THE UNIVERSITY OF TEXAS AT AUSTIN
Cockrell School of Engineering

FULL NAME: Tan Bui-Thanh **TITLE**: Professor

DEPARTMENT: Aerospace Engineering & Engineering Mechanics, and the Oden Institute

EDUCATION:

Degree	University	Year	Advisor
PhD Title: Model-Constrained Optimization Methods for Reduction of Parameterized Large-Scale Systems	MIT Major: Computational Fluid Dynamics	2007	Karen Willcox
M.Eng Title: Proper Orthogonal Decomposition Extensions and Their Applications in Steady Aerodynamics	Singapore MIT-Alliance (Nanyang Technological University) Major: High-performance Computation for Engineered Systems	2003	Murali Damodaran + Karen Willcox
B.Eng	HCM City University of Technology (Vietnam) Major: Aeronautics	2001	

Google Scholar link

VITA:

Tan Bui-Thanh is a professor (starting from 09/25), and the endowed William J Murray Jr. Fellow in Engineering No. 4, of the Oden Institute for Computational Engineering & Sciences, and the Department of Aerospace Engineering & Engineering Mechanics at the University of Texas at Austin. Bui-Thanh obtained his PhD from the Massachusetts Institute of Technology in 2007. In 2013, Bui-Thanh joined the ASE/EM department of the Cockrell School of Engineering at the University of Texas of Austin as an assistant professor. *He has decades of experience and expertise in multidisciplinary research across the boundaries of different branches of computational science, engineering, and mathematics*. Bui-Thanh is currently a co-director of the Center for Scientific Machine Learning at the Oden Institute. He is a former elected vice president of the SIAM Texas-Louisiana Section and a former elected secretary of the SIAM SIAG/CSE. Bui-Thanh was an NSF (OAC/DMS) early CAREER recipient, the Oden Institute distinguished research award, a two-time winner of the Moncrief Faculty Challenging award, and a Gordon Bell Prize finalist.

Bui-Thanh has extensive expertise with a track record on PDE-constrained inverse problems, Bayesian inverse problems, uncertainty quantification (UQ), reduced-order modeling (ROM) and surrogate, and high-order finite element methods. He has developed various physics-aware SciML approaches including causal recurrent neural networks (cRNN) to predict sea wave height from microseismic data, ROM-ML combing ROM for fast and accurate solutions of neutron transport and inverse problems, model-constrained autoencoder method for forward and inverse problems, modal-constrained variational autoencoder method for Bayesian inference, physics-aware deep learning methods for forward and inverse problems, unifying approximation theory for neural networks, to name a few.

PROFESSIONAL REGISTRATION: Texas

CURRENT AND PREVIOUS ACADEMIC POSITIONS:

Title	Employer	Dates	Advisor
Professor	UT Austin	09/2025--	
Associate Professor	UT Austin	09/2019--09/2025	
Assistant Professor	UT Austin	08/2013--08/2019	
Postdoc/Research-Associate/Research Scientist	UT Austin	06/2008--08/2013	Omar Ghattas
Postdoc associate	MIT	06/2007--06/2008	Raul Radovitzky
Research	MIT	02/2004--05/2007	Karen Willcox
Assistant Research Assistant	Singapore MIT alliance	06/2001--06/2003	Murali Damodaran + Karen Willcox

OTHER PROFESSIONAL EXPERIENCE:

1. Judge for GAIN 2014, The University of Texas at Austin,
2. Judge for CFD student competition at the AIAA CFD conference, 05/20—05/30, 2015
3. Judge for poster minisymposterium at the SIAM Computational Sciences and Engineering conference, February 2017
4. Outstanding Dissertation Review and Selection Committee, The University of Texas at Austin, 2018
5. UT Senate Event: Sandwiches with Professors, February 2018
6. Judge for GAIN 2018, The University of Texas at Austin, 01/30/2018
7. Judge for the 5th Annual Undergraduate Poster Exhibition, The University of Texas at Austin
8. Judge for poster minisymposterium at the SIAM Computational Sciences and Engineering conference, 02/28/2017
9. Judge for Texas Datathon, February 2018
10. Chair of the best paper prize for SIAM CSE 23, 02/26-03/03, 2023, Amsterdam, the Netherlands

HONORS AND AWARDS:

