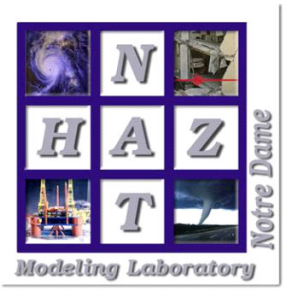
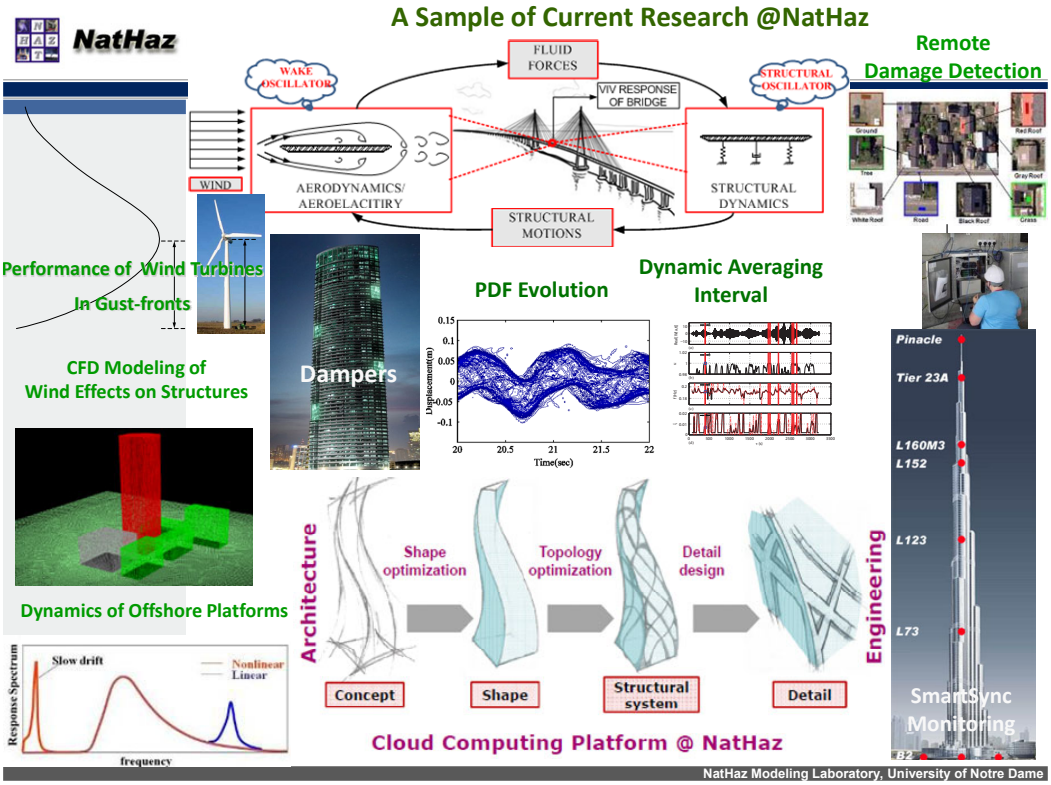
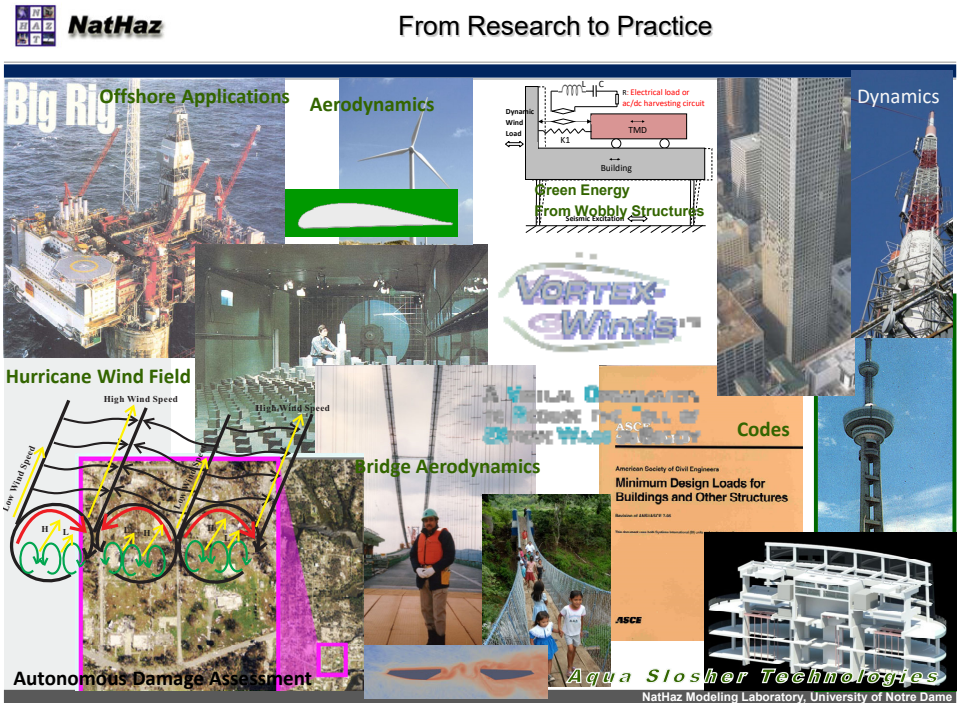
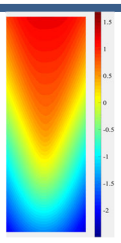
CURRICULUM VITAE

Ahsan Kareem, **Dist. MASCE, NAE**
NatHaz Modeling Laboratory
156 Fitzpatrick Hall
University of Notre Dame
Notre Dame, IN 46556
https://nathaz.nd.edu/
https://en.wikipedia.org/wiki/Ahsan_Kareem
kareem@nd.edu



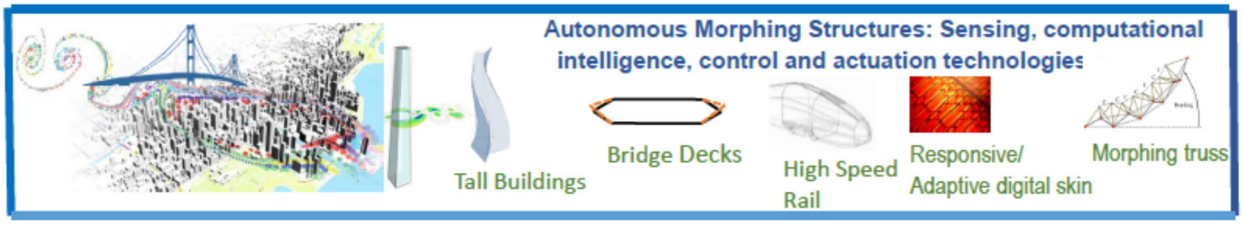






Fusion of computations, stochastics and machine learning

Fusion of computations, stochastics and machine learning addressing the next frontiers at ***NatHaz***. Left: evolution of predicted pressure distribution on the face of a tall building under winds using Bayesian Neural Network trained on tiny data set



EDUCATION

Ph.D., Civil Engineering (Structural Engineering and Fluid Dynamics), Colorado State University, December 1978.

M.Sc., Civil Engineering (Structural Engineering), the University of Hawaii with joint program at MIT, June 1975.

B.Sc., Civil Engineering, with Distinction, (Structural Engineering), W. Pakistan University of Engineering and Technology, May 1968 (Valedictorian)

PROFESSIONAL EXPERIENCE

2002-Present	Robert M. Moran Professor of Engineering, Department of Civil Engineering and Geological Sciences, University of Notre Dame
1999-02	Robert M. Moran Professor and Chair, Department of Civil Engineering and Geological Sciences, University of Notre Dame
1990-99	Professor, Department of Civil Engineering and Geological Sciences, University of Notre Dame
1990	Visiting Professor, University of Tokyo, Tokyo, Japan
1990-1992	Adjunct Professor, Department of Civil Engineering, University of Houston
1989-1990	Professor and Director Structural Aerodynamics and Ocean Systems Modeling Laboratory (SAOSML), Department of Civil Engineering, University of Houston
1984-1989	Associate Professor and Director, SAOSML, Department of Civil Engineering, University of Houston
1988-1990	Lecturer, Department of Civil Engineering, Rice University
1978-1984	Assistant Professor, Department of Civil Engineering, University of Houston
1977-1978	Research Associate (Research Faculty), Department of Civil Engineering, Colorado State University
1973-1977	Graduate Research and Teaching Assistant, Colorado State University
1971-1973	Graduate Student, University of Hawaii and Massachusetts Institute of Technology
1968-1971	Design Engineer, Harza Engineering Company International

TECHNICAL EXPERTISE

Engineering for resilient civil infrastructure under extremes in natural hazards

The mission of NatHaz is to quantify load effects caused by various natural hazards on civil infrastructure and to develop innovative strategies to mitigate and manage their effects on civil infrastructure for resilience. The group's body of work has considered the impacts of wind, waves and earthquakes on a broad range of civil infrastructures such as tall buildings, long-span bridges, offshore structures, wind turbines and support systems and other structures. NatHaz focuses on better quantifying load effects due to natural hazards, the ensuing structural response and strategies of mitigating their adverse effects engaging the full spectrum of computational simulation tools, advanced data sciences, laboratory experiments, and in situ full-scale observations. Recent interests have expanded to include developments in cyberspace involving virtual organizations, crowdsourcing, citizen engineering, citizen sensing, computational intelligence, sensing and actuation, web-enabled analysis and design, scientific machine learning (SciML), AutoTSC (time series classification using AutoML) and cloud-based computing. The NatHaz Modeling Laboratory is directed by Dr. Ahsan Kareem. The following is a summary of subtopics that address some of the key issues in engineering for resilient infrastructure under extremes in natural hazards.

Fluid-Structure Interactions/Aeroelasticity/Hydroelasticity/Turbulence

Fundamental contributions in the area of fluid-structure interactions, aeroelasticity, bluff-body aerodynamics hydrodynamic load effects and turbulence.

Examples:

- Aerodynamics of prismatic 2-D and 3-D static and oscillating prisms of varying aspect ratios and the role turbulence utilizing wind tunnel modeling and CFD
- Modeling of spatio-temporal pressure fields around 3-D prisms in boundary layer flows
- Aeroelasticity of prismatic structures, Vortex-Induced Vibrations (VIV) and Galloping
- Buffeting and flutter of long-span bridge decks
- Non-linear flutter, the role of turbulence on flutter and post flutter analysis
- Developed a novel unified reduced-order model for flutter-buffeting, VIV, Rain induced vibration utilizing Volterra kernels
- Shape optimization of bluff structures to minimize aerodynamic loads utilizing CFD embedded with gradient and surrogate-based optimization schemes
- Topology optimization of bridge decks and high-rise building structural systems
- Schemes for analysis, modeling and simulation of non-stationary (transient), non-Gaussian and non-linear features inherent to extreme loading events
- Characterization of turbulence features in land falling and over the ocean hurricanes/typhoons and downburst events on land, i.e., turbulence intensity and scales, spectral description and flow-field kinematics. Identification of low-level rolls in land falling hurricanes/typhoons responsible for localized heavy damage with spatial periodicity

Dynamic Wind Load Effects

Developed prediction methods for evaluating the response of tall buildings; long-span cable-supported bridges; complaint offshore structures under extreme environments and service loads.

