CURRICULUM VITAE
Satish Nagarajaiah, *Ph.D.*
United States Citizen

Fellow. U. S. National Academy of Inventors
Distinguished Member of ASCE, Medalist, F.SEI
Satishnagarajaiah.rice.edu; (Wikipedia page)

Professor of Civil Eng., Professor of Mechanical Eng. (&MSNE)   Satish.Nagarajaiah@rice.edu
Dept. of Civil & Env. Eng.   orcid.org/0000-0003-0088-1656; Google Scholar
Dept. of Mech. Eng. & Dept. Mat. Sc. Nano Eng.   *Former Editor* Structural Control Health Monitoring Wiley
MS318, 6100 Main St., Rice Univ., Houston, TX 77005   Editor-in-Chief SMM, Techno-Press

EDUCATION

Ph.D.	90	Structural Eng.	*State Univ. of New York,* Buffalo
M.S.	82	Structural Eng.	*Indian Institute of Science*, Bangalore
B.S.	80	Civil Eng. (Structures)	*UVCE, Bangalore University*, India

EXPERIENCE

06 – present	Prof. of Civil Eng./Prof. Mech. Eng.	*Rice University*, Houston, TX
05/06/07	Associate Chairman, CEVE	*Rice University*, Houston, TX
99 – 05	Assc. Prof. of Civi Eng. & Mech. Eng.	*Rice University*, Houston, TX
93 – 98	Asst. Prof. of Civil Eng.	*Univ. of Missouri—Columbia*, MO
90 – 93	Post-Doc., Dept. of Civil Eng.	*State Univ. of New York—Buffalo*, NY
87 – 90	Grad. Res. Asst., Dept. of Civil Eng.	*State Univ. of New York—Buffalo*, NY
82 – 86	Lead Structural Engineer	*Tata Consulting Eng., India*
80 – 82	Grad. Res. Asst., Dept. of Civil Eng.	*Indian Institute of Science*

HONORS AND AWARDS

- **2022, Satish Dhawan Distinguished Visiting Chair Professor, IISc, Summer 2022** (*IISc, IISc CiE Dept.*)

- **2021, Elected Distinguished Member** *of ASCE - class of 2021* (*ASCE News, ASCE Induction, UB News , Rice News*)

- **2020, ASCE Newmark Medal** jointly awarded by ***Structural Engineering Institute*** and ***Engineering Mechanics Institute*** (*ASCE, UB News, Rice News*)

- **2019, Elected Fellow U. S. National Academy of Inventors** (*NAI News, UB News, Rice News*)

- **2019,** International Association of Structural Control and Monitoring (*IASCM*) ***Takuji Kobori Prize*** (*IASCM-SCHM link, UB News, Rice News*)

- **2017, Elected Fellow** of ***ASCE - American Society of Civil Engineers*** (*Rice News*)

- **2017, Raymond Reese Research Award** *by* the ***ASCE*** (*ASCE News, Rice News*)

- **2016,** Among top 25 most cited researchers in Civil Engineering in the World in 2016 in a ranking by Elsevier and Shanghai Ranking Global (*Rice News*)
- *2015, Leon S. Moisseiff Award* for 2015 by the ASCE (*ASCE SEI Mag.*, *Rice News*)
- **2014**, Contact based distributed strain sensing using SWCNT nano-films, which was highlighted as one of the most cited papers in Nanotechnology journal in the 25th anniversary issue and web page of the Nanotechnology Journal (*IOP-Link*, *Rice News*)
- **2014,** Optical near infrared spectroscopy based noncontact smart strain sensing skin highlighted in National Science Foundation Science 360 News
- **2013,** Invited Participant in grand challenges for engineering in the 21st century summit organized by the US NAE, the UK Royal Academy of Engineering (RAE), and the Chinese Academy of Engineering (CAE), London (*NAE Grand Challenges for Eng.*)
- *2012, Elected Fellow* of *Structural Engineering Institute of ASCE* (*Rice News*)
- **2010,** Invited Participant in the Academy of Medicine, Eng., and Science (NAE, NAS, IOM) of Texas Annual Conference, San Antonio.
- *2008, Invited Participant in the National Academies NAE India-US* Symposium on Frontiers of Engineering, Beckman Center, Irvine, CA. (*NAE link*) ((*NAE FOE News*))
- **2000,** Best Paper Presentation Award, American Control Conference, Chicago.
- **1999 and 2000,** Professor of the Year Award for exemplary undergraduate teaching, CEE, Rice.
- *1999, National Science Foundation CAREER Award* (Adaptive Stiffness Structure Systems) (*Rice News*)
- **1980,** Summa Cum Laude, Gold Medal, B.S., UVCE, Bangalore University, India.

EDITIORIAL POSITIONS IN INTERNATIONAL JOURNALS

- *Editor, Structural Control and Health Monitoring, Wiley International Journal* – *2008- Present* http://onlinelibrary.wiley.com/journal/10.1002/(ISSN)1545-2263
- *Editor in Chief (Americas) Structural Monitoring and Maintenance,* Techno-Press *International Journal, 2014- Present* http://www.techno-press.org/?journal=smm#
- *Managing Editor, Journal of Structural Eng., ASCE, October 1, 2011 – Jan. 31, 2018*
- *Editor, Mechanical Systems and Signal Processing, Elsevier, 2017-2019*
- *Editorial board member, Intl. Journal of Engineering Structures, Elsevier, 2004 – Present*
- *Associate Editor, Editorial Board, J. of Structural Eng., ASCE, 2002 – 2006*

RESEARCH ACTIVITIES
Pioneering/Seminal Contributions

Computational Techniques for Nonlinear Dynamic Analysis

Satish Nagarajaiah is the pioneering/original developer of **advanced modeling and numerical techniques (that is widely used around the world in real projects and cited) for nonlinear dynamic analysis of three dimensional base isolated structures**, stability of elastomeric bearings with under large lateral displacement and large axial

load involving geometric and material nonlinearities, and smart base isolated benchmark problems.

Such **[pioneering development resulted in the widely known computer program 3D-BASIS that has been used for analysis and design of numerous base isolated structures within the United States and in many countries around the world.](#)** Landmark structures where *[3D-BASIS](#)* was used are the <u>New San Francisco International Airport</u>, the <u>San Francisco U.S. Court of Appeals</u>, and most recently in <u>Apple headquarters</u>, Cupertino, CA, all of which are supported on friction pendulum isolation bearings.

Origins and development of 3D-BASIS (3-Dimensional BASe Isolated Structures) was initially envisioned by the need for an efficient tool for nonlinear dynamic analysis of three-dimensional base isolated structures, particularly in solving the highly nonlinear bidirectional stick-slip hysteretic response of a collection of sliding isolation bearings and the resulting response of the superstructure, as this was not available in 1988. The primary challenge was to solve the stick-slip behavior of friction bearings—modeled using a differential equations to model hysteresis due to its efficiency in representing constant Coulomb friction or variable velocity dependent friction by using a very small yield displacement during the stick phase resulting in very high tangential stiffness followed by a very small tangential stiffness during the sliding phase—and the resulting stiff differential equations. A challenge that is compounded when biaxial-friction is modeled, wherein even the traditional method of using Gear's method to solve stiff differential equations breaks down—a problem that was vexing to solve in 1988. The answer was the development of the novel/new pseudo-force solution algorithm along with a semi-implicit Runge-Kutta method to solve the difficult problem. The efficient solution procedure is needed primarily for the nonlinear isolation system consisting of (1) sliding and/or elastomeric bearings, (2) fluid dampers, (3) other energy dissipation devices, while the superstructure is represented by three-dimensional superstructure model appropriately condensed (where only master nodes at the center of mass of the floor are retained).

3D-BASIS for Nonlinear Dynamic Analysis of Base Isolated Structures has been cited in several important code documents [FEMA 273/274 [39], ATC 33, NEHRP, NIST]. "The most widely used computer program for analyzing base isolated structures today is the 3D-BASIS suite of programs…" is a direct quote from the book on "Earthquake Resistant Design with Rubber" by Professor James M. Kelly, 1997 [2]—see page 234. (*[NIST – NEHRP Nonlinear Structural Analysis for Seismic Design NIST GCR 10-917-5-15wux56](#)*)

3D-BASIS has been used for analysis and design of numerous projects around the world; the most important of which are listed below.

- <u>U. S. Court of Appeals, San Francisco, CA, 1990-1991</u>
- LNG Tanks, Greece, 1994
- <u>New San Francisco International Airport, CA, 1996</u>
- ATATURK International Airport in Istanbul, Turkey, 2000

1/28/2023

- Statue of Hermes, Museum at Olympia, Greece, 2004
- Mills Peninsula Hospital, Burlingame, CA, 2005
- Washington Hospital, Fremont, CA, 2005
- Stanford University Hospital, CA, 2008
- Lunskoye and Piltun Offshore Oil Platforms, Sakhalin, Russia, 2008
- San Francisco General Hospital, CA, 2011
- Arkundagi Offshore Oil Platform, Sakhalin, Russia, 2013
- Lord Strathcona Elementary School, Vancouver, Canada, 2017
- Apple Park "Spaceship" Headquarters, Cupertino-California, 2017
- Numerous base isolated structures in Italy, Turkey, China, Japan, Korea, India and other countries.

Structural Control and Adaptive Stiffness Systems:

Satish Nagarajaiah is coauthor of **seminal state of art paper on structural control Journal of structural Engineering, ASCE, (2003)** (*One of the most highly cited paper in whole journals history as per Web of Science*). Satish Nagarajaiah' research thrust in earthquake protection, seismic isolation, and advanced seismic protection, and structural control since the start of his academic career as an assistant professor (1993) has focused on adaptive stiffness structures, and variable stiffness systems, a unique research direction in which he is currently considered as one of the foremost leaders in the world. He has performed widely cited research on **adaptive stiffness structures, semi-active variable stiffness systems and smart tuned mass dampers**. He has invented and developed semi-active variable stiffness systems (US patent awarded in 2000) and truly adaptive passive stiffness systems—particularly negative stiffness system (US Patent awarded in 2014). He was awarded the prestigious NSF CAREER award in 1998-99, and recently ASCE awarded the Moissieff award in 2015 and IASCM awarded the Kobori Prize in 2019 for his research on negative stiffness structural systems. His ideas of tuned mass dampers with variable stiffness springs in vibration control of tall buildings and towers subject to wind and earthquake forces have been adopted in China. His invention of the negative stiffness device (NSD) is being tested for adoption in tall buildings with outriggers in China. NSD with dampers is found to very efficient in reducing stay cable vibrations due to rain and wind induced vibrations; hence, is being tested for adoption in stay cables of long span cable stayed bridges in China.