1. Best student, Ho Chi Minh City National University, Vietnam, 1996.
2. Best student, Ho Chi Minh City National University, Vietnam, 1997.
3. ROtring Merit award for top-scorer in the intake examination, Ho Chi Minh City University of Technology, Vietnam, 1998.
4. Silver medal in Fluid Mechanics in national Olympic competition, Vietnam, 1999.
5. Colombo Plan scholarship for excellent student, Ho Chi Minh City University of Technology, Vietnam, 2000.
6. Monthly scholarship for excellent student, Ho Chi Minh City University of Technology, Vietnam, 1996–2001.
7. Singapore-MIT Alliance Scholarship, Singapore, 2001–2003.
8. Institute of High Performance Computing IHPC-SUN Award for the best student in "Introduction to Numerical Simulation", Singapore, 2002.
9. Defense Science Organization (DSO) National Lab Award for the best master's thesis, Singapore, 2003.
10. Moncrief Grand Challenges Faculty Award, 2014.
11. Summer Faculty fellowship, Air Force Office of Scientific Research (AFOSR), 2016.
12. NSF Career Award (jointly by NSF Office of Advanced Cyberinfrastructure and NSF Division of **Applied Mathematics), 2019.**
13. Moncrief Grand Challenges Faculty Award, 2019.
14. Distinguished Research Award, 2019.
15. Endowed William J. Murray, Jr. Fellow in Engineering No. 4, 2020
16. Elected Vice President of the SIAM TX-LA section May 2020 to May 2022
17. Elected Secretary of the SIAM Activity Group on Computational Sciences and Engineering (SIAG/CSE), 2021-2023
18. Elected to the editorial board for Computer and Mathematics with Applications, Elsevier, March 2021

KEYNOTE/PLENARY SPEAKER/LECTURER:

1. Invited lecturer at international school on "Some Mathematical Problems related to Electromagnetic Waves" at Vietnam Institute for Advanced Studies in Mathematics, 2014
2. Invited speaker on "Some Recent Advances in Hybridized Discontinuous Galerkin Methods", at the workshop on advanced Numerical Methods in the Mathematical Sciences, Texas A&M, 2015.
3. Invited lecturer at the International Winter School on UQ, Norway, January 2015
4. Invited lecturer at the EU Regional school on UQ, Aachen, Germany, Sep 2015
5. Invited speaker at the Oberwolfach workshop, Germany, Sep 2015
6. Invited lecturer at Texas Consortium for Computational Seismology, April, 2016
7. Invited speaker at the workshop on Uncertainty Quantification, Guanajuato, Mexico, January, 2017
8. Plenary speaker at the Ninth Meeting on Numerical Analysis of Partial Differential Equations, Santiago, Chile, June 2017
9. Plenary speaker at the VII International Congress on numerical methods, Guadalajara, Mexico, June, 2017

10. Invited speaker at the workshop on Uncertainty Quantification and Data-Driven Modeling, Austin, March, 2017
11. Invited speaker at the mini workshop on Bayesian Inverse Problems and Imaging, Shanghai, May, 2017
12. Plenary speaker at MATHEMATICS FOR ATMOSPHERIC-BIOSPHERIC SCIENCE conference, Levi, Finland, November, 2017
13. Invited speaker at the workshop on Sensor location in Distribution parameter systems, Institute for Mathematics and its Applications, Minnesota, September, 2017
14. Invited speaker at Reducing the dimensions and cost for UQ in complex systems, the Isaac Newton Institute for Mathematical sciences, UK, March, 2018.
15. Invited lecturer at the "Numerical modeling with hyperbolic equations" workshop, CIMAT, Guanajuato, Mexico, April 2018.
16. Keynote speaker at the “International symposium on Big data challenges for predictive modeling of complex systems”, November 2018, Hong Kong.
17. Invited speaker at the “Efficient operator splitting techniques for complex systems and large-scale data analysis”, Tsinghua Sanya International Mathematical Forum, January 2019, China.
18. Keynote speaker at the “Guanajuato Uncertainty Quantification”, January 2019, Queretaro, Mexico.
19. Lecturer: Short course on discontinuous Galerkin Methods, Seoul National University, South Korea, May 2019.
20. Keynote speaker at “Caltech workshop on Inverse Problems”, February 2020, Pasadena.
21. Semi plenary speaker at “the International Conference on Computational Methods ICCM2021”, July 2021.
22. Invited lecturer at the EU Regional school on UQ, Aachen, Germany, Sep 2021
23. Plenary Speaker at the 2nd North American High Order Methods Conference, San Diego, July 2022.
24. Keynote speaker of the minisymposium “Advances in high-order methods for computational fluid dynamics”, Computational Fluids Conferences, Cannes, April 28, 2023.
25. Invited lecturer on “Short course in scientific deep learning”, University of New South Wales, Australia, June 31-July 1, 2023.
26. Invited lecturer on “Short course in scientific deep learning”, National Taiwan University, Taiwan, July 3-July 14, 2023.
27. Invited lecturer on “Short course in scientific deep learning”, Yonsei University, South Korea, August 1-August 11, 2023.
28. Invited lecturer on “Short course in scientific deep learning”, Politecnico di Torino, Italy, June 11-August June 13, 2024.
29. Invited Keynote speaker at TACC Symposium for Texas Researchers, September 2024
30. Invited plenary speaker at the XLV Ibero-Latin American Congress on Computational Methods in Engineering (CILAMCE 2024), Maceió, Alagoas, Brazil, from 11 to 14 November 2024.
31. Keynote speaker in the minisymposium “Inverse Problems and Data Assimilation for Digital Twins” at the DTE & AICOMAS 2025, Paris 17-21, February, 2025.