Examples:

- Developed advanced analysis framework for coupled response analysis of building utilizing synchronous multi-point pressure measurement (SMPM) system or high-frequency base balance (HFBB) derived data and pointed out and corrected the common problem with recent wind tunnel practice in combining modal contribution using earthquake engineering-based CQC method as unlike earthquake loads components the wind loads components are partially correlated (**Buildings Dynamic Analysis).**
- Developed a new framework for equivalent static wind loads (ESWL) on buildings including coupled cases and bridges based on HFBB and SMPM **(Buildings and Bridges Analysis)**
- Developed advanced coupled flutter and buffeting response analysis framework for long-span bridges that take into account nonlinearities of both aerodynamic and structural origins. **(Long-Span Bridges Dynamic Analysis).**
- Developed nonlinear bridge flutter analysis schemes. **(Long-Span Bridges Dynamic Analysis)**
- Unveiled underlying mechanisms in multi-modal coupled flutter through curve veering analysis of eigenvalues and vectors and developed closed-form solutions. **(Dynamics of Long-span Bridges).**
- Developed a closed-form formula for estimating critical flutter wind speed of generic long-span bridges that not only provides, for the first time, a theoretical basis of the well-known empirical "Selberg's formula", which is limited to bridges with flat plate sections but also serves as its important extension to commonly used bridge deck sections **(Bridge Design)**.
- Experimentally measured for the first time the spatial correlation of self-excited forces which plays a major role in flutter estimation and cataloged the influence of turbulence on the correlation **(Long-Span Bridges/ Experimental)**.
- Introduced verification of in-situ behavior via full-scale monitoring of tall buildings using advanced technologies such as GPS and networked sensors, to validate design procedures. Developed ***SmartSync*** technologies to monitor real-time dynamics of some of the tallest structures in the world in real-time **(Full-Scale Monitoring of Dynamic response)**
- Conducted and/or investigated hurricane-induced damage to high-rise cladding/envelope in Hurricanes: Alicia; Andrew; York; Katrina, Ike and established wind speed damage correlation **(Hurricanes & Structures)**
- Developed physical bench top facility involving a multi-fan wind tunnel for the generation of gust front winds. Developed an improved understanding of transient loads and their quantification through experiments and data-driven models. **(Gust Fronts/ Load Effects).**

- Established the need and significance of the dynamic response of offshore structures to wind loads and developed an analysis framework starting with the first paper at OTC in 1980 **(Offshore Structures)**
- Developed models for dynamic wind load effects on structures: Towers, Chimneys, wind turbines, solar cells, (**Other Structures)**

Dynamic Wave Load Effects

Contributed to a wide range of topics in the areas of offshore dynamics.

Examples:

- Established in the mid-eighties a systematic analysis procedure for compliant offshore platforms (TLPs) subjected to the simultaneous action of wind, waves and current loads including hull and tethers coupled dynamics involving nonlinearities of aerodynamic, hydrodynamic and structural origins in both time and frequency domain **(Dynamics of Coupled Systems)**.
- Advanced the frequency domain approach for these complex nonlinear systems, a first in the offshore industry that captured all significant nonlinear effects, e.g., drag induced, diffraction, drift and splash zone load effects at the instantaneous position of the platform utilizing equivalent "quadratization" and "cubicization" **(Dynamics of Deepwater Offshore Platforms)**.
- Dynamic load effects on wind turbines
- Utilized tri-variate Hermite polynomials in tandem with Volterra series expansion to model these load effects along with an innovative feedback approach to correct for the instantaneous position of the platform in both time and frequency domains. **(Non-linear Random Vibration)**.
- Developed schemes for the diffraction of nonlinear random waves by circular cylinders and attendant load effects **(Wave Dynamics)**.
- Developed fundamental understanding and models for the "Ringing" response of TLPs **(Non-linear Random Vibration)**.
- Modeling the dynamics of nonlinear systems with symmetric and asymmetric nonlinearities utilizing Volterra Systems **(Non-linear Random Vibration)**.
- Analysis of nonlinear systems under deterministic and stochastic excitations utilizing attractors in phase space via Poincare mapping to delineate signatures of chaotic and periodic motions **(Non-linear Random Vibration)**.
- Modeling of non-linear systems utilizing Volterra Systems and innovative schemes for the identification of Volterra kernels **(Non-linear Random Vibration)**
- Modeling of floating wind turbines in wind and wave environment.

Damping Systems and Motion Control

Developed various motion control systems with applications to tall buildings and towers

Examples

- Developed passive semi-active and active strategies for mitigating structural motions through developments in control algorithms, e.g., model predictive control **(Motion Control).**

- Designed sloshing dampers for Knightsbridge Tower in Manila and Dallas Museum Tower in Dallas and validated their performance through "Hardware-in-the-loop" experiments and in full-scale (**Damping Systems**)
- Developed semi-active or adaptive tuned liquid column damper systems (**Damping Systems**)
- Developed a detailed analogy of nonlinear sloshing of fluid-filled tanks used as dampers at higher amplitudes in terms of sloshing and slamming utilizing a linear and an impact damper, where the hardening effects are explained by the transition of fluid from sloshing mode to periodic impact. **(Non-linear Dynamics)**
- Regenerative dampers for harvesting energy from TMDs (**Energy Harvesting)**

System Identification/Structural Health Monitoring

Developed efficient SI schemes using advanced methods and easy to use practical application web enabled apps.

Examples

- Developed wavelet-based system identification for engineering structures **(System Identification).**
- Delineated the efficacy of Hilbert and wavelet transforms in signal processing, system behavior analysis, extraction of signal embedded in noise and nonlinear signal analysis **(Time-Frequency Analysis)**.
- Development of "Dynamic Load Simulator" with multiple actuators capable of inducing correlated loads; conducted "Hardware-in-the-loop" experiments to physically model nonlinear components and interface them with a computational model of the remaining system **(Advanced Hybrid Simulation)**.
- Developed system identification using transformed singular value decomposition/principle component analysis in time-frequency domain **(Identification of Non-Stationary Data/Damping/Frequency)**.
- Developed Blind Source Separation-based system identification for non-stationary systems in the time-frequency domain **(Identification of Non-Stationary Data/Damping/Frequency)**.
- Real-time damping, frequency and mode shape identification. **(Advanced SI Techniques)**

Simulation/Computational Methods/Stochastic Mechanics

Developed efficient simulation schemes for random vector processes: stationary/non-stationary; Gaussian/Non-Gaussian; Conditional/Un-Conditional utilizing spectral and time-series methods in conjunction with a novel scheme named "Stochastic Decomposition."

Examples

- Developed efficient Monte-Carlo-based simulation schemes for the uni-variate, multi-variate and multi-dimensional Gaussian stationary and non-stationary processes **(Simulation).**
- Developed ARMA system modeling and simulation in wind effects **(Simulation).**

- State-Space Modeling of combined buffeting and self-excited effects of bridges **(Simulation)**.
- Introduced "spectral correction" method that has led to subsequent developments by many others for the simulation of non-Gaussian unconditional, conditional multi-variate and random fields including, e.g., pressure fluctuations on structures, random ocean waves and soil moisture contents**(Non-Gaussian Simulations).**
- Utilized innovative wavelet-based scheme and Hilbert transform nested with POD for the simulation of gust front winds and earthquakes **(Gust Fronts and earthquakes)**
- Developed system identification of transient systems **(System ID)**
- Introduced the Large Eddy Simulation (LES) Scheme for simulating numerically flow around and its load effects on prismatic building **(CFD)**.
- Developed High-Order time-frequency domain analysis using wavelets to capture transient nonlinear relationships between two measured processes like turbulence and pressures **(Higher-Order Analysis)**
- Simulation of multi-variate correlated non-Gaussian processes that match not only the cross-spectral features but also the JPDF **(Non-Gaussian Simulations).**
- Developed computational schemes for shape (CFD based) and topology optimization of tall buildings under uncertainties (**CFD, Computational methods, Shape and topology optimization)**.

Uncertainty Quantification/Safety and Reliability/Risk Assessment

Developed schemes for the propagation of uncertainty in damping, reliability analysis under winds and pdf of the extreme response of nonlinear ocean platforms with applications.

Example

- Efficient computation of failure probability via hieratical clustering
- Meso-scale approach for probability evolution
- Introduced the role of uncertainty in the analysis of wind-induced dynamic response of structures leading to reliability-based analysis **(Safety and Reliability Analysis).**
- Introduced reliability-based measures for the performance of buildings from human comfort considerations **(Probabilistic Design).**
- Safety and performance analysis of building cladding under extreme wind events **(Wind Speed Damage Correlation).**
- Developed peak factor for non-Gaussian narrow-banded and broad-banded processes.
- Development of load factors for the design of flexible structures in wind in light of uncertainties in system parameters and wind **(Code Based Design)**.
- Development of the pdf of the extreme response of nonlinear systems, like TLPs in ocean environment based on higher-order moments of the response derived from the Volterra series expansion of nonlinear components **(Probabilistic Response Analysis).**
- Developed probability evolution of a high-dimensional random space at mesoscale using parcel-based schemes (**Nonlinear-random vibration**)
- Uncertainty quantification in CFD simulations
- Stochastic emulation/surrogate modeling

- Developed automated damage detection system based on high-resolution aerial imagery involving advanced automated registration, light and color adjustment and damage identification for rapid post-hurricane loss estimates and recovery efforts (**Damage detection**)

Codes/Standards Cyber based-Analysis and Computational Design Technologies

Developed improved and implemented current and past versions of ASCE Standard on Wind Loads and developed web-based e-analysis and e-design tools for promoting their usage in design practice.

Examples

- Introduced closed-form expressions for Gust Effect Factor (GEF) in ASCE 7-05 and its predecessors and a new Gust Effect Factor in ASCE 7-05 and an alternate expression for the equivalent static loading, which correctly represents the variation of, wind loads along with the height, which has been in part implemented in AIJ. Developed a 3-D Gust Loading Factor for the along, across and torsional components **(ASCE 7-05-10)**.
- Developed and introduced an interactive web-based database for aerodynamic wind loads on tall buildings in ASCE 7 05 Commentary (http://aerodata.ce.nd.edu). The framework also evaluates the dynamic response of buildings and equivalent static loads for given building dynamic features **(Buildings e-Design)**.
- Introduced a web-based portal for evaluating newly introduced Gust-Front Factor: A new framework for the analysis of wind load effects in gust-fronts (http://gff.ce.nd.edu**)**. This accounts for the contrasting velocity profile and transient dynamics of gust fronts and reduces to current gust GEF for non-gust front winds **(Gust Front Factor)**. Extended the concept to Generalized Gust Front Factor for application to any code.
- Developed a web-based simulation portal (http://windsim.ce.nd.edu**)** to facilitate stochastic simulation of wind-related processes without the need for users' familiarity with the theoretical background **(Web-Based Simulation).**
- Developed web-base portals for full-scale data monitoring, transfer, processing, mining and on-the-fly processing (http://windycity.ce.nd.edu; http://bdart.ce.nd.edu) **(Web-Based Data Acquisition, Analysis and Management)**
- Developing an Engineering Virtual Organization to reduce the toll of extreme winds on society VORTEX-Winds (www.vortex-winds.org). A cyber-collaboratory of the leading universities, organizations, firms and government agencies dedicated to mitigating the effects of extreme winds on society. VORTEX-Winds coordinates geographically dispersed e-analysis and design modules to enable automated, integrated analysis and design of structures to resist wind) **(Virtual Organizations)**.
- Developed web-based analysis of tall buildings utilizing databases involving high-frequency base balance
- Experimental work on wind loads on TLPs quantified the influence of interference among platform deck structures, lift induced moments and discrepancies in the recommendations of the codes and standards in offshore engineering **(Offshore Platforms)**
- Developed an extensible system for the management of long-running scientific tasks with application to OpenFoam CFD software. The portal allows even novices to run basic CFD cases for flow around bluff bodies (**CFD portal**).