Sparse Structural System Identification:

Satish Nagarajaiah has made **seminal contributions to the development of structural system identification techniques/algorithms** since 1995, based on **sparsity and low rank methods, time-frequency, wavelets, sparse regularization, statistical learning**, filtering (Interaction Matrix formulation with input-error function, Kalman Filter, Unscented Kalman Filter), Bayesian identification, Physics Guided Machine Learning. His research thrust in structural monitoring and output only system identification and damage detection has centered on the development of new low rank,

sparse, compressive sensing, time-frequency algorithms, based on statistical learning, blind source separation, filtering, advanced signal processing techniques and vision base sensing techniques. <u>His algorithms have been used world-wide in real structures, for example the Donghai River Cable Stayed bridge in Shanghai and for identification of force in stay cables (long span) cable stayed bridges in China and the world.</u> His papers on this topic have been cited widely. <u>Recently, his team of research collaborators were awarded the 2017 Raymond C. Reese Research Prize for sparse structural identification and IASCM Kobori Prize for 2019 for identification of highly nonlinear hysteretic negative stiffness systems</u>.

Smart Strain Sensing Skin for Noncontact Strain Maps:

Satish Nagarajaiah is a <u>pioneering inventor</u> (<u>US Patent awarded in 2004</u>) and developer of **smart strain sensing skin using nanomaterials–both contact and noncontact laser based**–in an institute/center funded by NASA (Texas Institute of Intelligent Bio-Nano Materials and Structures for Aerospace Vehicles—co-principal investigator, *Rice News***).** <u>His seminal two journal papers on strain sensing using nanofilm (based on single wall carbon nanotubes) published in 2004 (Nanotechnology Journal and Advanced Materials Journal) are the earliest and most cited papers in this field.</u> His team has conducted widely cited research on nanocomposite-based strain sensing in the AFOSR funded study. **At Rice they have recently developed and demonstrated laser based non-contact smart strain sensing skin** (<u>US Patent awarded in 2016</u>) with funding from Office of Naval Research. This unique invention has recently been shown to produce two-dimensional strain maps, which is vital for detection of stress-strain concentration at crack tips and around holes. In computational mechanics this is one of the central problems that is hard to verify using current experimental techniques, except for Digital Image Correlation (which has limits near the crack tip)—smart strain sensing skin is an answer to this pressing need. This research has received wide attention including a highlight on the webpage of **National Science Foundation 360 as a novel invention**. <u>The smart sensing skin is being evaluated for adoption by Airbus - Europe.</u>

RESEARCH GRANTS

- Total Funding to Date (1993-2023) $20.6M
- PI/Co-PI Funding (1993-2023) -- $6.6M
- **Link to all NSF grants at nsf.gov for Satish Nagarajaiah**

1/28/2023

RESEARCH GROUP

Post-Doctoral Researchers (12 total to date)

- Dr. Wei Meng, Ent. Lead and Post-Doc Ph.D. Dissertation, CEVE, Rice University, M.S. Rice, M.S. and B.S., China Petroleum University, China.
- Dr. Sutanu Bhowmick, Post-Doc, 2021-2022, Ph.D. Rice University, M.S., IIT-K, B.S. Jadavpur University, India.
- Dr. Venkata Srivishnu Mohan Vemuru, Post-Doc, 2016-2018, Ph.D. and M.S., Rice University, B.S. NIT India
- Dr. Kalil Erazo, Post Doc, 2015-2017, Ph.D. Civil Engineering, University of Vermont 2015, M.S. Georgia Tech 2011. Currently, Assistant Teaching Professor, Rice University, 2020-present. 2017-2019, *Research Professor*, Institute of Santo Domingo (INTEC), Dominican Republic
- Dr. Yongchao Yang, Post Doc, 2014-2015, Ph.D. Civil Engineering, Rice 2014, B.S. Harbin Institute of Technology
- Dr. Chao Sun, Post Doc, 2014-2015, Ph.D. Civil Engineering, Rice 2013. M.S., Tongji Univ., B.S., Shanghai Jiao Tong University
- Dr. Dharap Prasad, Post Doc, 2006 – 2007, Ph.D. Civil Engineering, Rice, 2006, M.S. IIT Bombay, B.S. VJIT, Bombay, India
- Dr. Li Zhiling, Post Doc, 2006 – 2007, Ph.D. Civil Engineering, Rice, 2006, M.S. & B.S. Tsinghua University, China
- Dr. Steve Wilkerson, Post Doc, 2005 – 2006, Ph.D. Civil Engineering, Rice, 2005, M.S. & B.S. Rice University
- Dr. Sriram Narasimhan, Post Doc, 2005 – 2006, Ph.D. Civil Engineering, Rice, 2005, M.S. Louisiana State University, B.S. Osmania University, India
- Dr. Bong Hwan Koh, Post-doc, 2003-2004, Ph.D. Mechanical Engineering, Dartmouth College, 2003, M.S. & B.S. Sung Kyun Kwan University, Korea. Currently, 2005-present, *Associate Professor*, Dept. of Mech. Engineering, *Dongguk University*, Seoul, Korea.
- Dr. Sanjay Sahasrabudhe, Post Doc, 2001 – 2002, Ph.D. Civil Engineering, Rice, 2001, M.S. & B.S. Pune University, India

FORMER GROUP MEMBERS:

Former Ph.D. students – 32 (graduated)
+ *3 (ongoing PhD students); Graduated 22 MS students

33-35*. Sudheendra Herkal (Sp23), Ashish Pal (Sp24), Aniruddha Das (TBD)

32. Wei Meng, Ph.D., Rice Univ. (2022 Aug), Entrepreneurial Lead, NSF Proj.
https://scholar.google.com/citations?hl=en&user=xAaR5AIAAAAJ

31. Debasish Jana, Ph.D., Rice Univ. (2021 Dec), Post-Doc, UCLA, USA.
https://orcid.org/0000-0003-2368-6394

30. Liangkun Wang, Ph.D., Tongji Univ., (Jointly with Prof. Ying Zhou, Tongji University) Currently Assistant Professor, Tongji University, Shanghai, China. *https://orcid.org/0000-0003-3426-4023*

29. Meng Wang, Ph.D., Tongji Univ., (Jointly with Prof. Fei Fei Sun, Tongji University) Currently Assistant Professor, Beijing University of Technology, Beijing, China *https://orcid.org/0000-0003-0432-8313*

28. Prabhas Hundi (Final year advisor, with former Colleague Rouzbeh Shahsavari), Ph.D. Rice (2021), Engineer, Houston, TX *https://scholarship.rice.edu/handle/1911/110376*

27. Sutanu Bhowmick, Ph.D. Rice (2021), Currently Lecturer/Post-doc Rice CEE, Houston *https://orcid.org/0000-0001-9350-4803*

26. Debarshi Sen, Ph.D. Rice (2018), Currently, Assistant Professor, Southern Illinois University, Carbondale, 2018-2020, Post-doc, MIT, and 2020-2022, Post-doc, Lehigh Univ., PA. *https://orcid.org/0000-0002-6475-4659*

25. Zhilu Lai, Ph.D. Rice (2018) Currently Post-doc, ETH, Zurich, Switzerland. *https://orcid.org/0000-0001-6227-6123*

24. Peng Sun, Ph.D. Rice (2017) Currently Assistant Professor, University of Central Florida. *https://www.patrick-sun.com/*, *https://orcid.org/0000-0002-1227-5533* Post-doc, 2018-2022, Univ. of Michigan, MI.

23. Tong Sun, Ph.D. DUT (2017) (Jointly with Prof. Hong-Nan Li, Dalian Univ. of Tech.—DUT, Shenyang Jianzhu Univ—SJZU project), Currently Assistant Prof., Shenyang Jianzhu Univ., China *https://publons.com/author/1322887/tong-sun#profile*

22. Zhan Shu, Ph.D. UCLA (2015) (Jointly with UCLA Prof. Zhang in NSF-NEES project) Currently, Associate Professor, Shanghai University, china. *https://www.researchgate.net/profile/Zhan_Shu10*, *https://orcid.org/0000-0002-1374-1698*

21. Navid Attary, Ph.D. RPI (2015) (Jointly with RPI Prof. Symans in NSF-NEES project), Currently Senior Research Scientist, FM Global, Boston. *https://orcid.org/0000-0003-4092-8244*

20. Apostolos Sarlis, Ph.D. UB (2015) (Jointly with UB Prof. Constantinou in NSF-NEES project), currently Research Engineer, Exxon Mobil, Houston, TX (*Google ScholarLINK*)

19. Lin Chen, Ph.D. Tongji (2015) (Jointly with Tongji Prof. Limin Sun in a Tongji Sponsored Research project), Currently Associate Professor, Tongji Univ., Shanghai, China *https://chenllab.com* *https://orcid.org/0000-0002-3570-234X* (*Google Scholar Link*).

18. Keguan Zou, Ph.D. Rice (2015), currently Structural Eng., New York City, New York (*Google Scholar Link*), *https://orcid.org/0000-0002-1345-2474*

17. Yongchao Yang, Ph.D. Rice (2014), Post-doc Rice (2014-2015), Currently Assistant Professor, Aug 2019-Present, Michigan Technological University, Houghton, Michigan, *https://www.mtu.edu/mechanical/people/faculty/yang-y/* formerly, 2017-2019, Technical Staff Member at Argonne National Laboratory, IL, 2015-2017, Director Post-doc, Los Alamos National Laboratory. *https://orcid.org/0000-0003-1776-3306*

16. Srivishnu Mohan Venkata Vemuru, Ph.D. Rice (2014), Post-Doc Rice Univ. 2016-2018. *https://orcid.org/0000-0002-1577-6608* (*Google Scholar Link*)

15. Kaveh Karami, Ph.D. IUST (2013), Visiting student from Iran University of Science and Technology (IUST), Joint supervision with Professor Fereidoun Amini, IUST, currently, assistant professor, University of Kurdistan, Sanandaj, Iran, *https://eng.uok.ac.ir/Ka.Karami/Biography.html*; *https://orcid.org/0000-0002-9519-2855*

14. Tathagata Ray, Ph.D. UB (2013), (Jointly with UB Prof. Reinhorn in NSF-NEES project) formerly Assistant Professor, New Mexico State University, NM *https://orcid.org/0000-0002-3939-0638*

13. Chao Sun, Ph.D. Rice (2013), currently, Assistant Professor, Louisiana State University, LA *https://www.lsu.edu/eng/cee/people/Sun.php* *https://orcid.org/0000-0003-3909-0325*

12. Chaojun Huang, Ph.D. Rice (2013) currently, Subsea Riser Engineer, 2H Offshore Inc., Houston, TX. (*Google Scholar Link*)

11. Dharma Theja Reddy Pasala, Ph.D. Rice (2013), currently Riser Engineer, INTECSEA, Houston, TX. *https://orcid.org/0000-0003-0689-2364*

10. Ertan Sonmez, Ph.D. Rice (2011), Assistant Professor, Ankara, Turkey *https://www.atilim.edu.tr/en/ce/page/2242/academic-staff*

9. Michael Contreras, Ph.D. Rice (2010), currently at Dept. of Energy, *https://www.energy.gov/eere/contributors/michael-contreras* *https://scholarship.rice.edu/handle/1911/64407*