PROFESSIONAL SOCIETY/GOVERNMENT SERVICE AND TECHNICAL COMMITTEES:

1. Member, AIAA Fluid Dynamic Technical Committee 2015-2017
2. Organizing committee for the Meeting of Texas-Louisiana (TX-LA) Section of the Society for Industrial and Applied Mathematics (SIAM), October 5-7, 2018
3. Co-chair, Finite Element (FEM) Rodeo at the University of Texas at Austin, 2013, 2019
4. Vice-Chair of US National Congress on Computational Mechanics, Austin, July 2019.
5. Organizing committee for the Annual Meeting of Texas-Louisiana (TX-LA) Section of the Society for Industrial and Applied Mathematics (SIAM), October 16-18, 2020
6. Associate Editor of the SIAM Journal on Scientific Computing, since January 2020
7. Associate Editor of the Elsevier Journal on Computational Physics, since April 2021
8. Organizing committee for the Annual Meeting of Texas-Louisiana (TX-LA) Section of the Society for Industrial and Applied Mathematics (SIAM), Nov 5-7, 2021
9. Member of Program Committee for the IEEE symposium series on computational intelligence: 2022 Special Session: Physics-informed Computational Intelligence: Theories, Models and Applications (PHYCI) https://ieeessci2022.org/specialsession_Physics-pci.html, Dec 4-7, 2022.
10. A main organizer of the "Inaugural Workshop on Scientific Machine Learning", UT Austin, April 3-4, 2023.
11. Invited Panelist for "Round Table: Data-driven methods and Machine learning for CFD", 22nd Computational Fluid Conferences, Cannes, France, April 26, 2023
12. Invited Panelist at RTX Physics Informed Machine Learning (PIML) Workshop 2023 on Nov 1, 2023.
13. Elected Vice President of the SIAM TX-LA section May 2020 to May 2022
14. Elected Secretary of the SIAM SIAG/CSE since January 2021
15. Editorial board member of the SIAM Journal of Scientific Computing (2019-2022) and Journal of Computational Physics 2020-2021
16. Elected editorial board member of Computer & Mathematics with Applications since 2021

CONFERENCE ACTIVITIES:

1. Organizer of the Minisymposium on "Large-scale Optimization in Inverse Wave Propagation" at the Siam Conference on Computational Science and Engineering, Reno, NV, 2011.
2. Organizer of the Minisymposium on "Large-Scale Full Waveform Inversion" at the SIAM Conference on Computational Science and Engineering, Boston, MA, 2013.
3. Co-chair, FEM Rodeo at UT Austin, 2013