- Developed "virtual shaker" and "virtual building" concepts to accurately extract dynamic properties of civil infrastructure from sensor output in laboratory and full-scale structures and to identify their damage state.
- Developed citizen Engineering: Evolving OSS Practices to Engineering Design and analysis (**Cyber based Technologies**)

Data Analytics and Machine Learning

Developed data analytics and machine learning enabled schemes for applications to natural hazards

Examples

- Data analytics, supervised, unsupervised and reinforcement learning
- Bayesian Deep Convolution Neural Networks for random fields; Bayesian Deep learning
- AutoTSC using AutoML (automatically solve the time series classification using the Shapelet Transform aided with ML)
- Advancing the use of the Wavelet, Shapelet and Spavelet transforms
- Dynamic mode decomposition and Koopman operator
- Surrogate Modeling with applications to structural engineering and dynamic loading
- Fusion of CFD, Stochastics, Machine Learning and beyond
- Autonomous morphing of structures through sensing, computations and actuation

TEACHING

Courses Taught

ENGI 1223	Computers and Programming (University of Houston)
ENGI 2332	Mechanics of Materials (University of Houston)
CIVE 3337	Theory of Structures (University of Houston)
CIVE 5397	Probability, Statistics, and Decision for Civil Engineering (University of Houston)
CIVE 6339	Introduction to Structural Dynamics (University of Houston)
CIVE 6349	Reliability and Safety of Structures (University of Houston)
CIVE 7338	Dynamics of Structures (University of Houston)
CIVE 7339	Topics in the Dynamics of Structures (University of Houston)
CIVI 512	Applications of Probability Theory (Rice University)
CEEE 30200	Introduction to Structural Engineering (University of Notre Dame)
CE 336	Structural Mechanics I (University of Notre Dame)
CE 356	Structural Mechanics II (University of Notre Dame)
CE 476/576	Design of Structures to Resist Natural Disasters (University of Notre Dame)
CE 569	Advanced Structural Dynamics (University of Notre Dame)
CE 598	Wind Engineering (University of Notre Dame)
CE 67003	Topics in Risk and Reliability of Structures (University of Notre Dame)
CE 4010/	

7010 Analysis of Wobbly Structures: An Introduction to Structural Dynamics (University of Notre Dame)
CE 6024 Advanced Topics on Wind Effects on Structures
CE 6025 Advanced Topics in aerodynamics and structural dynamics
CE 80200 Wind Engineering

Professional courses taught

International Advanced School on Thunderstorm outflows and their Impact on Structures, Genoa, Italy, October 4-8, 2021

- Simulation of Wind Effects, Kareem
- GFF: A Recent Framework for Wind Load Effects on Structures: Non-Synoptic Winds, Kareem
- Toward the codification of thunderstorm/downburst winds, Kwon/Kareem/Solari

Wind Load Effects: Advanced Study School, Beijing, PRC, August 29-Sept 4, 2019
Wind Load Effects: Advanced Study School, Chongqing, PRC, Oct 20-24, 2018;
Wind Load Effects: Advanced Study School, Beijing, PRC, Oct 10-13, 2017;
Wind Load Effects: Advanced Study School, Beijing, PRC, Oct 10-13, 2016;
Dynamic Wind Load Effects: Advanced Study School, Porto Allegre, Brazil, July 2015.
Dynamic Wind Effects on Structures, Participants of the Project 111 at the Beijing Jiaotong University, Beijing, July 2014
Provisions for Dynamic Load Effects in ASCE 07, Professional School for Wind Effects, San Juan Puerto Rico, June 2009
Computational Methods in Wind Engineering, Technical University Opole, Poland, March 2009.
Computational Methods in Wind Engineering, Bridge Engineering Department, Tongji University, Shanghai, PROC, November 21-23, 2007.
Computational Methods in Wind Engineering, Center of Excellence International Advanced Study Institute, Tokyo, Japan, March 5-9, 2007.
Motion Mitigation Devices in Structural Engineering, Center of Excellence International Advanced Study Institute, Tokyo, Japan, March 5-9, 2007.
Dynamics of Tall Buildings under Winds, Continuing Education Course at the 11th Americas Conference on Wind Engineering, Baton Rouge, Louisiana, May 31, 2005
Aerodynamic Tailoring of Tall buildings, SPACE, Universiti Teknology Malaysia, Advanced School for Professionals and Academicians, Kuala Lumpur, February 23-24, 2005
Wind Effects on Structures: The Next Frontiers, Croucher Foundation Advanced Study Institute, Hong Kong University of Science and Technology, 6-10, December 2004, 8-10, December 2005.
Wind-Excited and Aeroelastic Vibrations of Structures, EU Advanced School, Genoa, Italy, Department of Structural and Geotechnical Engineering, University of Genoa, June 12-16, 2000.
Design of Floating Production Systems, Austin, Texas, sponsored by the University of Texas and Norwegian Institute of Technology, October, 1991.

Wind Resistant Design of High-Rise Buildings, Taipei, sponsored by Building Research Institute, Taiwan, August, 1991.
Design of Steel Bins for the Storage of Bulk Solids at Sydney, Australia, Sydney, Australia, sponsored by University of Sydney, March, 1985.
Wind Loads on Buildings and Structures, Dallas and Houston, sponsored by Texas Tech University, October, 1984.
Wind Effects on Structures Special Reference to Caribbean, Mayaguez, P.R., sponsored by University of Puerto Rico, August, 1982.

SUPERVISION OF RESEARCH

Post-Doctoral/Research Fellows/Research Professors/Visiting Scholars

Name	Research Area	Inclusive Dates
Dr. Margaux Geuzaine	Data-Driven models for Extremes	2022-2023
Dr. Hao Wang	Wind Turbines	2020-2021
Dr. H. Bai	Bridge Aerodynamics	2020-2021
Dr. Miguel Cid Montoya	Bridge Aerodynamics	2019-2021
Dr. Jiawei Wan	Numerical Modeling/ CFD	2016-2021
Dr. Xin Chen	Wind Turbines	2020-2021
Mr. Zhanbiao Zhang	Bluff Body Aerodynamics	2019-2021
Mr. Huan Li	Bridge Aerodynamics	2018-2020
Mr. Simin Zou	Bridge Aerodynamics	2018-2021
Mr. HaoCheng Chang	CFD	2018-2021
Mr. Hong Xu	Typhoon probabilistic modeling	2018-2020
Dr. Guoji Xu	Machine learning	2017-2019
Dr. Peter Sempolinski	Development of Computational Platforms	2016-2018
Prof. Sunwei Li	CFD	2016-2018
Prof. Yanhong Xi	CFD	2018-2019

Xin Chen	Damping Systems	2018-2019
Mr. Hongxi Qin	Train-bridge-wind interactions	2017-2018
Mr. Tao Tianyan	Simulation of Non-Stationary Events	2017-2108
Ms. Yu Liting	Sloshing Modeling	2017-2019
Ms. Yunzhu Cai	Dynamics of Transmission Lines	2016-2018
Yanguo Sun	Dynamics of Structures	2016-2017
Prof. Amay Qin	Large Cranes Dynamics	2016-2017
Prof. Yanguo Sun	Bridge Aerodynamics	2016-2017
Mr. Lorenzo Banfi	Aeroelasticity	2015-2016
Prof. J-S Hwang	System Identification	2015-2016
Prof. Liang Hu	Stochastic Modeling	2015-2016
Prof. Jiawu Li	Building Aerodynamics	2015-2105
Prof. Qinhua Wang	Building Dynamics	2015-2106
Prof. Qi Wang	Post Flutter Behavior of Bridges	2015-2106
Prof. X. Wang	Bridge Engineering	2015-2016
Prof. Xingping Zhou	Wind Effects on Solar Chimneys	2014-2015
Prof. Jie Wang	Long Span Bridges	2014-2105
Prof. Qingshan Yang	Long Span Roofs	2014-2015
Qinghai Guan	Dynamics of Pedestrian Bridges	2014-2105
Prof L. Zhao	Long Span Bridge Aerodynamics	2013-2014
Prof. B. Chen	Dynamics of Long Span Roofs	2013-2014
Prof. F. Xu	Post Flutter Performance of	

	Bridges	2013-2014
Ms. Yan Fang	Shape Optimization	2013-2015
Prof. C. Zheng	Active Flow Control	2013-2014
Dr. D-K Kwon	Dynamic Wind Load Effects	2001-
Prof. Sang Hyun Lee	Active mass dampers	2013-2014
Dr. Kilje Jung	Bridge aerodynamics	2103-2014
Dr. Enrica Bernardini	Dynamics of Tall Buildings	2011-2014
Dr. Seymour Spence	Dynamics/Optimization of Structures	2011-2014
Prof. Luigi Carassale	Nonlinear Stochastic Dynamics	2005-
Dr. Lixiao Li	Hurricane/Typhoon Wind Field	2010-2013
Dr. D. Wei	Computational Fluid Dynamics	2010-2014
Prof. Shouke Li	Longspan roofs	2011-2012
Dr. Shouying Li	Dynamics of Flexible Structures	2010-2011
Dr. H. Cao	Aerodynamic Damping of Structures	2010-2011
Prof. Deepak Kumar	Random Vibrations	2009-2012
Prof. H. Kozmar	Environmental Aerodynamics	2007-08
Prof. Jae-Seung Hwang	Structural Dynamics	2006-07
Prof. Heeduck Kim	Aerodynamics	2003-04
Prof. F. Haan, Jr.	Bridge Aerodynamics	2001-02
Prof. M. Kanda	Dynamic Load Effects	1999-01
Dr. Y. Zhou	Wind Loads & Building Codes	1998-01
Dr. X. Chen	Bridge/Building Aerodynamics	5/1/98- 2006

Dr. K. Gurley	Stochastic Simulation	1997
Mr. M. Moubacher	Bridge Aerodynamics	1997
Mr. Katsutoshi Ohdo	Construction Safety	1997-98
Dr. J. D. Yoder	Dynamic Load Simulator	1996
Dr. Balaje Rao	Non-Gaussian Analysis	1994
Prof. Young-Moon Kim	Tall Buildings	1993-94
Dr. S. Gomathinayagam	Analysis of Full-Scale Data	1993
Dr. T. L. Murlidharan	Conditional Simulation	1993
Dr. Johanes Suhardjo	Structural Control	1990-91
Dr. Yaqin Zhang	Finite Element Analysis	1989-90
Dr. Yousun Li	Probabilistic Dynamics	1988-89
Prof. El Sayed A. Mashally	Seismic Response Analysis	1989-90
Dr. Po Chien Lu	Structural Aerodynamics	1984-87
Dr. Wei-Joe Sun	Probabilistic Response of Structures	1984-86
Dr. John W. Cox	Offshore Engineering	1984-85
Mr. Zhendong Liu	Numerical Modeling	1990-92
Mr. Elias Saqan	Computer Code Development	1989-90
Mr. Ruey-Ming Chung	Experimental Methods	1987-88

Ph.D. Thesis Students

Name	Thesis Title	Graduation Year
Jeder Hsieh	Reliability of Concrete Chimneys under Winds	1983
Chii-Ming Cheng	Acrosswind Response of Towers	1984

	and Stacks of Circular Cross-Section	
Yousun Li	Stochastic Response of Tension Leg Platforms to Wind and Wave Fields	1988
Chang Chun Hsieh	Probabilistic Response Analysis of Offshore Platforms to Wave Loading	1991
Jun Zhao	Response Statistics of Tension Leg Platform	1993
Xiaobing Song	Stochastic Response of Offshore Compliant Systems to Environmental Loads	1993
Dahai Yu	Numerical Modeling of Flow Around Structures	1997
Kurt Gurley*	Modeling Nonlinear Load Effects on Structures	1997
Mike Tognarelli	Non-Gaussian Response Statistics of Ocean Structures	1999
Katsutoshi Ohdo**	Influence of Wind on Construct-ability of Civil Structures	1999
Fred Haan	The Effects of Turbulence on the Aerodynamics of Long Span Bridges	2000
Swaroop Yalla	Liquid Dampers for Mitigation of Structural Response: Theoretical Development and Experimental Validation	2001
Gang Mei	Model Predictive Control Schemes for the Mitigation of Natural Hazards: Theoretical and Experimental Studies	2001
Luigi Carassale****	Reliability of Nonlinear Systems	2002
Tracy Kijewski***	Full-Scale Measurements & System Identification: A Time-Frequency Perspective	2003

Lijuan Wang*****	Modeling, Analysis and Simulation of Transient Events	2007
Rachel Bashor	Dynamics of Tall Buildings	2011
Kyle Butler#	Transient Aerodynamic Load Effects	2010
Jim Thomas	Damage Detection Using Aerial/Satellite Imagery	2012
Megan McCullough ##	Multi-Hazard Resistant Design	2016
Teng Wu ###	Non-Linear Aerodynamics Of Bridges	2013
Yanlin Guo+	Data to Knowledge: Interpretation Of Full-Scale Data	2015
Chao Yin	Response Statistics of Non-Stationary and Non-Linear Structures	2019 (expected)
Sarah Bobby ####	Topology and Shape Optimization of Tall Buildings under Winds	2015
Maria Gibbs ^	Dynamics of Pedestrian Bridges	2017
Xihaier Luo++	Machine Learning for Prediction and Uncertainty Quantification	2020
Fei Ding^^	Shape Optimization of Structures	2022
Yan Fang	Computational Wind Engineering	2023 (expected)
Monica Arul^^^	Data Analytics in Dynamics of Structures	2021
Liang Hu^^^^	Performance-Based Design for Wind	2022 (Expected)
Yunzu Cai[1]	Wind Effects on Transmission Lines	2019
Jiawei Wan[2]	Computational Modeling of Non-Linear	