8. Chen Bilei, Ph.D. Rice (2008), currently Structural Engineering, Shell, Houston, TX. *https://scholarship.rice.edu/handle/1911/22279*

7. Zhiling li, Ph.D. Rice (2006), currently Floating Systems Engineer, BP, Houston, TX. *https://scholarship.rice.edu/handle/1911/18939*

6. Dharap Prasad, Ph.D. Rice (2006), currently Structural Engineer, SBM, Houston, TX. (*Google Scholar Link*)

5. Steven M. Wilkerson, Ph.D. Rice (2005), currently Associate Professor of Practice, PVAMU, *https://www.pvamu.edu/sites/hb2504/cvs/All/smwilkerson.pdf* *https://scholarship.rice.edu/handle/1911/18838*

4. Nadathur Varadarajan, Ph.D. Rice (2005), Research Engineer, Shell Technology Center, Houston, TX. *https://scholarship.rice.edu/handle/1911/18829*

3. Sriram Narasimhan, Ph.D. Rice (2004), currently (2021 – present) **Professor UCLA** Department of Civil Engineering, formerly (2006-2020) **Canada Research Chair, Professor, University at Waterloo**, Canada. (*ORCiD link*) (*Google Scholar Link*)

2. Sanjay Sahasrabudhe, Ph.D. Rice (2001), currently Senior Structural Engineer at McDermott Engineering, Houston, TX. *https://scholarship.rice.edu/handle/1911/18128*

1. Ravi Subramaniam, Ph.D. UB (1994) (Jointly with Professor Andrei Reinhorn, University at Buffalo), Distinguished Technologist at Hewlett Packard Inc., SF, CA. *https://www.linkedin.com/in/ravi-subramaniam-53ab169*

Former Group Members (total 12 to date - Advisor and Mentor) in Faculty Positions around the World

- Dr. Debarshi Sen, Ph.D. (2018). Assistant Professor (July 2022-present), CEIE, Southern Illinois University, Carbondale, *https://engineering.siu.edu/civil/faculty-staff/faculty/* 2018-2020 Post-Doc, MIT, Post-Doc 2020-2022 / Lehigh University https://orcid.org/0000-0002-6475-4659

- Dr. Meng Wang, Ph.D., (2021) (Jointly with Prof. Fei Fei Sun, Tongji University) Currently Assistant Professor, Beijing University of Technology, Beijing, China https://orcid.org/0000-0003-0432-8313

- Dr. Peng Sun, Ph.D. Rice (2017), Assistant Professor (Fall 2020, *https://www.patrick-sun.com/*), CEE, University of Central Florida, Orlando, 2018-2020 Post-Doc Univ. of Michigan, Ann Arbor https://orcid.org/0000-0002-1227-5533

- Dr. Yongchao Yang, Currently Assistant Professor, Michigan Technological University, Houghton, MI, *https://www.mtu.edu/mechanical/people/faculty/yang-y/*; Post Doc, 2014-2015, Ph.D., Rice 2014, B.S. Harbin Institute of Technology, formerly, 2017-2019, Technical Staff Member at Argonne National Laboratory, Chicago, IL, 2015-2017, Director Post-doc, Los Alamos National Laboratory, Albuquerque, New Mexico. https://orcid.org/0000-0003-1776-3306

- Dr. Kalil Erazo, Currently, Assistant Teaching Professor, Rice University, 2020 – present, *https://kalilerazo.wordpress.com*, 2017-2019, Research Professor, Institute of Santo Domingo (INTEC), Dominican Republic *https://www.intec.edu.do/en/prensa/notas-de-prensa/item/investigador-del-intec-dicta-conferencia-en-mit,* Post Doc, 2015-2017. *https://orcid.org/0000-0002-5890-7073* *https://scholar.google.com/citations?user=TtmEUHYAAAAJ&hl=en&authuser=2*

- Dr. Tong Sun, Ph.D. (2017) (Primary Advisor Jointly with Prof. Hong-Nan Li, DUT, SJZU project), Currently Assistant Prof., Shenyang Jianzhu University, China *https://publons.com/author/1322887/tong-sun#profile*

- Dr. Lin Chen, Ph.D. (2015) (Primary Advisor Jointly with Tongji Prof. Limin Sun in a Tongji Sponsored Research project), *https://scholar.google.com/citations?user=X5-zCpEAAAAJ&hl=en ,* Currently Associate Professor, Tongji University, Shanghai, China. *https://chenllab.com https://orcid.org/0000-0002-3570-234X*

- Dr. Ertan Sonmez, Ph.D., Rice (2011), Currently, 2017-present, Assistant Professor, Dept. of Civil Engineering, Atlim University, Ankara, Turkey *https://www.atilim.edu.tr/en/ce/page/2242/academic-staff https://orcid.org/0000-0002-1399-1646*

- Dr. Chao Sun, Post Doc, 2014-2015, Ph.D., Rice (2013), Currently, Associate Professor, Dept. of Civil Engineering, Louisiana State University, *https://www.lsu.edu/eng/cee/people/Sun.php* *https://orcid.org/0000-0003-3909-0325*

- **Dr. Sriram Narasimhan**, Post Doc, 2005 – 2006, Ph.D. Rice (2005), Currently, 2021-present **Professor UCLA**, Department of Civil Engineering; formerly (2006-2020) **Canada Research Chair, Professor, University at Waterloo**, Canada. (*Link*) (Google Scholar Link)

- Dr. Steven M. Wilkerson, Ph.D., M.S., B.S. Rice (2005). currently Associate Professor of Practice, PVAMU, *https://www.pvamu.edu/sites/hb2504/cvs/All/smwilkerson.pdf* *(Link)*

- Dr. Bong Hwan Koh, Post-doc, (2003-2004), Currently, 2005-present, Associate Professor, Department of Mechanical Engineering, Dongguk University, Seoul, Korea. *https://www.dongguk.edu/mbs/en/subview.jsp?id=en_020308070000* *https://scholar.google.com/citations?user=qqcrl0IAAAAJ&hl=en&authuser=2*

Current Group Members
Senior Members/Post-Docs:

Dr. Wei Meng, Entrepreneurial Lead, Post. Doc., Aug 2022-2023
https://scholar.google.com/citations?hl=en&user=xAaR5AIAAAAJ

Dr. Sutanu Bhowmick, Comp. Post. Doc. Aug 2022-present, Post-Doc/ Lecturer, Aug 2021-22, Rice University,
https://orcid.org/0000-0001-9350-4803
https://scholar.google.com/citations?hl=en&authuser=2&user=-pgkA6MAAAAJ

Ph.D. Students: Current— 3 Students

1. **Sudheendra Herkal,** Ph.D. Student, "Novel Negative Stiffness Structures and architectured materials," B.S. and M.S. IIT Madras, India.

2. **Ashish Pal,** Ph.D. Student, "Data fusion, inverse modeling, and System Identification using measured data and mechanics." B.S and M.S., IIT Kanpur, India.

3. **Aniruddha Das,** Ph.D. Student, "TBD." B.S., IIT Roorkee, India.

Former Graduate Students (Served as primary Advisor and Mentor):

2022

Dr. Wei Meng, Ph.D. Student, "Next-Generation 2D Optical Strain Mapping: Strain-Sensing Smart Skin vs. Digital Image Correlation," **Ph.D. Dissertation,** CEVE, Rice University, M.S. Rice, M.S. and B.S., China Petroleum University, China.

2021

Dr. Debashish Jana, "Vision and Learning based Sensing for Structural Health Monitoring" **Ph.D. Dissertation,** CEVE, Rice University, M.S. IIT Kanpur, IIEST. Shibpur, India.

Dr. Sutanu Bhowmick, "Vision-Based Full-Field Sensing for Condition Assessment of Structural Systems," **Ph.D. Dissertation,** CEVE, Rice University, M.S. IIT Kanpur, B. S. Jadavpur University, India.

2020

Ray Buttgen, "Analytical and Experimental Study of Negative Stiffness Brace and its Effectiveness in a Scaled Two Story Model," M.S. Thesis (submitted as an MCEE Report and graduated due to Covid Pandemic beginning in March 2020), CEVE, Rice University, B.S., Rice University.

2018

Kiachun Yang, "Development of Multifunctional Laser-Induced Graphene Composites and Devices", M.S. Thesis, CEVE, Rice University, B.S., Harbin Institute of Technology, currently, Ph.D student Duke, Mechanical Eng. and Material Science.

1/28/2023

Dr. Debarshi Sen, "Applications of Statistical Learning and Stochastic Filtering for Damage Detection in Structural Systems," **Ph.D. Dissertation,** CEVE, Rice University, B.S. and M.S., IIT Kharagpur. India.
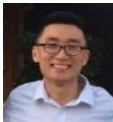
Dr. Zhilu Lai, "Sparse Structural System Identification and Damage Detection," **Ph.D. Dissertation,** CEVE, Rice University, M.S. Hong-Kong-Polytech, B.S. Xiamen University, China

Wei Meng, "Analysis on Dynamic Response of a Tension-leg Platform Riser System" M.S. Thesis, CEVE, Rice University B.S. and M.S., China Petroleum University, China.

2017

Dr. Peng (Patrick) Sun "Strain-Sensing Smart Skin for Structural Health Monitoring" Ph.D. Dissertation, CEVE, Rice University, M.S., B.S. Southeast University, China.

2016

Sam Wang, "Smart Skin for Measuring Fracture and Fatigue" M.S.Thesis, CEVE, Rice University, B.S. Taiwan

2015

Dr. Keguan Zou, "Study of Adaptive Passive Stiffness Systems with Nonlinear Vibrations: New Analytical and Computational Techniques," **Ph.D. Dissertation**, CEVE, Rice University, Dec. 2014, M.S., Southeast Univ., China, B.S., Tsinghua Univ., China

2014

Dr. Yongchao Yang, "Harnessing data structure for health monitoring and assessment of civil structures: sparse representation and low-rank structure" **Ph.D. Dissertation,** CEVE, Rice University, B.S. Harbin Institute of Technology, China

Dr. Srivishnu Venkata Mohan Vemuru, "Dynamic Stability of elastomeric seismic isolation bearings and seismic protection using enhanced adaptive negative stiffness system." **Ph.D. Dissertation**, CEVE, Rice University, M.S. Rice, B.S. NIT- Surtkal, India

Dr. Chao Sun, "Structural Vibration Control of Nonlinear Systems Using the Smart Tuned Mass Damper (STMD) and the Nonlinear Tuned Mass Damper (NTMD)." **Ph.D. Dissertation**, CEVE, Rice University, M.S. Tongji University, China, B.S. Shanghai Jaio Tong University, China

2013

Dr. Dharma Theja Reddy Pasala, "Seismic response control of structures using novel adaptive-passive and semi-active variable stiffness and negative stiffness devices" **Ph. D. Dissertation**, CEVE, Rice University, M.S. Rice, B.S., IIT - Guwahati, India.