4. Organizer of the Minisymposium on “Recent Advances in High Order Finite Element Methods” at the SIAM Conference on Computational Science and Engineering, Boston, MA, 2013.
5. Organizer of the Minisymposium on “Recent Advances in High Order Discontinuous Galerkin Methods” ICOSAHOM 14, Salt Lake City, Utah, 2014.
6. Organizer of the Minisymposium on “Uncertainty Modeling and High Performance Stochastic Methods for Computationally Intensive Calibrations, Predictions and Optimizations” WCCM 14, Barcelona, Spain, 2014
7. Organizer of the minisymposium on “Theory Implementation and Applications of HDG Methods” at the SIAM Conference on Computational Science and Engineering, Utah, 2015
8. Organizer of the minisymposium on “Recent Advances in High Order Finite Element Methods for Atmospheric Sciences” at the SIAM Conference on Computational Science and Engineering, Utah, 2015
9. Organizer of the minisymposium on “Higher Order Finite Element Discretizations” at the 1st Pan- American Congress on Computational Mechanics, Buenos Aires, 2015
10. Organizer of the minisymposium on “Recent Advances in Higher Order Finite Element Methods” at the 13th US National Congress on Computational Mechanics, San Diego, 2015
11. Organizer of the minisymposium “Advances in MCMC and related sampling methods for large-scale inverse” at the 8th International Congress on Industrial and Applied Mathematics, August, 2015, Beijing, China
12. Organizer of the minisymposium “Inverse Problems meet big data”, at the SIAM Conference on Uncertainty Quantification, Lausanne, April, 2016.
13. Organizer of the minisymposium “Advances in Sampling Methods for Bayesian Inverse Problems”, at the SIAM Conference on Uncertainty Quantification, Lausanne, April, 2016.
14. Organizer of the minisymposium “Advances in Sampling Methods for Bayesian Inverse Problems”, at the SIAM Conference on Uncertainty Quantification, Lausanne, April, 2016.
15. Organizer of the minisymposium “Inverse Problems meet big data”, at the SIAM Conference on Computational Science and Engineering, Atlanta, 2017
16. Organizer of the minisymposium “Efficient Algorithms for Bayesian Inverse Problems Governed by PDE Forward Problems”, at the SIAM Conference on Computational Science and Engineering, Atlanta, 2017
17. Organizer of the minisymposium “Advances in MCMC and Related Sampling Methods for Large-Scale Inverse Problems”, at the SIAM Conference on Computational Science and Engineering, Atlanta, 2017
18. Organizer of the minisymposium “Advances Approaches for PDE-Constrained Bayesian Inverse”, at the SIAM Annual Meeting, Atlanta, July, 2017
19. Organizer of the minisymposium “Advances in Uncertainty quantification for multi-physics applications”, at the SIAM UQ conference, Garden Grove, April, 2018
20. Organizer of the minisymposium “Hybridized Discontinuous Galerkin Methods”, at the ICOSAHOM conference, London, July, 2018
21. Organizer of the minisymposium “High-Order discretizations for Multi-physics”, at the WCCM conference, New York, July, 2018
22. Organizer of the minisymposium “Advances in Uncertainty Quantification for Multi-physics Applications”, at the WCCM conference, New York, July, 2018

23. Organizer of the minisymposium “Inverse Problems and Imaging”, at the SIAM TX-LA meeting, Louisiana, October, 2018
24. Organizer of the minisymposium “High-order Finite element methods for complex and multiphysics applications”, at the SIAM CSE conference, Spokane, February, 2019
25. Organizer of the minisymposium “Exploiting Model Hierarchies, Sparsity, and low rank structure of large-scale Bayesian computation”, at the SIAM CSE conference, Spokane, February, 2019.
26. Organizer of the Contributed session “Sampling Techniques for High Dimensional Bayesian Inverse Problems”, Bayes Comp, January, 2020.
27. Organizer of the minisymposition “Scientific Machine Learning” in the SIAM TX-LA annual meeting, College Station, October, 2020.
28. Organizer of the minisymposium “Model-Aware Machine Learning Methods for Science and Engineering Problems”, USNCCM, July, 2021.
29. Organizer of the minisymposium “Uncertainty Quantification for Data-intensive Inverse problems and learning”, SIAM CSE, March, 2021.
30. Organizer of the minisymposium “Machine Learning Based models for forward and inverse problems in Computational Science and Engineering”, Mechanistic Machine learning and digital twin for computational science, engineering, and technology, Sep, 2021.
31. Organizer of the minisymposium “Uncertainty Quantification for Data-Intensive Inverse Problems and Machine Learning”, SIAM UQ, Atlanta, April, 2022
32. Organizer of the minisymposium “Scientific Deep Learning”, SIAM TX-LA, Houston, Nov 4-6, 2022
33. Organizer of the minisymposium “Uncertainty quantification for data-intensive Inverse Problems and Learning”, SIAM CSE 23, Amsterdam, March 2023.
34. Organizer of the minisymposium “Machine Learning in CFD”, Computational Fluids Conferences, Cannes, April 25-28, 2023
35. Organizer of the minisymposium “Scientific Deep learning”, US National Congress on Computational Mechanics, July 23-27, 2023, New Mexico, USA.
36. Organizer of the minisymposium “Scientific Deep learning”, World Congress on Computational Mechanics, July 21-26, 2024, Vancouver, Canada.
37. Organizer of the minisymposium “Machine Learning for Design Tasks and Inverse Problems”, World Congress on Computational Mechanics, July 21-26, 2024, Vancouver, Canada.
38. Organizer of the minisymposium “Scientific Deep Learning Approaches for realtime forecast and calibration of digital models”, at the DTE & AICOMAS 2025, Paris 17-21, February, 2025.