*Received Notre Dame Alumni Research Award and Munro Prize from Elsevier
**Ph.D. awarded by the University of Tokyo, Japan.
***Office of Naval Research, Department of Defense Graduate Fellowship and Skidmore Owings & Merrill Fellowship; Eli J. and Helen Shaheen Graduate School award; R. D. Marshall, AAWE Award 2005.
****Ph.D. awarded by the University of Genoa, Italy
***** R. H. Scanlan AAWE Award 2009
# Kaneb Teaching Award
Kaneb Teaching Award, Donnaville Teaching Award, Claire Booth Luce Fellowship; ASCE's Amman Fellowship
ASCE's Amman Fellowship, Junior IABSE Award, IEEE/ASME/ASCE Noble Prize, IAWE Junior Research Award
2017 AAWE Best Paper Award
^ NSF Fellow/Amman Fellowship, Winner of Notre Dame, Midwest 3MT Competition, 2015 ASCE's New Faces of Civil Engineering.
1 Ph.D. awarded by Tongji, Shanghai, PROC
2 Ph.D. awarded by Southwest Jiaotong University, PROC
^^ Winner of Thornton Tomasetti Innovation Fellowship & Best paper award at the 15th International Conference on Wind Engineering, Beijing, Sept 2019.
^^^ Kaneb Teaching Award, Winner of Notre Dame, Midwest and ACC 3MT Competition Health Monitoring Award also wins First Place in the 1st International Project Competition for Structural Health Monitoring, organized by the Asia Pacific Network of Centers for Research in Smart Structures Technology (UIUC & Harbin Inst. Tech.). 2021 Best Paper Award in Analysis and Computations in the Journal of Structural Engineering, ASCE. Shaheen Graduate School Award for the best student performance in the College of Engineering.
^^^^ 2021 IAWE Junior Research Award and Best paper JSE, ASCE award
+ Best paper JSE, ASCE award
++ Adeli-Blackwell Prize from Wiley for the Best paper award

Placement of Ph.D. Students/Postdoctoral Fellows

Jeder Hsieh	Vice-President Taiwan High Speed Rail Corporation Taipei, Taiwan
Chii-Ming Cheng	Professor and Director Former Department Chair Wind Engineering Research Center Department of Civil Engineering Tamkang University Taipei, Taiwan
Yousun Li	Principal Engineer

	Offshore R & D Shell Development Company Houston, TX
Chang Chun Hsieh	Engineering Consulting Practice Taipei, Taiwan
Jun Zhao	Investment Banker ChinaVest San Francisco/Shanghai
Xiaobing Song	Principal Engineer Offshore Systems American Bureau of Shipping Houston, TX
Dhai Yu	J. P. Morgan Chase New York, NY
Kurt Gurley	Professor Associate Chair of the School Department of Civil Engineering University of Florida Gainesville, FL
Michael Tognarelli	Senior Lead Engineer BP Offshore Houston, TX
Katsutoshi Ohdo	Project Manager Construction Safety Division Ministry of Labor Government of Japan Tokyo, Japan
Fred Haan, Jr.	Professor Department of Mechanical Engineering Iowa State University/Roseman Hull Ames, Iowa/IN Carol College, MI (Currently)
Swaroop Yalla	Sr. VP Director Risk Management Bank of America, Charlotte, SC
Gang Mei	Project Engineer

	EI Taller Colaborativo P.C. Philadelphia, PA
Luigi Carassale	Professor Department of Mechanical Engineering University of Genoa Genoa, Italy
Tracy Kijewski-Correa	Linbeck Associate Professor Department of Civil Engineering and Geological Sciences University of Notre Dame Notre Dame, IN
Wei-Joe Sun	Project Manager Lockheed Martin Johnson Space Center Clear Lake, TX
Po-Chen Lu	Professor Department of Civil Engineering Tamkang University Taipei, Taiwan
El-Sayed Amin Mashaly	Professor Department of Structural Engineering Alexandria University Alexandria Egypt
Yaqin Zhang	Senior Engineer Shell Development Company Houston, TX
Johanes Suhardjo	Senior Systems Engineer OIT/College of Engineering University of Notre Dame Notre Dame, IN
Xinzhong Chen	President's Excellence in Research Professor Department of Civil Engineering Texas Tech University Lubbock, TX
Yin Zhou	Risk Management Solutions, Inc. Palo Alto, CA

Lijuan Wang	Principal Engineer Technip, Houston, TX
Rachel Stansel	Lead Engineer American Bureau of Shipping San Antonio, TX
Kyle Butler	Senior Engineer AIR Worldwide, Boston, MA
Megan McCullough	Director Hazards Aon Banfield, Troy, MI
Seymour Spence	Assoc. Prof. University of Michigan
Enrica Bernardini	Associate Teaching Professor University of Michigan
Teng Wu	Assoc. Prof. University of Buffalo, Buffalo, NY
Yanlin Guo	Asst. Prof. Colorado State University
Fei Ding	Post-Doctoral Fellow University of California, Berkeley
Jim Luo	Research Associate Brookhaven National Laboratory
Monica Arul	Asst. Prof. Virginia Tech (fall 2022)

EXPERIENCE

Selected Administrative/Leadership Appointments/Experiences

Beyond research, has distinguished himself as an international leader through service as the president of the International Association for Wind Engineering (IAWE), Chair of the Wind Engineering Division of American Society of Civil Engineers (ASCE) and has served as president of the American Association for Wind Engineering (AAWE) and top-level senior leadership positions of the Structural Engineering and Engineering Mechanics Institutes of ASCE, and Chairman Department of Civil Engineering at the University of Notre Dame. Served for three 3-year terms on the Provost's Advisory Committee, the University of Notre Dame

advising on strategic issues and tenure and promotions. Provided mentoring has impacted the lives of hundreds of undergraduates, dozens of graduate students, post-doctoral fellows and visiting professors.

President, *International Association for Wind Engineering*, 2015-2019; 2019-.

Member, Board of the *World Wind Energy Association* (WWEA), 2015-

Member, *Blue Ribbon Review Committee of New ASCE Manual of Practice for Objective Resilience* 2021.

Member, *Advisory Board*, *National Full-Scale Infrastructure for Community Hardening in Extreme Wind, Surge, and Wave Events*, Florida International University, 2022-

Member, *Advisory Board*, *NSF/NHERI Experimental Facility at University of Florida*, 2021-

Member, *National Academy of Engineering*, Civil and Environmental Engineering Section PEER Committee, 2020-2023

***Chair*,** Wind Engineering Division of the American Society of Civil Engineering (ASCE), 2017-2018

Member, *Blue Ribbon Review Committee of New ASCE Tall Building Monograph, 2019.*

Chair, Structural Engineering Institute, ExCom, 2012-2014
Member, *NRC Committee on the Risk Assessment of Bio-Agro Defense Facility, 2011-2-12*
Member Advisory Board, *The European Union Research Center, THUNDERR, for research on the impact of thunderstorm winds on structures.2017-2022.*
Member Advisory Board, *The 21st Century Center of Excellence: Wind Effects on Buildings and Urban Environment, Tokyo Polytechnic University, Tokyo,* 2003-2007.

Visiting Professor, *Department of Civil Engineering, Universiti Teknologi Malaysia*, August, 2003, Jan-Feb, 2005.

Regional Coordinator, *International Association for Wind Engineering (North America and South America),* 1995-2009.

President, *American Association for Wind Engineering, 1994-98.*

Vice-Chair, *Engineering Mechanics Division, ASCE, 2001-2002.bb*

Chair, *Engineering Mechanics Division, ASCE, 2002-2003.*

Chair, *Structural Engineering Institute, TAD, ASCE, 2012-*

Chair, Advisory Board, Engineering Mechanics Division, ASCE, 2007-2008
Chair, Department of Civil Engineering, University of Notre Dame, 1999-2002

Member*, Board of Directors of the Multi-hazard Mitigation Council* an advisory body of the National Institute of Building Science, Washington, DC, 1998-1999.

Member, *Governing Council, The Partnership for Natural Disaster Reduction*, FEMA/ DOE/INEEL.

Member, *Blue Ribbon Review Committee of New ASCE Manual of Practice for Wind Tunnel Testing of Buildings and Structures*, ASCE, 1995.

Member, *Advisory Board, International Wind Engineering Forum*, 1994-.

Member, *Advisory Board, DOE/NASA*, Project on Aerospace Engineering at Southern University, LA, 1995-97.

Member, Provost's Advisory Committee, University of Notre Dame, 1997-2003; 2014-2017

President, American Association for Wind Engineering 1994-1998

Member, *Board of Directors, American Association for Wind Engineering*, 1992-2002.

Member *of the Panel to Review of the Need for a Large-Scale Test Facility for Research on the Effects of Extreme Winds on Structures*, National Research Council, National Academy of Sciences, 1998-99.

Member of the *Panel on the Assessment of Wind Engineering Issues in the United States*, National Research Council, National Academy of Sciences, 1989-91.

Consultant - UNDP *to the Government of India*, Engineering for Mitigation of Cyclone Damage, 1993-94, 1995.

***Member**, Committee on Natural Disasters*, National Research Council, National Academy of Sciences, 1986-91.

AWARDS and HONORS

Membership to Academies of Engineering

- ***Member***, US National Academy of Engineering (NAE), 2009
- ***Foreign Member***, Chinese Academy of Engineering (CNAE), 2018
- ***Foreign Fellow***, Indian National Academy of Engineering (INAE), 2010
- ***Foreign Member***, Engineering Academy of Japan (EAJ), 2020

Chaired Professorships

- ***Robert M Moran Professor of Engineering,*** University of Notre Dame, 1999-
- ***Qiushi Chair Professor***, Zhejiang University, Hangzhou, P.R.O.C., 2021-

Medals Awarded

- ***James Croes Medal***, ASCE, 2022
- ***Nathan M Newmark Medal,*** ASCE, 2021
- ***Earnest Howard Medal,*** ASCE, 2019
- ***Masanubo Shinozuka Medal***, ASCE, 2017
- ***Theodore von Karman Medal***, ASCE, 2015
- ***James Croes Medal***, ASCE, 2015
- ***Alan G. Davenport Medal***, International Association for Wind Engineering, 2007
- ***Robert H. Scanlan Medal***, ASCE, 2005
- ***Jack E. Cermak Medal***, ASCE, 2002
- ***Greaves Cotton & Co., UK, Gold Medal***, 1968, for being the Best Civil Eng. Graduate.

- ***Habib Bank Gold Medal*** for the Highest Standing in the Graduating Class of 1968
- ***Habib Bank Gold Medal*** for the Highest Standing in Structural Engineering Area, 1968.
- ***Pak-Techno Consultants Gold Medal*** for the Highest Standing in Hydro-Systems Areas, 1968.