Dr. Chaojun Huang, "Structural Health Monitoring System for Deepwater Risers with Vortex-induced Vibration: Nonlinear Modeling, Blind Identification, Fatigue/Damage Estimation & Vibration Control" **Ph. D. Dissertation**, CEVE, Rice University, M.S. Tsinghua University, China, B.S. Tsinghua University, China.

2012

Dr. Michael Contreras, "Neural Network based real time structural damage monitoring and fault detection and control" **Ph. D. Dissertation**, CEVE, Rice University (*First Hispanic-American Student*). M.S. UCLA, B.S. UCLA.

2011

Dr. Ertan Sonmez, "Deterministic and Stochastic Responses of Smart Variable Stiffness and Damping Systems and Smart Tuned Mass Dampers," **Ph.D. Dissertation**, CEVE, Rice University. M.S. Vanderbilt University, B.S. Middle Eastern University, Turkey.

2010

 Srivishnu Mohan, "Dynamic Response of Multi-Degree of Freedom Structure with Sliding Isolation System and Uplift" M.S. Thesis, CEVE, Rice University, B.S. NIT-Surtkal, India.

2009

 Dharma Theja Reddy Pasala, "Repetitive Control of Hysteretic Systems Using Robust H-infinity Controller" M.S..Thesis, CEVE, Rice University, B.Tech, IIT- Guwhati, India.

2008

 Dr. Chen Beili, "Detection Filter-based Method for Robust Structural Damage Detection," **Ph.D. Dissertation**, CEVE, Rice University. M.S. Tsinghua University, China, B.S. Tsinghua University, China.

2007

 Ike Akinwande, "Nanocomposite strain sensors: A study of electrical and thermal properties" M.S. Thesis, CEVE, Rice University (*First African American Student*). B.S. Rice University.

2006

 Dr. Li Zhiling, "Methods for real-time actuator-sensor failure and structural damage detection," **Ph.D. Dissertation**, CEVE, Rice University. M.S. Tsinghua University, China, B.S. Tsinghua University, China.

 Dr. Dharap Prasad, "Real-time structural damage monitoring using interaction matrix formulation and observers," **Ph.D. Dissertation**, CEVE, Rice University. M.S. IIT-Bombay, India, B.S. VJIT, Bombay, India.

2005

 Dr. Steve Wilkerson, "An optimization algorithm for minimum weight design of steel structures with non-smooth stress constraints," **Ph.D. Dissertation**, CEVE, Rice University. M.S. Rice University, B.S. Rice University

Dr. Nadathur Varadarajan, "Novel Smart Variable Stiffness Tuned Mass Damper and its Real Time Identification and Control using Time-frequency Techniques," **Ph.D. Dissertation**, Rice University, **Best graduate student award,** CEVE. M.S. BITS-Pilani, India, B.S. BITS-Pilani.

Michael Sullivan, "State Estimation of International Space Station Centrifuge Rotor with Incomplete Knowledge of Disturbance Inputs," M.S. Thesis, *Dept. of Mech. Eng. & Mat. Sc.,* Rice University, (Draper Fellow).

2004

Dr. Sriram Narasimhan, "Control of smart base isolated buildings with new semiactive devices and novel H_2/LQG, H_∞, and time frequency controllers" **Ph.D. Dissertation**, CEVE, Rice University., M.S. Rice, M.S. Louisiana State University, B.S. Osmania University, India.

Jeffery Dyck, "Experimental and analytical study of variable fluid damper and stiffness device" M.S. Thesis, CEVE, Rice University. B.S. Texas A&M University.

2003

Dr. Ashutosh Agrawal, "Response of semiactive variable stiffness and damping systems to pulse type excitations: Analytical and experimental study" M.S. Thesis, CEVE, Rice University, B.S. IIT-Bombay, India.

2002

Mao, Yuqing, "Sliding mode control and nonlinear spectra of smart base isolated structures," M.S. Thesis, CEVE, Rice University, B.S. Tongji University, China.

Criste, Erin, "Testing and analysis of a prototype fluid damper," M. S. Thesis, Rice University, B.S. Vanderbilt University (*Third Female Graduate Student*).

2001

Dr. Sahasrabudhe, Sanjay, "Semi-active control of sliding base isolated buildings and bridges with variable stiffness and damping systems," **Ph.D. Dissertation**, CEVE, Rice University. M.S. Pune University, India, B.S. Pune University, India.

1998—University of Missouri-Columbia

Iyer, Ravi, "Experimental study of a 1:20 scale bridge model with sliding isolation system and innovative dampers," M.S.Thesis, CEE, University of Missouri-Columbia. B.S. VJIT, Bombay, India.

Ma, Xiaojiang, "System identification of an 8 story base isolated building using earthquake data," M.S.Thesis, CEE, University of Missouri-Columbia. B.S. Tongji University.

Mate, Datta, "Experimental and analytical study of semi-active variable stiffness control system," M.S. Thesis, CEE, University of Missouri-Columbia. B.S. Pune University.

Sunan, Wang, "Predictive control algorithms for semi-active variable stiffness systems in building structures," M.S. Thesis, (*Second Female Graduate Student)* CEE, University of Missouri-Columbia. B.S. Tongji University.

1996—University of Missouri-Columbia

Wei, Wu, "Application of partitioned predictor corrector algorithms in nonlinear structural analysis and optimal control", M.S. Project, University of Missouri-Columbia. B.S. Tianjin University.

Keith, Ferrell, "Stability of elastomeric seismic isolation bearings in buildings", M.S.Thesis, CEE, University of Missouri-Columbia. B.S. University of Missouri-Columbia.

Sun, (Tracy) Xiahong, "Response of base isolated structures to Northridge Earthquake including pounding," M.S. Thesis, (*First Female Graduate Student),* CEE, University of Missouri-Columbia**.** B.S. Tsinghua University.

1994—State University of New York at Buffalo

Dr. Subramaniam, R. S., "Application of fuzzy set theory to the active control of base isolated structures," **Ph.D. Dissertation**, CEE, SUNY at Buffalo, (Co-advisor with Prof. Andrei Reinhorn). M.S. IIT-Madras, B.S. IIT-Madras.

1991—State University of New York at Buffalo

Tsopelas, P., "Nonlinear dynamic analysis of multiple building base isolated structures," M.S. thesis, CEE, SUNY at Buffalo, (Co-advisor with Prof. Constantinou). B.S. NTU, Athens, Greece.

Visiting Professors
- Prof. Beom-Seon Jang, Seoul National University, 2014-2016
- Prof. J. Chang, Suzhou University of Science and Technology, China, 2014-2015
- Prof. Srinivasan, Mechanical Eng., Lamar/TAMU/IISc, Fall 2012
- Prof. Biswajit Basu, Trinity College, Dublin, Ireland, 2006 (on sabbatical), 2005 (summer), and 2004 (summer)
- Prof. Sriram Narasimhan, University of Waterloo, 2007 (on sabbatical)
- Prof. N. Sundararajan, Electrical Eng., Nanyang Tech. University, Singapore, 2004

Visiting Students
- Liangkun Wang, Ph.D. Student, Dept. of Civil Engineering, Tongji Univ, 2019-2021
- Meng Wang, Ph.D. Student, Dept. of Civil Engineering, Tongji Univ, 2018-2020
- Zhao Hanwei, Ph.D. Student, Dept. of Civil Engineering, Southeast University, 2017-18
- Wei Zhang, Ph.D. Student, Dept. of Civil Engineering, Tongji University, 2016
- Tong Sun, Collaborative Ph.D. Student, B.S., M.S., Dalian Univ. of Technology, 2014-2016
- Yuyi Beasho, University of Tokyo, 2015-2016
- Lin Chen, Collaborative PhD. Student, Dept. of Civil Eng., Tongji University, 2012-2014
- Kaveh Karami, PhD. Student, Dept. of Civil Eng., Iran Univ. of Science and Technology, Tehran, Iran, Spring 2013
- Yudong Shi, PhD. Student, Dept. of Civil Eng., Kyoto University, Spring 2012

Undergraduate Students
- Ray Butgen (Research Assistant), Rice University, 2016-2018
- Jackie Zhao (Research Assistant), Rice University, 2014-present
- Jihoon Kim (Research Assistant), Rice University, 2012-2014
- Dan Sloat (Research Assistant), Rice University, 2010-2012
- Peter Fobel (Research Assistant), Rice University, 2011-2012

- Eastman Landry (Research Assistant), Rice University, 2008-09
- Jeffery Haydon ((Research Assistant), Rice University, 2007-08
- Ike Akinwande (Research Assistant), Rice University, 2003-04
- Ryan Kent Giles (Research Assistant), Rice University, 2002-03
- Daniel Arizpe Rizzo (Research Assistant), Rice University, 2000-01
- Jose De La Pena (Research Assistant), Rice University, 99-2000
- Carlos Alvarez (Research Assistant), Rice University, 99-2000
- Sabrina Macedo Moran (Research Assistant), Cornell University, 99-2000
- Tyson Newhouse (Research Assistant), Univ. of Missouri, prior to 96-97
- Pulliam, John, E. (Research Assistant), Univ. of Missouri, prior to 96-97
- Hendrix, Rick (Research Assistant), Univ. of Missouri, prior to 95-96
- Stone, David (Research Assistant), Univ. of Missouri, 94-95
- Ferrell, Keith (Research Assistant), Univ. of Missouri, 93-94
- Gazdowski, Eric (Research Assistant), Univ. of Missouri, 93-94

PUBLICATIONS

CITATIONS

Goggle Citations (>16300 citations, H index 66)

> *http://scholar.google.com/citations?user=l_jZ3NgAAAAJ&hl=en*

Web of Science SCIE (>8800 citations, H index 49)

> *https://publons.com/researcher/2729143/satish-nagarajaiah/publications/*

Scopus (>11000 citations, H index 53)

> *http://www.scopus.com/authid/detail.url?authorId=7003411593*

ORCID

> *http://orcid.org/0000-0003-0088-1656*

Journal papers/Books/Publications

Books

B1. Loh, Kenneth, and Satish Nagarajaiah, eds. *Innovative developments of advanced multifunctional nanocomposites in civil and structural engineering*. Woodhead Publishing, 2016. (PDF)

B2. Cimellaro, Gian Paolo, Satish Nagarajaiah, and Sashi K. Kunnath, eds. *Computational methods, seismic protection, hybrid testing and resilience in earthquake engineering: A Tribute to the research contributions of Prof. Andrei Reinhorn*. Vol. 33. Springer, 2014. (PDF)

Journal Publications

Summary   Published = 225 = 205 + 20 Non-Web of Science Journal-Articles . For full list of papers visit the following web sites:
https://www.webofscience.com/wos/author/record/661994
or satishnagarajaiah.rice.edu

