring and Analysis of the Little River Overflow Bridge, Oklahoma," \$31,000, (2010-2011).

California Strong Motion Instrumentation Program, "Utilization of Strong Motion Data for Assessment of Structural Integrity in Instrumented Highway Bridges," Co-PI with R. Betti, \$49,995, (2008-2009).

NYCDOT Bridges and Tunnels/Weidlinger Associates, "Monitoring of the Manhattan Bridge", \$160,000, Co-PI with R. Testa (2008-2009).

National Science Foundation, CAREER Award 2002, "Development of Nonlinear Modeling Tools for Analysis, Simulation, and Structural Health Monitoring, PI, \$375,000 (2002-2008)

National Science Foundation, "Disaster Vulnerability in Relation to Poverty in the Katrina Event: Reconnaissance Survey and Preliminary Analysis," PI, \$109,542, (2006-2007)

Metropolitan Museum of Art, "Pilot Study - Monitoring and analysis of test construction vibrations at the metropolitan museum of art," PI \$30,000, (2007) (first phase)

California Strong Motion Instrumentation Program, "Identification of the Dynamic Characteristics of the New Carquinez Bridge Using Ambient Vibration Measurements," Co-PI with R. Betti, \$49,995, (2007)

Federal Highway Administration, "Corrosion Monitoring Research Study for New York City Bridges" Co-PI with R. Betti, \$1.2million, (2004-2007).

Federal Highway Administration, "Corrosion Monitoring Research Study for New York City Bridges – Project Extension" Co-PI with R. Betti, \$300,000, (2006).

National Science Foundation, Research Experience for Undergraduates CAREER Award Supplement, PI, \$12,000 (2003-2007)

National Science Foundation, "Fourth International Workshop on Structural Control", PI, \$15,000 (2004).

National Science Foundation, "Attracting and Retaining Undergraduates to Engineering the Built Environment through Instructional and Technological Innovation", \$375,000. Co-PI with U. Lall and M. Garvin, (2002-2004).

Metropolitan Transit Authority, Bridges and Tunnels, "Vibration Monitoring Survey of the Verrazano-Narrows Suspension Bridge & NYC Marathon Monitoring," PI with R. Testa, \$95,350, (2004-2005).

Taiwan Institute of Environment and Disaster Policy, "Policy-Oriented Suggestion from Post-Disaster Recovery Mechanism to the Public Works in Taiwan," Co-PI with H. Ling, \$79,619.

Columbia University, Academic Quality Fund, "Development of an Integrated Methodology for Risk Assessment and Risk Mitigation of Major Metropolitan Areas Subjected to Natural and Man-Made Hazards", \$198,000 for 2 years, PI with G. Deodatis, (2003-2004).

Office of the Executive Vice Provost (Columbia), Center for Hazard and Risk Research, "Pilot Study to Assess the Cost Benefit of Seismic Retrofits to Residential Structures in Istanbul", \$25,000 for 6 months, (2002).

FAPESP Visiting Fellowship, Research Scholar support to foster collaborative research in Sao Paulo, Brazil, \$3,100, (2002).

National Science Foundation and Earthquake Engineering Research Institute Travel grant to attend the 12th World Conference on Earthquake Engineering in Auckland New Zealand, \$1,000, 2000.

Columbia Workshop on Infrastructure grant for *Risk Analysis of Critical NYC Civil Infrastructures due to Natural Hazard*, \$5,000, Summer, 1999.

SELECTED CONSULTING AND ADVISORY PROJECTS

National Geographic Society (2016)

Rubin Museum of Art (2017 – present)

MTA - Vibration Field Testing of the Verrazano-Narrows Bridge during the 2011 Hurricane Irene Event (August 27-29, 2011) to Examine Damping Estimates of the 1st Two Torsional Deck Modes, (2011)

Parsons/MTA - Peer Review of Seismic Performance Evaluation of the Throgs Neck Bridge (2008-2009)

Metropolitan Museum of Art - Advisory consulting, data analysis and oversight of real-time vibration monitoring program during major excavation. (2007)

Metropolitan Museum of Art - Advisory consulting, data analysis and real-time vibration monitoring program during major construction. (2011)

Weidlinger Associates/MTA - Inspection and peer oversight of dynamic strain gauge monitoring procedures for the Throgs Neck Bridge. (2000)