Prizes, Awards & Honors

- ***2021 First Place*** in the 1st International Competition for Structural Health Monitoring (IPC-SHM2020) (along with graduate student Monica Arul)
- ***2019 IABSE Award of Merit,*** International Association for Bridge & Structural Engineering
- ***Ranked 12th Worldwide in Civil Engineering*** in Stanford citation index, 2020 published in PLoS. (https://journals.plos.org/plosbiology/article?id=10.1371/journal.pbio.3000918)
- ***National High-End Foreign Expert***, *The State Council*, PROC, 2012-2015
- ***Distinguished ICOSSAR Research Award***, International Association of Structural Safety and Reliability (ICOSSAR), 2103
- ***Scruton Lecturer***, 2013, Institute of Civil Engineers (ICE), London, November 2013
- ***Elected inaugural Fellow*** of the Engineering Mechanics Institute of ASCE, 2013
- ***Elected Distinguished Member*** of ASCE, 2010
- ***Inducted Honorary Member*** of the Japan Association for Wind Engineering, 2012
- ***Inducted to the Offshore Technology Conference Hall of Fame***, OTC/ASCE, 2011
- ***Distinguished Research Achievement Award***, University of Notre Dame, 2009
- ***Distinguished Service Appreciation*** as Chair of EMD/ASCE, 2003.
- ***Achievement in Academia Award,*** Colorado State University, 1998
- ***National Engineering Award***, National Hurricane Conference, 1997
- ***American Association for Wind Engineering Award***, 1997
- ***US Presidential Young Investigator Award***, the White House, 1984
- ***Finalist group in Esquire Magazine*** Best of the New Generation Men & Women under Forty Who are Changing America, April 1984
- ***Halliburton Young Faculty Research Excellence Award***, 1983, University of Houston.
- ***Presidential Award***, The Office of the President of Pakistan, Award of Merit, 1968
- ***Best All-Round Scholar,*** Don Bosco High School, Pakistan, 1962

Best Paper/Book Awards

- ***2021 Atmospheric Sciences Librarians International (****affiliate of* ***AMS) CHOICE Honorable Mention award.*** (along with co-editor Prof. H. Hangan)
- ***2021 Best Paper Award*** in the *Journal of Structural Engineering*, ASCE, Analysis and Computations (along with co-author Graduate student Dr. Monica Arul)
- ***2019 H. Adeli-Wiley-Blackwell Innovation in Computing Award,*** Wiley-Blackwell Publishers. (along with graduate student Dr. Jim Luo)
- ***2019 Best Paper*** in the *Journal of Structural Engineering*, ASCE. *in Structural Hazards area,* (along with Drs. Hu, Kwon and Guo)
- ***2016 Alfred Noble Prize*** by ASCE/ASME/IEEE for a *paper of exceptional merit* (along with graduate student Dr. Teng Wu)
- ***2015 James Croes Medal***, ASCE, for a paper *ranked 2nd* among all papers published in ASCE's 37 Journals (along with co-author Spence).

- ***2013 Japan Association for Wind Engineering Publication Award,*** (along with co-author Prof. Y. Tamura)
- ***2008 State-of-the-Art Award of Civil Engineering Award***, ASCE (shared with TeamKareem)
- ***1999 Best Paper Munro Prize*** by *Elsevier* for the Best Paper in Engineering Structures (with co-authors, Gurley)
- ***1977 Best Paper Martin Minta Award***, the American Institute of Aeronautics and Astronautics (AIAA).

Honorary & Guest Professorships

- Tsinghua University (Hon), PROC
- Tongji University (Hon), PROC
- Southwest Jiatong University (Hon), PROC
- Shijiazhuang Tiedao University (Hon), PROC
- Central South University (Hon), PROC
- Beijing Jiatong University (Guest), PROC
- Chongqing University (Guest), PROC
- Southeastern University (Hon), PROC
- Hong Kong Poly University, (Hon), Hong Kong
- Tokyo Polytechnic, (Guest), Japan
- University of Genoa (Guest), Italy

Who's Who Listings

- Listed in ***Who is Who in America***, 55th Edition, 2001
- Listed in ***International Man of the Year***, 2000/2001
- Listed in ***Who's Who in Science and Engineering***, 2000
- Listed in 2000 ***Outstanding Scientists of the 20th Century***.
- Listed in ***Who's Who in Society***, 1988
- Listed in ***Who's Who in the South and Southwest***, 1983
- Listed in ***International Who's Who in Engineering***, 1983
- Listed in ***Who's Who in Engineering***, 1982
- Listed in ***Who's Who in Technology Today***, 1980
- Listed in ***American Men and Women of Science***, 1979

Scholarships Awarded

- ***East-West Center Scholarship*** (a Fulbright Hayes Program), the University of Hawaii/MIT, 1971-73.
- ***British Commonwealth Scholarship,*** the Imperial College of Science and Technology, University of London, London, England, 1971-74 (did not avail).
- ***Asian Institute of Technology, Scholarship,*** Bangkok, 1971-73 (did not avail).
- ***Saigol Foundation Merit Scholarship*** in Engineering, 1964-68.
- ***National Merit Scholarship,*** Department of Education, Pakistan, Pre-Engineering and Engineering, 1962-68.
- ***Finalist Rhodes Scholarship*** (from Pakistan), 1968.

JOURNAL EDITORSHIPS/EDITORIAL BOARDS

Guest Editor-in-Chief, Journal ***Engineering,*** Elsevier/Chinese Academy of Engineering, Special issue on Bridge Engineering, 2017-2019.

Executive Editor-in-Chief of the Transaction of the Chinese Academy of Engineering: ***Frontiers of Structural and Civil Engineering***, Springer, 2014-

Member Editorial Board, Journal ***Engineering***, Elsevier/Chinese Academy of Engineering Journal, 2014-

Honorary Advisor, ***Advances in Bridge Engineering***, Springer 2019-

Advisory Editorial Board Member, Earthquake Engineering & Resilience, Wiley Interscience, 2022-

Guest Editor, ***Journal of Wind Engineering and Industrial Aerodynamics***, Virtual Special Issue, Recent Advances in Computational Wind Engineering (Profs. S. Lee and JS Hwang, co-editors), Elsevier 2021.

Guest Editor, ***Structural Safety***, special volume on the Reliability of Structures, Elsevier 2001-02.

Guest Editor, ***Journal of Wind Engineering and Industrial Aerodynamics***, Elsevier, special volume no. 36, dedicated to the Sixth U.S. National Conference on Wind Engineering, 1990.

Editor-in-Chief, North & South America, ***Wind and Structures, An International Journal***, Techno-Press, 1997-2005.

Associate Editor, ***Journal of Engineering Mechanics***, ASCE, 1998 - 2000.

Associate Editor, ***Journal of Structural Engineering***, ASCE, 1987 - 1997.

Member, Editorial Board of ***Probabilistic Engineering Mechanics***, Elsevier, 1994-.

Member, Editorial Board of ***Journal of Wind Engineering and Industrial Aerodynamics***, Elsevier, 1995-.

Member, Editorial Board of ***Structural Safety***, Elsevier, 1995-.

Member, International Editorial Board of ***Engineering Structures***, Elsevier, 1995-02; 2007-

Member, Editorial Board of ***Applied Ocean Research***, Elsevier, 1996-2012.

Member Editorial Board, ***STRIDES***, University of Houston Research Magazine, 1987-90.

Member Editorial Board, ***Natural Disaster Studies***, National Research Council, National Academy of Science/Engineering, National Academy Press, Washington, D.C., 1988-91.

Member Editorial Board, ***Computer-Aided Civil & Infrastructure Engineering***, 2009-

Member Editorial Board, ***Structure and Infrastructure Engineering*** 2007-;

Member Editorial Board, ***Int'l J. of Engg. Under Uncertainty***, 2008-.

Member Editorial Board, ***Frontiers of Structural and Civil Engineering***, 2011-

Member Editorial Board, ***Reliability Engineering and System safety,*** 2022.

SPONSORED RESEARCH *[Principal Investigator (PI) unless noted]*

Funded Projects

NHERI Computational Modeling and Simulation Center, **National Science Foundation/UC Berkeley, USA,** 2021-2025 (Co-PI)

NEHRI Cyberinfrastructure Center: DesignSafe, **National Science Foundation/UT Austin, USA,** 2021-2026 (Senior Personal)

NHERI Computational Modeling and Simulation Center, **National Science Foundation/UC Berkeley, USA,** 2016-2021 (Co-PI)

Collaborative Research: A Holistic Performance-Based Design Framework for Water, Debris, Pressure and Drift Induced Losses of Buildings under Winds, **National Science Foundation, USA,** 2016-2020.

NEHRI Cyberinfrastructure Center: DesignSafe, **National Science Foundation/UT Austin, USA,** 2015-2020 (Senior Personal)]

Multi-Fidelity Simulation of Wind Load Effects on Civil Infrastructure under Uncertainty, **SAPC Project University of Notre Dame**,2018-2020.

Towards the Development of a Performance-Based Design Framework for Wind Excited Multi-Story Buildings, **National Science Foundation, USA,** 2015-2019

An Integrated Framework for the Aerodynamic Shape and Performance-Based Topology Optimization of Tall Buildings under Winds, **National Science Foundation, USA**, 2013-2017

Global Center of Excellence: New Frontier of Education and Research in Wind Engineering, **Ministry of Education, Culture, Sports, Science and Technology (MEXT)**, 2008-2013

Cyber Eye: A Cyber-Collaboratory for National Risk Modeling and Assessment to Mitigate the Impacts of Hurricanes in a Changing Climate, **Strategic Research Initiative, University of Notre Dame, 2010-2013**

Real-Time Monitoring of Burj Khalifa Tower, **Samsung Corporation**, **Samsung Design and Construction Group, 2009-2013**

Advanced Aeroelastic Analysis Framework for Cable-Supported Bridges under Turbulent Winds, **National Science Foundation, 2009-20013.**

CDI-TYPEII: Open Sourcing the Design of Civil Infrastructure (OSD-CI), **National Science Foundation, USA, 2009-201 (Co-PI)**

VORTEX-Winds, A Virtual Organization for Reducing the Toll of Extreme Winds on Society, **National Science Foundation**, **2007-2009**

Structural Health Monitoring of Tall Buildings, **Samsung Corporation**, Samsung Design and Construction Group, **2007-2008**

Performance Evaluation of Tall Buildings under Winds: From Predictive Methods to Laboratory and Full-Scale Measurements, **National Science Foundation, 2006-2009**

Performance of Glass/Cladding of High-Rise Buildings in Hurricane Katrina and its Impact on the Vertical Evaluation, **National Science Foundation, 2005-2006**.

Study of Load Effects on Structures Induced by Gust-Fronts, **National Science Foundation, USA, 2003-2006.**

Characterization, Modeling and Simulation of Transient Hurricane Loads, **NIST/University of Florida**, **2003-2004.**

Full-Scale Study of the Behavior of Tall Buildings Under Winds, **National Science Foundation**, **2000-2003.**

Evolution of Time-Frequency Analysis: New Developments of Wavelet-Based Systems - Identification for Aero-Mechanical Systems, **NASA Indiana Space Grant Consortium**, **2000-2002.**

Modeling of Directional Seas in Bay of Campeche, **Ocean Engineering Services**, CA, **1999-00**.

Travel Grants/Fellowships, **National Institute of Industrial Safety**, **Ministry of Labor, Japan, University of Kyoto and Tokyo Polytechnic University, Japan and European Union**, **NSF,** 2000-07.

Research Participation in the 10th International Conference on Wind Engineering, **National Science Foundation**, 1999-00.

Wind & Building Pressure Field Data and Its Simulation in the Laboratory, (jointly with Clemson University & Texas Tech University) **Lockheed Martin**, 1998.

Wind Loading and Capacities of Components, Connections and Systems, (Jointly with Clemson University & Texas A&M University), **Lockheed Martin**, 1995-98.

The Next Generation of Tuned Liquid Dampers for Controlling Structural Motions, **National Science Foundation**, 1995- 98.

Engineering Research Equipment, Full Scale Component Testing and Digital Control System Upgrade, **National Science Foundation**, 1997-98.

Research Participation in the Twenty-Ninth Joint Meeting of the U.S.-Japan Panel on Wind & Seismic Effects (UJNR), **National Science Foundation**, 1997-98.

REU Site in CE/GEOS at the University of Notre Dame, (S. Silliman, P.I., CE/GEOS Faculty Co-PI), **National Science Foundation**, 1997-2000.

Large Scale Test Facility, National **Science Foundation**, 1997-98.

Large Scale Test Facility, Center for Building Technology, **NIST**, 1997-98.

Dynamic Response of Structures, **National Science Foundation**, 1995-98.

US/PRC Joint Research Program in Structural Control: Control of Nanjing TV Tower, **National Science Foundation**, 1994-98.

Engineering for Wind Hazard Mitigation, **National Science Foundation**, 1995-98.