J205. Bhowmick, S., Nagarajaiah, S., Kyrillidis, A. (2023). Data-and theory-guided learning of partial differential equations using SimultaNeous basis function Approximation and Parameter Estimation (SNAPE), Mechanical Systems and Signal Processing, 189, 110059 DOI: https://doi.org/10.1016/j.ymssp.2022.110059

J204. Herkal, S., Rahman, M.M., Nagarajaiah, S., Harikrishnan, VVJ., Ajayan, P. (2023). 3D printed metamaterials for damping enhancement and vibration isolation: Schwarzites, Mechanical Systems and Signal Processing 185, 109819. DOI: https://doi.org/10.1016/j.ymssp.2022.109819

J203. Jana, D., Nagarajaiah, S., (2023). Physics-Guided Real-Time Full-Field Vibration Response Estimation from Sparse Measurements Using Compressive Sensing, Sensors, 23(1), 384, DOI: https://doi.org/10.3390/s23010384

J202. Jana, D., Nagarajaiah, S., (2023). Data-driven full-field vibration response estimation from limited measurements in real-time using dictionary learning and compressive sensing. Engineering Structures, 275, 115280. DOI: https://doi.org/10.1016/j.engstruct.2022.115280

J201. Pal, A., Meng, W., Nagarajaiah, S. (2022). Hybrid method for full-field response estimation using sparse measurement data based on inverse analysis and static condensation. Journal of Infrastructure Intelligence and Resilience, 1(2), 100017 https://doi.org/10.1016/j.iintel.2022.100017

J200. Advincula, P.A., Meng, W., Eddy, L.J., Beckham, J. L., Siqueira, I.R., Luong, D.X., Chen, W., Pasquali, M., Nagarajaiah, S., Tour, J.M. (2022). Ultra-High Loading of Coal-Derived Flash Graphene Additives in Epoxy Composites, Macromolecular Materials and Engineering, DOI: https://doi.org/10.1002/mame.202200640

J199. Wang, L., Nagarajaiah, S., Shi, W., Zhou, Y. (2022). Seismic performance improvement of base-isolated structures using a semi-active tuned mass damper, Engineering Structures 271, 114963, DOI: https://doi.org/10.1016/j.engstruct.2022.114963

J198. Chen, L., Liu, Z., Nagarajaiah, S., Sun, L., Zhao, L., Cui, W. (2022). Vibration mitigation of long-span bridges with damped outriggers, Engineering Structures 271, 114873, DOI: https://doi.org/10.1016/j.engstruct.2022.114873

J197. Nagarajaiah, S., Zou, K., Herkal, S. (2022). Reduction of Transmissibility and Increase in Efficacy of Vibration Isolation Using Negative Stiffness Device with Enhanced Damping, Structural Control and Health Monitoring, e3081, DOI: https://doi.org/10.1002/stc.3081

J196. Meng, W., Pal, A. Bachilo, S.M., Weisman, R. B., Nagarajaiah, S., (2022). Next-Generation 2D Optical Strain Mapping with Strain-Sensing Smart Skin Compared to Digital Image Correlation. Nature - Scientific Reports, 12(1), 11226 https://doi.org/10.1038/s41598-022-15332-1

J195. Nagarajaiah, S., Chen, L., Wang, M. (2022). Adaptive Stiffness Structures with Dampers: Seismic and Wind Response Reduction using Passive Negative Stiffness and Inerter Systems, Journal of Structural Engineering, 148 (11), 04022179, DOI: https://doi.org/10.1061/(ASCE)ST.1943-541X.0003472

J194. Wang, M., Nagarajaiah, S., Chen, L. (2022). Adaptive passive negative stiffness and damping (NSD) for retrofit of existing tall buildings with tuned mass damper (TMD): TMD-NSD. Journal of Structural Engineering, 148 (11), 04022180, DOI: https://doi.org/10.1061/(ASCE)ST.1943-541X.0003474

J193. Wang, M., Li, Y.W., Nagarajaiah, S., Xiang, Y. (2022). Effectiveness and robustness of braced-damper systems with adaptive negative stiffness devices in yielding structures. Earthquake Engineering & Structural Dynamics, 51 (11), 2648-2667, DOI: https://doi.org/10.1002/eqe.3693

J192. Wang, M., Du, X. L., Sun, F. F., Nagarajaiah, S., & Li, Y. W. (2022). Fragility analysis and inelastic seismic performance of steel braced-core-tube frame outrigger tall buildings with passive adaptive negative stiffness damped outrigger. Journal of Building Engineering, 52, 104428. DOI: https://doi.org/10.1016/j.jobe.2022.104428

J191.Wang, M., Sun, F. F., Nagarajaiah, S., & Li, Y. W. (2022). Frequency-dependency/independency analysis of damping magnification effect provided by tuned inerter absorber and negative stiffness amplifying damper considering soil-structure interaction. Mechanical Systems and Signal Processing, 172, 108965 DOI: https://doi.org/10.1016/j.ymssp.2022.108965   (PDF)

J190. Wang, M., Nagarajaiah, S., & Sun, F. F. (2022). A novel crosswind mitigation strategy for tall buildings using negative stiffness damped outrigger systems. Structural Control and Health Monitoring, e2988.   https://doi.org/10.1002/stc.2988   (PDF)

J189. Jana, D., Nagarajaiah, S., & Yang, Y. (2022). Computer vision-based real-time cable tension estimation algorithm using complexity pursuit from video and its application in Fred-Hartman cable-stayed bridge. Structural Control and Health Monitoring, e2985. DOI: https://doi.org/10.1002/stc.2985   (PDF)

J188. Dharap, P., Nagarajaiah, S., & Li, Z. (2022). Geometric nonlinear analysis of large rotation behavior of a curved SWCNT. International Journal of Smart and Nano Materials, 1-14. DOI: https://doi.org/10.1080/19475411.2022.2061077   (PDF)

J187. Meng, W., Bachilo, S.M., Parol, J., Nagarajaiah, S., Weisman, R. B. Near-infrared photoluminescence of Portland cement. Scientific Reports 12, 1197 (2022). DOI: https://doi.org/10.1038/s41598-022-05113-1   (PDF)

J186. Jana, D., Patil, J., Herkal, S., Nagarajaiah, S., & Duenas-Osorio, L. (2022). CNN and Convolutional Autoencoder (CAE) based real-time sensor fault detection, localization, and correction. Mechanical Systems and Signal Processing, 169, 108723. DOI: https://doi.org/10.1016/j.ymssp.2021.108723   (PDF)

J185. Chen, W., Jana, D., Singh, A., Jin, M., Cenedese, M., Kosova, G., Brake, M.R., Schwingshackl, C.W., Nagarajaiah, S., Moore, K.J. and Noël, J.P., (2022). Measurement and identification of the nonlinear dynamics of a jointed structure using full-field data, Part I: Measurement of nonlinear dynamics. Mechanical Systems and Signal Processing, 166, p.108401. DOI: https://doi.org/10.1016/j.ymssp.2021.108401   (PDF)

J184. Jin, M., Kosova, G., Cenedese, M., Chen, W., Singh, A., Jana, D., Brake, M.R., Schwingshackl, C.W., Nagarajaiah, S., Moore, K.J. and Noël, J.P., (2022). Measurement and identification of the nonlinear dynamics of a jointed structure using full-field data; Part II-Nonlinear system identification. Mechanical Systems and Signal Processing, 166, p.108402. DOI: https://doi.org/10.1016/j.ymssp.2021.108402   (PDF)

J183. Jana, D., Nagarajaiah, S., Yang, Y., & Li, S. (2022). Real-time cable tension estimation from acceleration measurements using wireless sensors with packet data losses: analytics with compressive sensing and sparse component analysis. Journal of Civil Structural Health Monitoring, 1-19. DOI: https://doi.org/10.1007/s13349-021-00526-4   (PDF)

J182. Dharap, P., & Nagarajaiah, S. (2021). Tracking of Stiffness Variation in Structural Members Using Input Error Function Observers. Applied Sciences, 11(24), 11857. DOI: https://doi.org/10.3390/app112411857   (PDF)

J181. Huang, C., & Nagarajaiah, S. (2021). Output only system identification using complex wavelet modified second order blind identification method-A time-frequency domain approach. Structural Engineering and Mechanics, 78(3), 369-378. DOI: https://doi.org/10.12989/sem.2021.78.3.369   (PDF)

J180. Bhowmick, S., & Nagarajaiah, S. (2021). Data-Driven Theory-guided Learning of Partial Differential Equations using SimultaNeous Basis Function Approximation and Parameter Estimation (SNAPE). arXiv: https://arxiv.org/abs/2109.07471   (PDF)

J179. Bhowmick, S., & Nagarajaiah, S. (2022). Spatiotemporal compressive sensing of full-field Lagrangian continuous displacement response from optical flow of edge: Identification of full-field dynamic modes. Mechanical Systems and Signal Processing, 164, 108232. DOI:https://doi.org/10.1016/j.ymssp.2021.108232   (PDF)

J178. Sun, L., Sun, J., Nagarajaiah, S., & Chen, L. (2021). Inerter dampers with linear hysteretic damping for cable vibration control. Engineering Structures, 247, 113069. DOI:https://doi.org/10.1016/j.engstruct.2021.113069   (PDF)

J177. Wang, M., Nagarajaiah, S., & Sun, F. F. (2021). Optimal design of supplemental negative stiffness damped outrigger system for high-rise buildings resisting multi-hazard of winds and earthquakes. Journal of Wind Engineering and Industrial Aerodynamics, 218, 104761. DOI: https://doi.org/10.1016/j.jweia.2021.104761   (PDF)

J176. Wang, L., Nagarajaiah, S., Shi, W., & Zhou, Y. (2021). Semi-active control of walking-induced vibrations in bridges using adaptive tuned mass damper considering human-structure-interaction. Engineering Structures, 244, 112743.
 DOI:https://doi.org/10.1016/j.engstruct.2021.112743   (PDF)

J175. Azizi, S., Karami, K., & Nagarajaiah, S. (2021). "Developing a semi-active adjustable stiffness device using integrated damage tracking and adaptive stiffness mechanism". Engineering Structures, *238*, 112036. DOI: https://doi.org/10.1016/j.engstruct.2021.112036   (PDF)

J174. Lai, Z., Mylonas, C., Nagarajaiah, S., & Chatzi, E. (2021). "Structural Identification with Physics-informed Neural Ordinary Differential Equations". Journal of Sound and Vibration, 116196. DOI: https://doi.org/10.1016/j.jsv.2021.116196   (PDF)

J173. Li, Y., Sun, L., Zhang, W., & Nagarajaiah, S. (2021). "Bridge damage detection from the equivalent damage load by multitype measurements". Structural Control and Health Monitoring, 28(5), e2709. DOI: https://doi.org/10.1002/stc.2709   (PDF)

J172. Jana, D., Nagarajaiah, S., (2021). "Computer vision-based real-time cable tension estimation in Dubrovnik cable-stayed bridge using moving handheld video camera". Structural Control Health Monitoring, 28.5 (2021): e2713 DOI: https://doi.org/10.1002/stc.2713   (PDF)