Response Statistics of Ocean Structures under Wind, Wave and Current Loads and Their Motion Control, **Office of Naval Research**, Mathematical Sciences Division, and Department of Defense, 1993-1997.

Numerical Investigation of Wind Effects on Structures, Su3500, National Center for Supercomputing, **National Science Foundation**, 1996-97.

Bridge Aerodynamics, University of Notre Dame, 1996-97.

Travel Grants, **Lockheed-Martin, FEMA, CCIND, NSF, IBHS**, 1995-00.

Engineering Research Equipment: Data Acquisition, Sensing and Control, National **Science Foundation**, 1995-96.

International Travel Fellowship, **International Wind Engineering Forum** (Japan Society for Advancement in Building Science), 1994-98.

Research Participation in the Ninth International Conference on Wind Engineering, **National Science Foundation**, 1994-95.

Engineering of Structures for Mitigating Damage Due to Cyclones, **United Nations Development Project,** UN/Government of India, 1993-1995.

UJNR Panel Travel Support, **National Science Foundation**, 1993, 1999, 2002, 2006

Dynamic Response of Structures, National **Science Foundation**, 1992-1993.

Offshore Winds and Their Load Effects, Offshore Technology Research Center, **National Science Foundation**, Engineering Research Centers Program, 1991-1992.

Equipment for Wind Tunnel Laboratory, **University of Notre Dame**, 1990-.

Response of Tension Leg Platform to Combined Action of Wind, Waves, and Currents, **Texas Advanced Research Program**, 1989-1991.

Mitigation of Offshore Platform Motions Utilizing Tuned Sloshing Dampers (Co-PI), **Texas Advanced Technology Program**, 1989-92.

Wind Effects on Tension Leg Platforms, Offshore Technology Research Center, **National Science Foundation**, Engineering Research Centers Program, 1990-1991.

Faculty Development Award, **University of Houston**, Office of the Provost, 1989-1990.

Dynamic Response of Structures, **National Science Foundation**, 1990-1993.

Wind Resistant Design of High-Rise Buildings, **Building Research Institute**, Ministry of Interior, Taiwan, 1991.

Risk Assessment and Probabilistic Design, **University of Houston**, Energy Laboratory, 1989-1990.

Wind Effects on Tension Leg Platforms, Offshore Technology Research Center, **National Science Foundation**, Engineering Research Centers Program, 1989-1990.

Dynamic Response of Structures, **National Science Foundation**, 1989-1990.

Nonlinear Frequency - Domain Hydrodynamic Analysis of Compliant Offshore Platforms in Random Seas, **Texas Advanced Technology Program,** 1988-1990.

Dynamic Response of Structures, **National Science Foundation**, 1988-1989.

Sixth U.S. National Conference on Wind Engineering, **National Science Foundation,** 1988-1990.

Dynamic Response of Structures, **Halliburton Foundation**, Houston, Texas, 1988- 1989.

Seismic Analysis of Structure-Equipment Systems, **Amber/Booth Company**, Inc., Houston, Texas, 1986-1988.

Dynamic Response of Structures, **National Science Foundation**, 1986-1987.

Serviceability of Tall Buildings, **American Institute of Steel Construction**, Chicago, Illinois, 1985-1990.

Grant CPU time on the CRAY Y-MP, **CRAY Corporation**, Minneapolis, Minnesota, 1987-1988.

Equipment and Travel Grants, **Halliburton Foundation**, Houston, Texas, 1984- 1986.

Dynamics of Deepwater Compliant and Fixed Offshore Structures, **Shell Oil, Conoco, Brown & Root, DnV,** 1984-1991.

Dynamic Response of Structures, **National Science Foundation**, 1985-1986.

Response of Tension Leg Platforms to Random Wave and Wind Fields, **Chevron Oil Field Research Company**, La Habra, California, 1984-1986.

Participation in a Joint US-Australian Workshop on Loading, Analysis and Stability of Thin-Shell Bins, Tanks and Silos, Sydney, Australia, **National Science Foundation**, 1985-1986.

Development of Ultra-sensitive Force Balance and Automated Experimental Control, **New Research Opportunities Program**, University of Houston, 1984-1985.

Dynamic Response of Structures, **National Science Foundation**, 1984-1985.

Equipment Grant (Microcomputer System), **University of Houston**, 1983-1984.

International Travel Grant, **National Science Foundation**, 1983-1984.

Development of Computer Programs for Dynamic Analysis of Tension Leg Platforms, **Gulf Research & Development Company**, Houston, Texas, 1982-1983.

Wind Engineering Study of Kilroy Airport Center, **Kilroy Industries/AeroVironment**, Pasadena, California, 1981-1982.

Wind-Excited Response of a Tension Leg Platform, **Gulf Research & Development Company**, Houston, Texas, 1980-1982.

Across-Wind Response of Towers and Stacks of Circular Cross Section, **National Science Foundation**, 1980-1982.

Local Terrain Effects on Jet Engine Test Facility, **General Electric/AeroVironment**, Pasadena, California, 1979-1980.

Equipment for Wind Tunnel Laboratory, **New Research Opportunities Program**, University of Houston, 1979-1981.

KEYNOTE/PLENARY LECTURES

Kareem, A, "Designing Resilient Civil Infrastructure under Wind hazard," **International High-End Forum on Resilience of Critical Infrastructure Systems**, Chinese Academy of Engineering, Shanghai, August 17-19, 2022.

Kareem, A., "Enhancing Infrastructure Resiliency through Disruptive Technologies," **10th International Congress of the Croatian Society of Mechanics**, Pula, Croatia, Sept 28-30, 2022.

Kareem, A., "Emerging Frontiers in Industrial Aerodynamics," **3rdInternational Conference on Industrial Aerodynamics (ICIA2021).** organized by Chinese Aerodynamics Research Society, CRRC Changchun Vehicles Co., Ltd., Changchun, China, from Nov. 17th to Nov. 19th, 2021.

Kareem, A., "'Current and future trend in intelligent buildings," **Chongqing Academy of Chinese Engineering S&T Strategy for Development**. Accelerating the Transformation and Update of Building Industry in Chongqing Area, Chongqing, via internet, Sept 1, 2021.

Kareem, A., *Structural Health Monitoring: From Virtual Shakers to Machine Learning* at the **International Conference on Frontiers of Structural and Civil Engineering**, under the auspices of the Chinese Academy of Engineering, Tongji University, Shanghai, October 19-21, 2020.

Kareem, A., *Recent Developments in the Modeling of Probabilistic Wind Effects* at the **9th National Conference on Stochastic Dynamics and the12th National Conference on Random Vibration Theory and Application** held in Chongqing from October 30-November 1, 2020,

Kareem, A., *Damping Estimates using a Virtual Shaker: a Web enabled Framework,* in-Memoriam of Prof. Neftalí Rodríguez-Cuevas, the **International Colloquium of the Mexican Society for Earthquake Engineering** (SMIS), October 22, 2020.

Kareem, A., *Experimental & Computational Simulation of Wind Pressures and Forces on Buildings*, **NSF NHERI 2020 WOW & SimCenter Users Workshop**, Aug 10-11, 2020.

Kareem, A., *Emerging Frontiers in Wind Engineering: Computing, Stochastics, Machine Learning and Beyond*, **The 15th International Conference on Wind Engineering (ICWE 15)**, Sept 2019, Beijing, China.

Kareem, A., "The Generalized Wind Loading Chain and Beyond," **The 2nd Romanian Conference on Wind Engineering**, June 2019, Bucharest, Romania.

Kareem, A., "Wind Engineering of Tall, Long and Deep Structures," **The 291st China Engineering Science and Technology Forum and 2019 China Steel Structure Development Summit**, May 2019, Hangzhou, China.

Kareem, A., Engineering for Extremes: A Nexus of Modeling, Simulation, Virtualization and Living Laboratory," **Special Lecture at the Croatian Academy of Sciences and Arts**, July 2019, Zagreb, Croatia.

Kareem, A., "Structural Health Monitoring: From SmartSync to Virtual Shakers and Machine Learning," **Honorary Professorship Award ceremony Lecture at the Southeast University**, March 2019, Nanjing, China.

Kareem, A., "Structural Health Monitoring: From Virtual Shakers to Machine Learning," **The Eighth Kwang-Hua Forum on Innovations and Implementations in Earthquake Engineering Research**, Shanghai, China, Dec, 13-16, 2018.

Kareem, A., "Computational Design: A Fusion of CFD, Stochastics, Machine Learning and Beyond**,"** **International Top Level Forum on Engineering Science and Technology Development Strategy**, Chongqing, China, October 19-21, 2018.

Kareem, A., "Analysis and Modeling of Extreme Non-Stationary Wind Load Effects: Emerging Perspectives," **International Workshop on Wind-Related Disasters and Mitigation**, Sendei, Japan, March 11-14, 2018.

Kareem, A., "Tailoring of Bridge Decks for Optimal Performance," **2018 China-US-Japan International Workshop on Bridge Engineering**, Dec 17, 2018, Changsha, China.

Kareem, A., "Model-Based and Data-Driven Stochastic Simulation of Wind Effects," **International Workshop on High-Performance Wind Energy Systems**, Chongqing, China, Oct 17-19.

Global Living Laboratory: Data to Knowledge, **14th General Assembly of the Chinese Academy of Engineering**, Beijing, May 2018.

Computational Wind Engineering: A Fusion of CFD, Stochastics, Machine Learning and Beyond, **International Symposium on Computational Wind Engineering**, CWE 2018, Seoul, Korea, June 2108.

Kareem, A., "Near Real-Time Monitoring of Super Tall Buildings: A SmartSync System," **The Seventh Kwang-Hua Forum on Innovation and Implementation in Earthquake Engineering Research**, Shanghai, PROC, December 9-11, 2016.

Kareem, A., "A Transition from Time or Frequency Domain to Time-Frequency Domain for Estimating Non-Synoptic Wind Load Effects," **14th International Symposium on Structural Engineering**, Beijing, PROC, Oct 12-15, 2106.

Kareem, A., "The Emerging Dynamic of Wind Effects: A Transition from Stationarity, Linearity, and Gaussianity," **In-Vento 2016, Italian Wind Engineering Conference**, Terni, Italy, Sept 24-27, 2016.

Kareem, A., "The Changing Dynamic of Wind Effects on Structures: A Transition to a Non-Stationary, Non-Linear and Non-Gaussian Outlook," **Probabilistic Methods Conference 2016, ASCE**, Nashville, TN, May 23-25, 2016

Kareem, A., "From Hazards to Disasters: A Need for a Culture of Resilience," **First International Conference on Natural Hazards & Infrastructure**, Crete, Greece, June 28-July 1, 2016

Kareem, A., "SmartSync System and IoT (Internet of Things) for Near Real-Time Monitoring of Burj Khalifa," **International Top-Level Forum on Engineering Innovation and Development**, Chongqing, PROC, May 18-19, 2016

Kareem, A., "Triple Emerging Fronts of Wind Engineering: The Three Nons" **Third International Symposium on Wind Engineering**, Tongji University, Shanghai, PROC. March 2016

Kareem, A, "From Hazards to Disasters: A Need for a Culture of Resilience," **World Engineering Education Forum**, Florence Italy, 21-24, 2015

Kareem, A., "Cyber-based Technologies for Wind Effects on Tall Buildings," **Innovations in Wind effects & Super Tall Building Engineering**, Seoul, S. Korea, Sept. 20, 2014.

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Kareem, A., "Innovation in Research and Development in Natural Hazards Engineering," **Foreign Experts Symposium**, State Administration of Foreign Experts Affairs, State Council of China, in the afternoon session joined on Round Table Meeting with **Jin Ping Xi, President of China and other cabinet members**, State Guest House, Shanghai, May 22,2014.

Kareem, A., "Wind effects: The Next Frontiers," **International Symposium on Wind Engineering**, Taipei, Taiwan, March 12, 2014.

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Kareem, A., "Nonstationary and non-Gaussian features in wind-structure interactions," **International Symposium on Unsteady Separation in Fluid-Structure Interactions,** European Research Community of Fluids, Turbulence and Combustion (**ERCOFTAC),** Mykonos, Greece, June 2013**.**

Kareem, A., "Changing Dynamic of Wind Loads: From Uniform Flows to Gust Fronts," **Large Scale Testing Facilities for Wind Hazard**, Tokyo, March 10, 2015.

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Kareem, A., "Modeling of Transient Winds and their Load Effects on Structures," Proceedings, **10th UK Conference on Wind Engineering**, Southampton, England, Sept. 2012.

Kareem, A., "Wind Induced Effects on Bluff Bodies in Turbulent Flows: Nonstationary, Non-Gaussian and Nonlinear Features, **7th International Colloquium on Bluff Body Aerodynamics & Applications**, Shanghai China, September 2012

Kareem, A., "Remarks on the Keynote Lecture: Turbulence Modeling for Strongly Detached High-Reynolds Number Flows Around Bodies with Applications in Fluid-Structure Interactions" Panelist the Keynote Session, **EMI/PMC 2012**, ASCE, June, 2012, Notre Dame, IN.

Kareem, A., "Cyberbased Analysis Modeling and Simulation of Wind Load Effects," Proceedings **International Congress of the Croatian Society of Mechanics**, Zadar, Croatia, May 2012.

Kareem, A., "Performance of Buildings in Urban Areas," **International Symposium on Full-scale Monitoring for Wind Disaster Mitigation**, Disaster Research Center, Kyoto, Japan, November, 2012.

Kareem, A., "Remarks on the Keynote Lecture: Design Processes for Wind effects Around Simple Buildings ," Panelist to the Keynote Session at the **13th International Conference on Wind Engineering,** Amsterdam, July, 2011.

Kareem, A., "Changing Dynamics of Aerodynamics," **7th Asia Pacific Conference on Wind Engineering**, Taipei, Taiwan, November 8-12, 2009

Kareem, A., "The Audacity of Change: A Transition to the Non-Stationary and Non-Linear Era,," **10th International Conference on Structural Safety and Reliability (ICOSSAR)**, Osaka, Japan, 2009

Kareem, A. "Next frontiers of innovation, discovery and learning in wind engineering: a cyberinfrastructure perspective," **3rd International Symposium on Wind Engineering**, March 2008, Tokyo, Japan

Kareem, A., "Modeling and Simulation of Non-Traditional Extreme Winds and their Effects," **13th Australasian Wind Engineering Society Workshop**, Hobart, Tasmania, December, 2008.

Kareem, A., "Climate Change and its Impact on Wind Effects and Recent Topics in Wind Energy Related Research," **13th Biennial Australasian Wind Engineering Society Workshop**, Hobart, Tasmania, December 2008.

Kareem, A, "Numerical Simulation of Wind Effects: a Probabilistic Perspective," **4th International Conference on Computational Wind Engineering**, June 2006, Yokohama, Japan.

Kareem, A., "Bluff Body Aerodynamics and Aeroelasticity," **Fourth European African Conference on Wind Engineering**, Prague, July, 11-15, 2005.

Kareem, A and Chen, X.., "Recent Advances in Dynamic Analysis of Structures to Wind," **Sixth Asia Pacific Conference on Wind Engineering**, Seoul, Korea, September, 12-15, 2005.

Kareem, A., "Tailoring Contemporary Tall Buildings for Wind Effects," CTBUH 2004 Seoul Conference: **Tall Buildings in Historical Cities – Culture & Technology for Sustainable Cities**, Council on Tall Buildings and Urban Habitat and the Architectural Institute of Korea, October 2004.

Kareem, A., "Wind Effects on Structures: The Next Frontiers," **International Wind Engineering Symposium,** IWES 2003, Taipei, Taiwan, November 17-18, 2003.

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Chen, X., and Kareem, A., "Advanced Aeroelastic Analysis of Long-Span Bridges: A Nonlinear Analysis Framework," **7th Congresso Nazionale di Ingenria del vento – In-Vento-2002**, Milano, 15-18 September 2002.

Kareem, A., " Performance of Building Cladding in Urban Environment Under Extreme Winds," **Second International Symposium on Advances in Wind & Structures,**" Busan, Korea, 21-23 August 2002.

Kareem, A. and Kijewski, T., "Probabilistic & Statistical Approaches for Wind Effects: Time-Frequency Perspectives," **Fifth Asia-Pacific Conference on Wind Engineering**, October 21-24, 2001, Kyoto, Japan.

Kareem, A., "Stochastic Techniques in Wind Engineering," **6th Italian Conference on Wind Engineering** (In-Vento-2000), Genova, 18-21 June 2000.

Kareem, A., "Modeling and Simulation of Wind Effects: A Reflection on the Past and Outlook for the Future," **First International Symposium on Wind and Structures for the 21st Century**, January 26-28, 2000, Chegu, Korea.

Kareem, A., "Analysis and Modeling of Wind Effects: Numerical Techniques," **10th International Conference on Wind Engineering**, Copenhagen, Denmark, June, 1999.

Kareem, A., "Engineering for Reducing the Toll of Natural Hazards," **First USA-China-Japan Workshop on Future R&D Directions in Public Works, Civil Infrastructure Systems and Hazard Mitigation**, Nov. 4-6, 1998, Shanghai, China.

Kareem, A., "Wind Effects on Offshore Structures," **Jubileum Conference on Wind Effects on Buildings & Structures**, Gramado, Brazil, May 25-29, 1998.

Kareem, A., "How to Cope with Low Frequency-High Impact Disasters: A Wind Engineering Viewpoint," **7th International Conference on Structural Saety and Reliability**, Kyoto, Japan, November 1997.

Kareem, A., "Jousting With the Wind: A Reflection on Past Lessons and Outlook for the 21st Century," **1997 National Hurricane Conference,** April 22-25, 1997, Houston, TX.

Reinhold, T.A. and Kareem, A., "Next Generation of Wind Test Facilities: A Feasibility Study," **Second International Workshop on Structural Control, "Next Generation of Intelligent Structures**", December 18-21, 1996, Hong Kong.

Kareem, A., "New ASCE7-95 Wind Standard," **Assessment of Wind Loads: Current Status & Future Direction**, Center for Wind-Resistant Structures, the National University of Singapore, Singapore, 16 December 1996.

Kareem, A., "Advanced Analysis Schemes for Wind Loads on Buildings," **Assessment of Wind Loads: Current Status & Future Direction**, Center for Wind-Resistant Structures, The National University of Singapore, Singapore, 16 December 1996.

Kareem, A., "Analysis and Modeling of Wind Effects on Structures," **IWEF Workshop on Computational Wind Engineering/CFD '96,** August 9, 1996, Fort Collins, Colorado.

Kareem, A., "Damping in Structures: Its Evaluation and Treatment of Uncertainty," **IWEF Meeting on Structural Damping**, September 8, 1995, Atsugi, Japan.

Kareem, A. and Gurley, K., "Reliability-Based Gust-Loading Factors for Offshore and Coastal Structures," **UNDP Sponsored Workshop on Engineering of Structures for Mitigating Damage Due to Cyclones**, Structural Engineering Research Centre, Madras, India, January 4-6, 1995.

Kareem, A., "Wind Engineering Research in USA," **Inaugural Meeting of the International Wind Engineering Forum**, Tokyo, Japan, March, 1994.

Kareem, A., "Reliability Based Analysis and Design of Wind Sensitive Structures," **UNDP Sponsored Workshop on Strategies for Design and Construction of Structures to Mitigate Damage Due to Cyclones**," Structural Engineering Research Centre, Madras, India, January 5-7, 1994.

Kareem, A., "Liquid Tuned Mass Dampers: Past, Present, and Future," **Seventh U.S. National Conference on Wind Engineering**, Los Angeles, CA, July 1993.

Kareem, A., "Nonlinear Stochastic Response of Structures to Wave Loads," **29th Polish Solid Mechanics Conference**, Rytro, Poland, September 1992.

INVITED SEMINARS

Structural Health Monitoring: From Virtual Shakers to Machine Learning, **Abbett Distinguished Lecture, Center for Intelligent Infrastructure**, Missouri University of Science & Technology, April 29, 2022.

Modeling the Dynamics of Tall Buildings under Wind: From Historical Historical Perspective to Recent Advances and Beyond, **International Association for Wind Engineering Seminar Series**, organized by the University of Birmingham, UK, December 3, 2020. via zoom for 550 registered attendees (Over 400 joined live and around 675 viewed the recorded seminar.

Wind Effects on Structures: Fundamentals to Emerging Frontiers, **University of Cambridge**, Division D Seminar Series, June 19, 2020.

Insights from Full-Scale Monitoring of Structures, **Henry L. Pierce Seminar Series, MIT**, February 2018

Wind Effects on Structures: Fundamentals to Emerging Frontiers, **Richard J. Carroll Memorial Lecture**, the **Johns Hopkins University**, March 2107.

Bluff Body Aerodynamics-Aeroelasticity: The Next Frontiers, **Mechanical Engineering Distinguished Lecture, Virginia Tech**, November 2016.

Dynamic Wind Load Effects on Tall, Long and Deep Structures, **Lecture at the Honorary Professorship Ceremony, Shijiazhuang Tiedao University,** October 2016.

CI-Enabled Simulation, Analysis, Design and Monitoring of Structures under Winds, **Departmental Lecture**, Civil Engineering Department, **University of Illinois,** April 2016**.**

Computational Tools for Bridge Aerodynamics, **Lecture at the Honorary Professorship Ceremony**, **Central South University**, Changsha, PROC, March 2016.

Cyberinfrastructure Enabled Analysis, Simulation, Design and Monitoring of Structures under Winds, **John Blume Distinguished Lecture**, 2015, **Stanford University**, Palo Alto, CA, February 25, 2015.

Cyberinfrastructure Based Analysis Simulation Design and Monitoring of Tall Buildings Under Winds, **Distinguished Lecture**, Faculty of Construction and Environment, The Hong Kong Polytechnic University, January 12, 2015.

Wind Effects: The Next Frontiers, **Harbin Institute of Technology** Shenzhen Graduate School, Zhentzhen, PROC, January 13, 2015.

Bridge Aerodynamics: The Next Frontiers, **Federal Highway Administration Fairbanks Highway Research Center**, May 13, 2014.

Wind Effects the Next Frontiers, **Honorary Professorship Lecture, Southwest Jiaotong University**, School of Civil Engineering, Chengdu, Sichuan, China, April 18, 2014.

Cyberbased Technologies in Modeling Wind Effects, **Distinguished Lecture Hunan University**, Changsha, Hunan, PROC, April 19, 2014

Frontiers of Wind Engineering @ NatHaz, **Special Seminar Walter P. Moore Associates**, Austin Texas, October 2013.

Assessing Structural Damage through Post-Disaster Surveillance: From Ground Level Observations to Aerial Imagery, **Mehta-McDonald Lecture Series**, **Texas Tech University**, Feb 13, 2013.

Natural and Supplementary Damping in Structures, **7th Annual Center for Extreme Load Effects on Structures Seminar Virginia Polytechnic Institute and State University** Blacksburg, Nov. 30th, 2012

Analysis Simulation and Design of Structures under Winds: a Cyberinfrastructure Perspective**, Richardson Lecture**, Department of Civil Engineering, **University of Colorado**, April 20, 2012.

Cyberinfrastructure based Analysis Simulation and Design of Structures under Winds**,** Department of Civil Engineering, **Rensselaer Polytechnic Institute**, April 11, 2012

Wind Effects on the Built Environment, the **ETH, Swiss Federal Institute of Technology**, Zurich;

Dynamic Wind Load Effects: The Next Frontiers, **Department of Civil Engineering Seminar**, **University of Illinois**, Urbana, Champagne, March 28, 2011

Wind Effects on Structures: The Next Frontiers, **UB-EERI, MCEER and CSEE-GSA Seminar**, **University of Buffalo**, October 2010

Recent Advances in Wind Load Effects on Structures, **Tongji Honorary Professorship Lecture**, **Tongji University**, Shanghai, October 2010.

Dynamic Load Effects on Structures, **Distinguished Lecture Series**, Department of Civil Engineering, **Duke University**, Durham, N.C., March 2010.