J171. Chen, L., Nagarajaiah, S., & Sun, L. (2021). "A unified analysis of negative stiffness dampers and inerter-based absorbers for multimode cable vibration control". Journal of Sound and Vibration, 494, 115814. DOI: https://doi.org/10.1016/j.jsv.2020.115814 (PDF)

J170. Sun, F. F., Wang, M., & Nagarajaiah, S. (2021). "Multi-objective optimal design and seismic performance of negative stiffness damped outrigger structures considering damping cost". *Engineering Structures*, *229*, 111615. DOI: https://doi.org/10.1016/j.engstruct.2020.111615 (PDF)

J169. Bhowmick, S., Nagarajaiah, S., & Veeraraghavan, A. (2020). "Vision and Deep Learning-Based Algorithms to Detect and Quantify Cracks on Concrete Surfaces from UAV Videos". *Sensors*, *20*(21), 6299. DOI: https://doi.org/10.3390/s20216299 (PDF)

J168. M Wang, S Nagarajaiah, FF Sun (2020), "Dynamic Characteristics and Responses of Damped Outrigger Tall Buildings Using Negative Stiffness," Journal of Structural Engineering 146 (12), 04020273. DOI: https://doi.org/10.1061/(ASCE)ST.1943-541X.0002846 (PDF)

J167. L Wang, S Nagarajaiah, W Shi, Y Zhou (2020) "Study on adaptive-passive eddy current pendulum tuned mass damper for wind-induced vibration control," The Structural Design of Tall and Special Buildings 29 (15), e1793. DOI: https://doi.org/10.1002/tal.1793 (PDF)

J166. S. Bhowmick, S. Nagarajaiah (2020) "Identification of full-field dynamic modes using continuous displacement response estimated from vibrating edge video," Journal of Sound and Vibration, 115657. DOI: https://doi.org/10.1016/j.jsv.2020.115657 (PDF)

J165. S. Bhowmick, S. Nagarajaiah (2020), "Automatic detection and damage quantification of multiple cracks on concrete surface from video," International Journal of Sustainable Materials and Structural Systems, Inderscience Pub., 4 (2-4), 292-311. DOI: https://doi.org/10.1504/IJSMSS.2020.109097 (PDF)

J164. Nagarajaiah, S., Sen, D. (2020) "Apparent-weakening by adaptive passive stiffness shaping along the height of multistory building using negative stiffness devices and dampers for seismic protection," Engineering Structures 220, 110754. DOI: https://doi.org/10.1016/j.engstruct.2020.110754 (PDF)

J163. Bhowmick, S., Nagarajaiah, S., Lai, Z. (2020) "Measurement of full-field displacement time history of a vibrating continuous edge from video," Mechanical Systems and Signal Processing 144, 106847. DOI: https://doi.org/10.1016/j.ymssp.2020.106847 (PDF)

J162. Sun, L., Shang, Z., Xia, Y., Bhowmick, S., and Nagarajaiah, S. (2020). "Review of Bridge Structural Health Monitoring Aided by Big Data and Artificial Intelligence: From Condition Assessment to Damage Detection," Journal of Structural Engineering 146 (5), 04020073. DOI: https://doi.org/10.1061/(ASCE)ST.1943-541X.0002535 (PDF)

J161. Wang, M., Sun, F. F., & Nagarajaiah, S. (2019). Simplified optimal design of MDOF structures with negative stiffness amplifying dampers based on effective damping. The Structural Design of Tall and Special Buildings, *28*(15), e1664. DOI: https://doi.org/10.1002/tal.1664 (PDF)

J160. D Sen, K Erazo, W Zhang, S Nagarajaiah, L Sun, (2019) "On the effectiveness of principal component analysis for decoupling structural damage and environmental effects in bridge structures," Journal of Sound and Vibration, 457, 280-298. DOI: https://doi.org/10.1016/j.jsv.2019.06.003 (PDF)

J159. D Sen, A Aghazadeh, A Mousavi, S Nagarajaiah, R Baraniuk, A Dabak, (2019) "Data-driven semi-supervised and supervised learning algorithms for health monitoring of pipes," Mechanical Systems and Signal Processing 131, 524-537. DOI: https://doi.org/10.1016/j.ymssp.2019.06.003 (PDF)

J158. Y Lei, D Xia, K Erazo, S Nagarajaiah, (2019) "A novel unscented Kalman filter for recursive state-input-system identification of nonlinear systems, "Mechanical Systems and Signal Processing 127, 120-135. DOI: https://doi.org/10.1016/j.ymssp.2019.03.013 (PDF)

J157. M Wang, F Sun, J Yang, S Nagarajaiah, (2019) "Seismic protection of SDOF systems with a negative stiffness amplifying damper," Engineering Structures 190, 128-141. DOI: https://doi.org/10.1016/j.engstruct.2019.03.110 (PDF)

J156. H Zhao, Y Ding, S Nagarajaiah, A Li, (2019) "Longitudinal Displacement Behavior and Girder End Reliability of a Jointless Steel-Truss Arch Railway Bridge during Operation," Applied Sciences 9 (11), 2222. DOI: https://doi.org/10.3390/app9112222 (PDF)

J155. K Erazo, B Moaveni, S Nagarajaiah, (2019) "Bayesian seismic strong-motion response and damage estimation with application to a full-scale seven story shear wall structure," Engineering Structures 186, 146-160. DOI: https://doi.org/10.1016/j.engstruct.2019.02.017 (PDF)

J154. Z Lai, T Sun, S Nagarajaiah, (2019) "Adjustable template stiffness device and SDOF nonlinear frequency response," Nonlinear Dynamics 96 (2), 1559-1573. DOI: https://doi.org/10.1007/s11071-019-04871-4 (PDF)

J153. C Sun, S Nagarajaiah, (2019) "Study of a novel adaptive passive stiffness device and its application for seismic protection," Journal of Sound and Vibration 443, 559-575. DOI: https://doi.org/10.1016/j.jsv.2018.12.015 (PDF)

J152. Z Lai, S Nagarajaiah, (2019) "Semi-supervised structural linear/nonlinear damage detection and characterization using sparse identification," Structural Control and Health Monitoring 26 (3), e2306. DOI: https://doi.org/10.1002/stc.2306 (PDF)

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1/28/2023

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C4. Nagarajaiah, S., Feng, M. Q., Shinozuka, M., and Reinhorn, A. M., "Analysis of bridges with friction controllable sliding isolation systems," Proceedings *Third Workshop on Bridge Engineering*, San Diego, 243-246 (November 1992).

C3. Nagarajaiah, S., Reinhorn, A. M., and Constantinou, M. C., "Uplift restraint for sliding base isolated structures," Proceedings *Third World Congress Joints and Bearings,* Canada, Vol. 2, 1173-1185 (1991).

C2. Nagarajaiah, S., Reinhorn, A. M., and Constantinou, M. C., "Lateral-torsional response of sliding isolated structures," Proceedings *Pacific Conference on Earthquake Engineering*, Auckland, New Zealand, 257-268 (1991).

C1. Nagarajaiah, S., Reinhorn, A. M., and Constantinou, M. C., "Analytical modeling of three dimensional behavior of base isolation devices," Proceedings *Fourth U.S. National Conference on Earthquake Engineering*, Palm Springs, California, Vol. 3, 579-588 (1990).

BOOK CHAPTERS

1. Sen, D. and Nagarajaiah, S. (2018). Data-Driven Approach to Structural Health Monitoring Using Statistical Learning Algorithms. Mechatronics for Cultural Heritage and Civil Engineering (edited by Ottaviano E., Pelliccio A. and Gattulli V.). Springer-Cham.

2. Nagarajaiah, S. and Yang, Y. (2014). Blind identification of output-only systems and structural damage via sparse representation and unsupervised machine learning. Encyclopedia of Earthquake Engineering (edited by Beer, M., Patelli, E., Kougioumtzoglou, I., and Au, I.). Springer-Verlag.

3. Nagarajaiah, S., Basu, B., and Yang, Y. (2014). Output only modal identification and structural damage detection using time frequency & wavelet techniques. Sensor Technology for Civil Infrastructures: Performance Assessment & Health Monitoring (edited by Wang, M., Sohn, H., and Lynch, J.). Woodhead Publishing.

4. S. Nagarajaiah, Basu, B. (2011) "Output only Modal Identification and Structural Damage Detection using Time Frequency & Wavelet Techniques" Sensor Technologies for civil infrastructures: Performance assessment & health monitoring, Edited by Wang, Sohn, Lynch, Woodhead Publishing.

5. S. Nagarajaiah, (2011) "Seismic Isolation of Structural Systems," Earthquake Engineering, Edited by Sashi Kunnath, Eolss Publishers Co Ltd.

6. Nagarajaiah, S., and Narasimhan, S. (2007) "Optimal Control of Structures," Handbook on Optimization of Structural and Mechanical Systems, Edited by J. S. Arora, World Scientific Publishing/Imperial College Press ISBN 978-981-256-962-2 / 981-256-962-6.

TECHNICAL REPORTS

TR9. Attary, N., Symans, M., Nagarajaiah, S., Reinhorn, A. M., Constantinou, M. C., Sarlis, A. S., Pasala, D. T. R., Taylor, D., "Seismic Protection of Highway Bridges with Negative Stiffness Device," Report No. MCEER-13-0013, Multidisciplinary Center for Earthquake Engineering Research, SUNY, Buffalo, New York (2014).

TR8. Pasala, D. T. R., Sarlis, A. A. S., Nagarajaiah, S., Reinhorn, A. M., Constantinou, M. C., Taylor, D., "Seismic Response Control of Structures Using a Novel Adaptive Passive Negative Stiffness Device," Report No. MCEER-13-0004, Multidisciplinary Center for Earthquake Engineering Research, SUNY, Buffalo, New York (2013).

TR7. Sarlis, A.A., Pasala, D.T.R., Constantinou, M.C., Reinhorn, A.M., Nagarajaiah, S., and Taylor, D. "Negative stiffness device for seismic protection of structures," Report No. MCEER-13-0005, Multidisciplinary Center for Earthquake Engineering Research, SUNY, Buffalo, New York (2013).

TR6. Nagarajaiah, S, and Sun, X., "Response of base isolated buildings during the 1994 Northridge earthquake," Rice Technical Report 51, to California Strong Motion Instrumentation Program, (1999).

TR5. Reinhorn, A.M., Nagarajaiah, S., Constantinou, M.C., Tsopelas, P.C., and Renfen, L., "3D-BASIS-TABS Version 2.0: A computer program for nonlinear dynamic analysis for three-dimensional base isolated structures," Report No. NCEER-94-0018, National Center for Earthquake Engineering Research, SUNY, Buffalo, New York (1994).

TR4. Nagarajaiah, S., Li, C., Reinhorn, A. M., and Constantinou, M. C., "3D-BASIS-TABS: A computer program for nonlinear dynamic analysis for three-dimensional base isolated structures," Report No. NCEER-93-0011, National Center for Earthquake Engineering Research, SUNY, Buffalo, New York (1993).