The Audacity of Change: A Transition to the Non-Stationary and Non-Linear Era, **Distinguished Lecture, Hong Kong, Polytechnic University**, Hong Kong, January 2010.

Tailoring Contemporary Structures for Dynamic Load Effects, **Lichtenstein Distinguished Seminar**, Department of Civil Engineering, **Ohio State University**, November 2009

The Audacity of Change: A Transition to the Nonlinear and Non-Stationary Era, **Global Center of Excellence Seminar**, Tokyo Polytechnic University, Atsugi, Japan, September 2009

The Saga of Glass Damage in Urban Environments Continues: Consequences of Aerodynamics and Debris Impact, **Global Center of Excellence Seminar**, Tokyo Polytechnic University, Atsugi, Japan, September 2009

Tailoring Contemporary Structures for Dynamic Load Effects, **Ferguson Distinguished Lecture**, Department fo Civil Engineering, The University of Texas, March 2009

Tailoring Contemporary Structures for Dynamic Load Effects, **Department of Civil and Environmental Engineering, Rice University**, October 20, 2008

Tailoring Contemporary Structures for Dynamic Wind Load Effects, **Department of Civil Engineering, University of Arizona**, April 28, 2008.

Dynamic Load Effects on Structures, **Podwell Distinguished Lecture**, City University of New York, NY, November 2007

The Wind Load Effects: The Next Frontiers, **Lecture at the Investiture Ceremony of the Advisory Lectureship at Tongji University**, Bridge Engineering Department, Tongji University, Shanghai, October 2006

Equivalent Static Loads on Structures, The 21st Century Center for Excellence on the Effects of Wind on Buildings and Urban Environment, **Tokyo Polytechnic University**, Tokyo, Japan, March 11, 2005.

Aerodynamic Tailoring of Tall Buildings, Sekolah Pendidikan Professional Dan Pendidikan Berterusan (SPACE), **Universiti Teknologi Malaysia**, Kuala Lumpur, February 23-24, 2005

Wind Effects on Structures: The Next Frontiers, The 21st Century Center for Excellence on the Wind Effects on Buildings and Urban Environment, **Tokyo Polytechnic University**, Tokyo, Japan, November 15, 2003.

Dynamics of Flexible Structures: The Next Frontiers, Department of Civil Engineering, **Universiti Teknologi Malaysia**, August 18, 2003.

Recent Advances in the Modeling of Tall Buildings Under Winds, Department of Civil Engineering, **Universiti Teknologi Malaysia**, August 12, 2003.

Dynamic Response of Structures: Computational Methods to Laboratory Experiments and Full-Scale Monitoring, **CPP, Wind Engineering Consultants**, Fort Collins Colorado, April 31, 2003

Next Frontiers in Dynamic Response of Structures, Department of Civil Engineering, **Colorado State University**, Fort Collins, Colorado, May 1, 2003.

Dynamic Response of Structures: Computational Methods to Laboratory Experiments and Full-Scale Monitoring, **Georgia Tech**, March 25, 2003.

Probabilistic Dynamic Response of Structures: Computational Tools, Laboratory and Full-Scale Experiments, **Vanderbilt University**, January 23, 2003.

Dynamic Response of Structures: Computational Methods to Laboratory Experiments and Full-Scale Monitoring, **University of California, Irvine**, California, November 22, 2002

Recent Developments in Wind Effects on Structures, **RWDI Wind Engineering Consultants**, Guelph, Canada, May 20, 2002.

Probabilistic Dynamics of Long span Bridges and Tall Buildings: The Next Frontiers, the Department of Civil Engineering, **Hong Kong Polytechnique University**, Hong Kong, April 19, 2002.

Dynamics of Tall Buildings and Long-Span Bridges, **Ove Arup Consulting Engineers**, Hong Kong, April 18, 2002

Jousting with the Wind: A Structural Engineer's Nightmare, **National Institute of Industrial Safety, Ministry of Labor, Tokyo**, March 17, 2000.

Modeling and Simulation of Wind Effects: A Reflection on the Past and Outlook for the Future, **Tokyo Institute of Polytechnics**, Tokyo, March 14, 2000.

Modeling of Dynamic Wind Effects on Structures, Department of Civil Engineering, **University of California at Berkeley**, October 25, 1999.

"Dynamic Load Effects on Structures," Joint Seminar in Mechanics and the Environment, **Duke University, Interdisciplinary Colloquia**, Department of Civil and Environmental Engineering and the Center for Applied Control at Duke University, May 4, 1999.

"Wind Effects on Civil Infrastructure," **Drexel Intelligent Infrastructure and Transportation Safety Institute**, Drexel University, Philadelphia, Pennsylvania, December 11, 1998.

"Dynamic Wind Effects on Structures," **CROM Lectures in Civil Engineering Design** 1998, Department of Civil Engineering, **University of Florida**, Gainesville, Florida, October 15, 1998.

"Probabilistic Dynamic Analysis of Structures Under Environmental Loads," Department of Civil Engineering, **Vanderbilt University**, Nashville, Tennessee, July 14, 1998.

"Modeling Analysis and Simulation of Dynamic Load Effects on Structures," Joint Seminar of the Departments of Civil Engineering and Aeronautics and Astronautics, **University of Illinois**, Urbana Champaign, Illinois, September 26, 1997.

"Dynamics of Structures Under Environmental Loads," Department of Civil Engineering, **Illinois Institute of Technology**, Chicago, Illinois, October 17, 1997.

"Dynamics of Tall Buildings Under Winds," Department of Civil Engineering, **Cornell University**, Ithaca, NY, October 29, 1996.

"Contemporary Analysis and Simulation Tools in Wind Engineering," Department of Civil Engineering, **University of Tokyo**, Tokyo, Japan, September 1995.

"Dynamic Response of Structures Under Environmental Loads," Dept. of Civil Engineering, **Johns Hopkins University**, Baltimore, Maryland, April 1995.

"Probabilistic Dynamic Response of Structures," Dept. of Civil Engineering, **Washington University**, St. Louis, Missouri, September 1994.

"Damping Devices to Control Structural Motions," **Tokyo Institute of Polytechnics**, Tokyo, March, 1994.

"Aerodynamics of Tall Buildings," **Kanagawa University**, Yokohama, Japan, March 1994.

"Stochastic Environmental Loads on Structures," **Structural Engineering Research Center**, Madras, India, December 1993.

"Wind Tunnel Modeling of Structure," **Structural Engineering Research Center**, Madras, India, December 1993.

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"Jousting with Environmental Loads: A Structural Engineer's Nightmare," Department of Civil Engineering and Geological Sciences, **University of Notre Dame**, September 1992.

"Wind Tunnel Modeling of Structures," **Tamkang University**, Taipei, Republic of China, August 1991.

"Codification of Wind Loads," **National Taiwan University**, Taipei, Taiwan, August 1991.

"Fluctuating Pressures and Forces on Bluff Bodies," Institute of Industrial Sciences, **University of Tokyo**, March 1990.

"Wind and Wave Loadings on Tension Leg Platforms," **Chevron Oil Field Research Company**, California, July 1990.

"Stochastic Analysis of Tension Leg Platforms," **UH Energy Laboratory** Seminar Series, Houston, Texas, April 1990.

"Dynamics of Tension Leg Platforms," **Shell Development Company**, Bellaire Research Center, Bellaire, Texas, April 1989.

"Stochastic Response of Tension Leg Platform to Wind and Wave Fields," Production Research Department, Marine Group, **Conoco, Inc**., Ponca City, Oklahoma, October 1987.

"Stochastic Response of Offshore Platforms," **Department of Mathematics**, University of Houston, April 1987.

"Performance of Constructed Facilities Under Extreme Winds," Department of Civil Engineering Seminar, **University of Houston**, December 1986.

"Environmental Loading of Offshore Platforms," **Shell Development Company**, Bellaire Research Center, Bellaire, Texas, July 1985.

"Wind Loads on Offshore Platforms," **Brown and Root, Inc.**, Halliburton Companies, Houston, Texas, June 1985.

"Computer-Aided Design of Structures," **Pakistan Railways, Structural Engineering Division,** and Computerization Institute, Lahore, Pakistan, December 1984.

"Hurricane Alicia: Wind Field Characteristics," **American Meteorological Society**, Houston, March 1984.

"Effects of Hurricane Alicia in the Galveston-Houston Region of Texas," Fluid Mechanics and Wind Engineering Program Seminar Series, Department of Civil Engineering, **Colorado State University**, November 1983.

"Wind Field Characteristics Over the Ocean and Wind Load Effects on Offshore Installation," **Gulf Research & Development Company**, Houston, Texas, June 1983.

"Wind Engineering Study of Buildings A Designer's Viewpoint," **Bernard Johnson, Inc.**, Houston, Texas, January 1983.

"Nonlinear Dynamic Response of Compliant Offshore Structures," Structural Engineering Seminar, **Rice University**, Houston, Texas, November, 1982.

"Probabilistic Structural Dynamics with Applications to Environmental Loads," Structural Engineering Seminar, **University of Colorado**, February, 1982.

"Environmental Loads on Structures with Applications to Structural Dynamics," Structural Engineering Seminar, **Texas A & M University**, February, 1982.

"Dynamic Effects of Wind on Offshore Structures," **Chevron Oil Field Research Company**, U.S.A., September 1981.

"Wind Loads on Gulf Oil TLP," **Gulf Research & Development Company**, Houston, Texas, May 1981.

"Dynamics of Tall Buildings," **Dept. of Civil Engineering, Georgia Tech.**, Atlanta, July 1979.

"Wind Excited Response of Tall Buildings," **Dept. of Civil Engineering**, University of Houston, March 1978.

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Chen, X., Kareem, A., Xu, G., Sun, Y., Wang, H., Hu, Liang, "Optimal Tuned Mass Dampers for wind turbine using a Sigmoid satisfaction function-base multi-objective optimization under earthquakes,", ***Wind Energy***, 2021.

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Bai, H., Li, R., Xu, G. Kareem, A., "Aerodynamics of Pi shaped composite deck cable-stayed bridges including VIV mitigation measures," ***Journal of Wind Engineering and Industrial Aerodynamics,*** 208, 104451, 2021.

Cid Montoya, M., Hernandez, S., Nieto, F., Kareem, A., "Aero-structural Design of Bridges Focusing on the Buffeting Responses: Formulation, Parametric Studies and Deck Shape Tailoring,", ***Journal of Wind Engineering and Industrial Aerodynamics***, 204, 104243, 2020. 10.1061/(ASCE)BE.1943-5592.0001705

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ExxonMobil, Houston Texas, Floating, Production, Storage and Offloading Vessels.

Chevron Oil Field Research Company, La Habra, CA. - Offshore Structures.

Aerovironment, Inc., Pasadena, CA., General Consultant - Wind Energy Systems and Structural Aerodynamics.

Herzfeld & Rubin, New York, N.Y. - Automobile Aerodynamics.

The Reinforced Earth Company, Arlington, VA. - Structural Aerodynamics.

Bernard Johnson, Inc., Houston, TX. - Structural Dynamics.

Walter P. Moore and Associates, Inc., Houston, TX. - Structural Dynamics.

Reynolds, Allen & Cook, Houston, TX. - Cladding Behavior of Tall Buildings.

Applied Research Engineering Services, Inc., Raleigh, N.C. - Wind Engineering, Earthquake Engineering, and Structural Dynamics.

United Nations Development Program, Madras, India - Engineering of Structures for Mitigating Damage Due to Cyclones.

Impact Forecasting, L.L.C., Chicago, Illinois – Risk Assessment of Structures in Wind Storms and Earthquakes.

KPFF Consulting Engineers, Seattle, Washington – Design of Olive & Eight a 420 ft. tall building in Seattle and Olivian a 400 ft tall building in Seattle.

State Farm Insurance, Damage evaluation of coastal communities in the wake of Katrina.

MacNamara Consulting, Design of Tuned Sloshing Dampers

Jones Day, Attorneys at Law, Stability of a Scissor Lift

Willis Tower TV Antenna Mast Damping, Willis Tower.

Damping in Tall Building in NYC, Kaufman Borgeest & Ryan LLP