TR3. Tsopelas, P., Nagarajaiah, S., Constantinou, M. C., and Reinhorn, A. M., "3D-BASIS-M: Nonlinear dynamic analysis of multiple building base isolated structures," Report No.

NCEER-91-0014, National Center for Earthquake Engineering Research, SUNY, Buffalo, New York (1991).

TR2. Nagarajaiah, S., Reinhorn, A. M., and Constantinou, M. C., "3D-BASIS: Nonlinear dynamic analysis of three-dimensional base isolated structures - Part II," Report No. NCEER-91-0005, National Center for Earthquake Engineering Research, SUNY, Buffalo, New York (1991).

TR1. Nagarajaiah, S., Reinhorn, A. M., and Constantinou, M. C., "Nonlinear dynamic analysis of three dimensional base isolated structures (3D-BASIS)," Report No. NCEER-89-0019, National Center for Earthquake Engineering Research, SUNY, Buffalo, New York (1989).

BOOKS

1. Loh, K. and Nagarajaiah, S. "**Innovative Developments of Advanced Multifunctional Nanocomposites in Civil and Structural Engineering**," *Elsevier, Woodhead Publishing* 2016.

2. Cimellaro, G. P., Nagarajaiah, S., and Kunnath, S. "**Computational Methods in Seismic Protection, Hybrid Testing and Resilience in Earthquake Engineering,"** *Springer, Geotechnical, Geological and Earthquake Engineering Book Series*, 2015.

PATENTS

LINK TO ALL PATENTS @ Google Patents

P4. Non-contact strain sensing of objects by use of single-walled carbon nanotubes RB Weisman, PA Withey, SM Bachilo, S Nagarajaiah, VSM Vemuru US Patent 9,255,853, 2016. US Patent approved in 2015--to be granted in 2016. International Patent Publication "Noncontact Strain Sensing of Objects by use of Single Walled Carbon Nanotubes," "Smart Skin," December 2013, WO 2013/184212 A2.

P3. Negative Stiffness Device and Method with MC Constantinou, AM Reinhorn, AA Sarlis, D Taylor, DA Lee, DTR Pasala, US Patent 8,857,110 B2, 10/14/2014.

P2. Smart materials, strain sensing, and stress determination by means of nanotube sensing systems, composites, and devices, U.S. Patent 7,730,547, 2010, with Barrera, E., Dharap, P., and Li, Z.,—Licensed by NanoRidge Materials Company

P1. Structural Vibration Damper with Continuously Variable Stiffness, US Patent No. 6,098,969, Aug. 8, 2000.

PROFESSIONAL/TECHNICAL COMMITTEE SERVICE

ASCE Service

- Satish Nagarajaiah has served for the last three decades. He is a <u>2021 Distinguished Member</u>, <u>Fellow of ASCE</u> since 2017, and a <u>fellow of Structural Engineering Institute</u> (SEI) of ASCE since 2012. He served on the <u>board of governors of ASCE SEI from 2015-2019</u> and on the <u>Technical Activities Division Executive Committee from 2006-2012 and again from 2015-2019</u>. He served as <u>Managing Editor</u>, <u>Journal of Structural Eng., ASCE, 2011-2018</u>. He has founded and chaired numerous committees in SEI, and EMI listed below.

- 15 –19, <u>Member, Board of Governors, ASCE Structural Engineering Institute</u>
- 15 –19, Member, Technical Activities Division, TAD-ExCom, ASCE Struct. Eng. Inst.
- 16—19, Member, Walter Huber Award Committee, ASCE
- 11 – 16, Member, ASCE Structural Engineering Institute, Awards Committee
- 10 - 12, Past Chairman, Executive Committee, Technical Activities Division, TAD-ExCom, SEI, ASCE
- 09- 10, <u>Chairman, Executive Committee, Technical Activities Division</u>, TAD-ExCom, SEI, ASCE
- 08 – 09, Vice Chairman, Executive Committee, Technical Activities Division, TAD-ExCom, SEI, ASCE
- 07 – 08, Secretary, Executive Committee, Technical Activities Division, TAD-ExCom, SEI, ASCE
- 06 – 07, Member, Executive Committee, Technical Activities Division, TAD-ExCom, SEI, ASCE
- 04 – 06, <u>Founding Chairman, New Technical Committee on Structural Health Monitoring and Control, Eng. Mechanics Institute</u>, ASCE
- 04 – 05, Chairman, Task Group Benchmark Problems, ASCE, International Association of Structural Control and Health Monitoring
- 98-02, <u>Chairman, Technical Committee on Structural Control and Sensing</u>, SEI., ASCE
  Other service within ASCE:

02–06	Member	Publications Admin. Com. ASCE Journal of Structural Engineering
00-08	Member	Technical Comm. on Dynamics, Eng. Mechanics Division, ASCE
95-02	Member	Structural Control Committee, Structural Eng. Inst., ASCE
95-03	Member	Methods of Analysis Committee, Structural Eng. Inst., ASCE
95-02	Member	Control Group Member, ASCE, Structural Control Committee
95-02	Member	ASCE, Standards Committee on Testing of Base Isolation Systems
95-01	Vice Chair	Subcommittee on Base Isolation, ASCE, Seismic effects committee
95-01	Member	Seismic Effects Committee, Structural Eng. Inst., ASCE
94-98	Director	New Madrid Chapter of Earthquake Engineering Research Institute

90-93 Member   Structural Engineers Association of Southern California

Other Organizations Service

02 – 06 President   U.S. Panel of International Association of Structural Control and Monitoring

PROFESSIONAL SOCIETY MEMBERSHIP

American Society of Civil Engineers (ASCE)
American Society of Mechanical Engineers (ASME)
American Institute of Aeronautics and Astronautics (AIAA)
Earthquake Engineering Research Institute (EERI)
International Association of Structural Control and Health Monitoring (IASCM)
International Joints and Bearings Research Council (IJBRC)
Indian Institution of Engineers (IIE)

CONFERENCE SCIENTIFIC COMMITTEES

2023	Member (Int.Sc.Adv.Com)	NODYCON 2023, Rome, Italy
2022.	Member (Int.Sc.Adv.Com)	CIMTECH, 7th International Conference Smart and Multifunctional Materials, Structures and Systems
2022	Member (Int.Sc.Adv.Com)	NODYCON 2022, Rome, Italy
2021	Member (Int.Sc.Adv.Com)	NODYCON 2021, Rome, Italy
2020	Member (Int.Sc.Adv.Com)	EURODYN 2020, Athens, Greece
2019	Member (Int.Sc.Adv.Com)	SHMII-9, St. Louis, Missouri
2018	Member (Int.Sc.Adv.Com)	7th International Conference on Structural Control Health Monitoring, Qingdao, China
2016	Member (Int.Sc.Adv.Com)	ACEM 2016 Congress (The World Congress on Advances in Civil, Environmental, and Materials Research), Int. Assn. Of Structural Engineering and Mechanics, Korea
2016	Member (Int.Sc.Adv.Com)	CIMTECH, 5th International Conference Smart and Multifunctional Materials, Structures and Systems
2015	Member (Int.Sc.Adv.Com)	CIMTECH, 4th International Conference Smart and Multifunctional Materials, Structures and Systems
2014	Member (Int.Sc.Adv.Com)	ACEM 2014 Congress (The World Congress on Advances in Civil, Environmental, and Materials Research), Int. Assc. Of Structural Engineering and Mechanics, Korea

2014	Member (Int.Sc.Adv.Com)	Six World Conference on Structural Control and Monitoring, Barcelona.
2014	Co-Chairman (Tech. Program Com).	Seventh ISSS International Conference on Smart Materials Structures & Systems (ISSS 2014)
2013	Advisory Board Mbar	7th International SHM Conference, ISHMII 2013, Hong Kong, China
2013	Member	10th International Conference on Damage Assessment of Structures--DAMAS
2012	Co-Chair	ANCRiSST 7th Int. Workshop, IISc, Bangalore, 2012
2012	Co-Chair	Asia Pacific Summer School on Smart Structures, IISc, Bangalore, 2012
2011	Member	Int. Committee, ANCRiSST 6th Int. Workshop, Dalian, China, 2011
2011	Member	Asia Pacific Summer School Smart Structures,Tongji Univ., China, 2011
2010	Member	Steering Committee: ASCE Earth and Space Conf. 2010, Hawaii
2009	Member	Steering Committee: ANCRiSST 5th Int. Workshop, Boston, 2009
2009	Member	Steering Committee: ASCE Structures Congress 2009, Austin
2008	Member	IASCM Committee, 5 International Workshop on Structural Control and Monitoring, Dalian, China
2006	Member	Scientific Committee, Fourth World Conf. on Structural Control, UCSD, International Assoc. of Structural Control and Health Monitoring
2006	Member	Steering Committee, Analysis & Computation, Structures Congress 2006, St. Louis, MO
2005	Member	Scientific Committee, Structural Engineering Convention, Indian Institute of Science, India
2004	Chairman	Structural Control WG, Fourth International Workshop Structural Control, International Assoc. of Structural Control & Health Monitoring
2002	Member	Scientific Committee, Seventh U.S. National Conf. on Earthquake Engineering, Earthquake Engineering Research Institute
1999	Member	Steering Committee, Mid America Highway Seismic Conf., FHWA

CONFERENCE SESSION ORGANIZATION

Structures Congress April 2019	Chairman, First Interdisciplinary Tech Summit: Resilience of Infrastructure Systems
Eng. Mech. Conf. June 2017	Co-Chairman, Structural Identification and Damage Detection
Structures Congress Feb 2016	Chairman, Session on Innovative Seismic Protection Systems
6WCSCM July 2014	Chairman, Multiple sessions and two Mini Symposia.
ISHMII Dec 2013	Chairman, Session on Structural Health Monitoring (Also, sessions on system identification).
DAMAS July 2013	Chairman, Session on Structural Health Monitoring (Also, sessions on system identification).
ANCRiSST July 2012	Chairman, Keynote Session on Structural Health Monitoring (Also, sessions on Energy Harvesting and Struct. Health Monitoring).
Structures Congress March 2012	Chairman, Keynote Session of Analysis and Computation Specialty Conference

1/28/2023

ANCRiSST   Chairman, Keynote /Plenary Session
July 2011

5WCSCM   Chairman, Co-Chair for Six Sessions
July 2010   5th World Conference in Structural Control and Monitoring

SPIE   Co-Chairman, Response Control of Structures,
March 2009   SPIE Smart Structures Conference, San Diego, CA

CIMTEC   Chairman, Structural Health Monitoring and Damage Detection
June 2008   Third World CIMTEC conference on Smart Structures and Materials,
                                Sicily, Italy

5CUEE   Chairman, Structural Control and Monitoring
March 2008   5th International Symposium Center for Urban Earthquake Eng,
                                Tokyo Institute of Tech., Tokyo

4WCSCM   Chairman, Analytical Studies in Structural Health Monitoring II
July 2006   4TH World Conf. on Structural Control and Monitoring, San Diego

4WCSCM   Chairman, Smart Tuned Mass Dampers
July 2006   4TH World Conf. on Structural Control and Monitoring, San Diego

USNCTAM   Chairman, Structural Health Monitoring I
May 2006   15th U.S. National Congress on Theoretical and Applied Mechanics
                                Boulder

USNCTAM   Chairman, Structural Health Monitoring II
May 2006   15th U.S. National Congress on Theoretical and Applied Mechanics
                                Boulder

SPIE   Co-Chairman, Structural Control I
Feb. 2006   San Diego

SHMII -2   Co-Chairman, Damage Identification and Localization III
Nov. 2005   Shenzhen, China

McMat   Co-Chairman, Highway Bridge Benchmark Problem
June 2005   ASCE/ASME Conf., New Orleans

3ICEE   Chairman, Seismic Analysis of Bridges
October 2004   3rd Int. Conf. on Earthquake Eng., Nanjing, China.

US-Korea Workshop   Chairman, Structural Health Monitoring
September 2004   US – Korea Smart Structures Workshop, Seoul Korea.

Eng. Mechanics Conf.   Chairman, Smart Base Isolated Benchmark Problem
U Delaware, Newark, June 2004   ASCE, 17th Eng. Mech. Conf.

Eng. Mechanics Conf.   Chairman, Structural Health Monitoring I
U Delaware, Newark, June 2004   ASCE, 17th Eng. Mech. Conf. (With Prof. Johnson, USC)

Eng. Mechanics Conf.   Co-chairman, Structural Health Monitoring III
U Delaware, Newark, June 2004   ASCE, 17th Eng. Mech. Conf.

Eng. Mechanics Conf. UW, Seattle, July 2003	Chairman, Smart Base Isolated Benchmark Problem ASCE, 16th Eng. Mech. Conf.
ICANCEER August 2002	Co-chairman, Structural Control I, Int. Conf. of Asia Pacific Centers of Hong Kong, Earthquake Eng. (With Prof. Masri, University of Southern California)
7USNCEE 2002	Co-chairman, Smart Materials and Structures, 7 US National Conf. on Boston, June Earthquake Eng. (With Prof. Gavin, Duke University)
3WCSC Italy, April 2002	Co-chairman , Semiactive Seismic Isolation, 3rd World Conf. on Structural Como, Control (With Prof. Gavin, Duke University)
MMC Conf. San Diego, CA, May 2001	Co-chairman, Structural Control I: Smart structural systems and devices, Materials&Mech. Conf. (With Prof. Johnson, Univ. of Southern California)
ICOSSAR Conf. Newport Beach, CA, May 2001	Co-chairman, Probabilistic System Identification, Int. Conf on Struct. Safety and Reliability (With Prof. Beck, Caltech)
VETOMAC, IISc Bangalore, India, Oct. 2000	Chairman, Random/Nonlinear Vibrations, Vibrations and Machines Conf.
EMD Conf. UT Austin, TX, May 2000	Co-chairman, Experimental Studies on Semi-active Structural Control ASCE, Eng. Mechanics Conf. (With Prof. Gavin, Duke University)
EMD Conf. UT Austin, TX, May 2000	Co-chairman, Analytical Studies on Semi-active Structural Control ASCE, Eng. Mechanics Conf. (With Prof. Gavin, Duke University)
EMD Conf. UT Austin, TX, May 2000	Co-chairman, Structural Control of Asymmetric and Flexible Buildings ASCE, Eng. Mech Conf. (With Prof. Johnson, Univ.of Southern California)
Structures Congress San Francisco, CA, April 1998	Chairman, Session on Smart Materials and Structures ASCE Structures Congress
Structures Congress Portland, WA, April 1997	Co-Chairman, Session on Semi-active and Hybrid Control, ASCE (with Professor Bill Spencer, Univ. of Illinois-Urbana)
Structures Congress Portland, WA, April 1997	Chairman, Session on Current Issues in Seismic Isolation and damping systems – I, ASCE
Structures Congress Portland, WA, April 1997	Chairman, Session on Current Issues in Seismic Isolation and damping systems – II, ASCE
Second US/Japan Workshop on Earthquake Protective Systems for Bridges, Tsukuba, Japan, December, 1992	Co-Chairman Session on Design of Seismic Isolation Systems (with Prof. Tokida)

REVIEW ACTIVITIES

<u>National and International Review Panels and Mail in Reviews</u>

Proposals	National Science Foundation
	European Science Foundation
	University of Missouri, Research Board
	Mid-America Transportation Research Center
	Multidisciplinary Center for Earthquake Engineering
Papers	Science Advances, AAAS
	Proceeding of National Academies of Sciences
	Proceedings of Royal Society
	Journal of Structural Engineering, ASCE
	Journal of Engineering Mechanics, ASCE
	Journal of Vibration and Acoustics, ASME
	Journal of Vibration and Control
	AIAA Journal, AIAA
	Journal of Applied Mechanics, ASME
	Journal of Aerospace Engineering, ASCE
	Earthquake Engineering and Structural Dynamics
	Earthquake Spectra
	Journal of Computer Aided Civil and Infrastructure Engineering
	Journal of Microcomputers in Civil Engineering
	Journal of Earthquake Engineering
	Journal of Engineering Structures
	Journal of Probabilistic Engineering Mechanics
	International Journal of Nonlinear Mechanics
	International Journal of Structural Health Monitoring
	International Journal of Structural Engineering and Mechanics
	Computer Methods in Applied Mechanics and Engineering
	IEEE Journals
	Structural Control and Health Monitoring
	Mechanical Systems and Signal Processing
	International Journal of Solids and Structures
	Canadian Journal of Civil Engineering
	International Journal of Intelligent Material Systems and Structures
	Structure and Infrastructure Engineering
	Journal of Smart Structures and Systems
	Nanotechnology Journal
	Smart Systems and Structures
	Smart Materials and Structures
	Structural Monitoring and Maintenance

Plenary/Keynote (20), Distinguished (5), Invited Lectures

August 17, 2022	ACEM22-Structures22, Int. Conf., Korea	Keynote Lecture
Nov 19, 2021	Bayer Dist. Lecture, Univ. of Houston, CEE	Distinguished Lecture
August 29, 2020	ACEM20-Structures20, Int. Conf., Korea	Keynote Lecture

Feb 12, 2020	Int. Modal Anal. Conf. XXXVIII, Houston	Semi Keynote Lecture
Sept 6, 2019	Int. Conf. Expt. Vib. Analy. EVACES, China	Keynote/Invited Lecture
Nov 14, 2018	MIT	Invited Lecture
Nov 8, 2018	Caltech	Invited Lecture
August 29, 2018	ACEM18-Structures 18, Int. Conf., Korea	Keynote Lecture
July 24, 2018	7th World Conf. Struc. Control Health Monitoring,	
	Qingdao, China	Plenary/Keynote Lecture
June 21, 2018	Tsinghua Univ. CEE	Invited Lecture
June 20, 2018	WTC conference, Beijing, China	Plenary Lecture
March 14, 2018	Northwestern Univ. CEE	Invited Lecture
Oct 30, 2017	Northeastern Univ. CEE	Distinguished Lecture
Sept 13, 2017	EURODYN conf., Rome, Italy	Semi-Plenary Lecture
Aug 11, 2017	3 Huixian Intl. F. Ear. Eng., UIUC	Plenary/Keynote Lecture
July 18, 2017	Yokohama National Univ.	Invited Lecture
July 13, 2017	Harbin Inst. of Tech.	Invited Lecture
March 7, 2017	Univ. of Western Ontario	Distinguished Lecture
Nov 24, 2016	Hong-Kong Poly Tech.	Invited Lecture
Nov 10, 2016	Link Lab, University of Virginia	Invited Lecture
August 29, 2016	ACEM16, Structures 16, Int. Conf., Korea	Keynote Lecture
June 26, 2016	Cambridge University	Invited Lecture
August 24, 2015	Georgia Institute of Technology CEE	Distinguished Lecture
Nov 8, 2015	Carnegie Mellon University CEE	Invited Lecture
Nov 6, 2015	University of Pittsburg CEE	Invited Lecture
July 8, 2014	7 Intl. Conf. Smart Struc., IISc, Bangalore	Plenary/Keynote Lecture
March 28, 2014	Warren Lecture, Univ. of Minnesota	Distinguished Lecture
March 17, 2014	NEES/EERI National Webinar	EERI/NEES Lecture
Feb. 6, 2014	Princeton University	Invited Lecture
July 8, 2013	DAMAS 2013, Trinity College, Dublin	Plenary/Keynote Lecture
April 22, 2013	University of Illinois, Urbana-Champaign	Invited Lecture
Nov 7, 2012	Stanford University	Invited Lecture
Nov 6, 2012	University of California, Davis	Invited Lecture
Nov 5, 2012	University of California, Berkeley	Invited Lecture
Oct 11, 2012	SUNY-Buffalo, NY	MCEER/EERI/NEES Lecture
Oct 10, 2012	SUNY-Buffalo, NY	Invited Lecture (Mechanical)
Sept 16, 2012	Int. Conf. on Advances in Inf. Eng. China	Plenary/Keynote Lecture
Sept 14, 2012	Hong Kong Polytechnic, China	Invited Lecture
July 28, 2012	ANCRiSST 2012 (IISc, Bangalore)	Plenary/Keynote Lecture
July 14, 2012	National University of Singapore	Invited Lecture
July 03, 2011	Tongji University, Shanghai, China	Invited Lecture
July 15, 2010	5th World Conf. Struct. Contrl. Monit., Japan	Plenary/Keynote Lecture
Nov 9, 2008	University of Michigan, MI	Invited Lecture
Nov. 4, 2007	Structural Eng. World Congress, Bangalore	Plenary/Keynote Lecture
Sept. 14, 2007	Trinity College, Dublin	Invited Lecture
July 26, 2007	Univ. of Tokyo, Japan	Invited Lecture
Dec. 16, 2005	Struct. Eng. Convention (SEC-2005)	
	Indian Institute of Science, Bangalore, India	Plenary/Keynote Lecture
Nov. 15, 2005	Japan Society of Promotion of Science	Keynote Lecture
Nov. 14, 2005	Kajima Res. Institute, Tokyo	Keynote Lecture
Sept. 3, 2004	US-Korea Workshop, Seoul, Korea	***Keynote Lecture***

Sept. 24, 2004	Caltech, Pasadena	Invited Lecture
August 31, 2004	Korean Advanced Institute of Tech.	Invited Lecture
April 5, 2002	3rd World Conf. on Structural Control	***Keynote Lecture***
July 23, 2001	Intl. Civil Eng. ICCE-2001, B'lore, India	**Plenary/*Keynote Lecture***

1/28/2023