COMMUNITY ACTIVITIES:

1. Outreach to Lake Travis Elementary School, 2018
2. Outreach to Lake Travis High School: 01/07/2023

PUBLICATIONS:

Blue Italic names are my postdocs
Red Italic names are my graduate students.

Boldface names are my Master/PhD/Postdoc mentors

A. Refereed Journal Papers (Please click to the name of a paper to lead to the actual published copy of the paper)

1. Bui-Thanh, T., Damodaran, M. and Willcox, K., "Aerodynamic Data Reconstruction and Inverse Design using Proper Orthogonal Decomposition", AIAA Journal, Vol. 42, No. 8, August 2004, pp. 1505-1516.

2. Bui-Thanh, T., Willcox, K., and Ghattas, O., "Goal-Oriented, Model-Constrained Optimization for Reduction of Large-Scale Systems", Journal of Computational Physics, Vol. 224, 2007, pp.880–896.
3. Bui-Thanh, T., Willcox, K., and Ghattas, O., "Parametric Reduced-Order Models for Probabilistic Analysis of Unsteady Aerodynamic Applications", AIAA Journal, Vol. 46, No. 10, pp. 2520-2529, 2008.

4. Bui-Thanh, T., Willcox, K., and Ghattas, O., "Model Reduction for Large-Scale Systems with High- Dimensional Parametric Input Space", SIAM Journal on Scientific Computing, Vol. 30, No. 6, pp. 3270-3288. 2008.

5. Wadley, H.N.G., Dharmasena, K.P., He, M.Y., McMeeking, R. M., Evans, A. G., Bui-Thanh, T., and Radovitzky, R., "An Active concept for limiting injuries caused by airblasts", International Journal of Impact Engineering, 37(3), pp. 317–323, 2010.

6. Bui-Thanh, T., and Ghattas, O., "An Analysis of a Non-conforming hp-Discontinuous Galerkin Spec- tral Element Method for Wave Propagations", SIAM Journal on Numerical Analysis, 50(3), pp. 1801–1826, 2012.
7. Bui-Thanh, T., and Ghattas, O., "Analysis of the Hessian for Inverse Scattering Problems. Part II: Inverse Medium Scattering of Acoustic Waves", Inverse Problems, 28, 055002, 2012.
8. Bui-Thanh, T., and Ghattas, O., "Analysis of the Hessian for Inverse Scattering Problems. Part I: Inverse Shape Scattering of Acoustic Waves", In 2013 Highlight Collection of Inverse Problems, 28, 055001, 2012.
9. Bui-Thanh, T., Ghattas, O., and Higdon, D., "Adaptive Hessian-based Non-stationary Gaussian Process Response Surface Method for Probability Density Approximation with Application to Bayesian Solution of Large-scale Inverse Problems", SIAM Journal on Scientific Computing, 34(6), pp. A2837– A2871, 2012.
10. Bui-Thanh, T., Burstedde, C., Ghattas, O., Martin, J., Stadler, G., and Wilcox, L., "Extreme-scale UQ for Bayesian inverse problems governed by PDEs", Proceedings of SC12, Gordon Bell Prize Finalist, 2012.

11. Bui-Thanh, T., Demkowicz, L., and Ghattas, O., "Constructively Well-Posed Approximation Methods with Unity Inf-Sup and Continuity Constants for Partial Differential Equations", Mathematics of Computation, 82(284), pp. 1923–1952, 2013.
12. Bui-Thanh, T., Ghattas, O., Martin, J., and Stadler, G., "A computational framework for infinite- dimensional Bayesian inverse problems. Part I: The linearized case", SIAM

Journal on Scientific Computing, SIAM Journal on Scientific Computing, 35(6), pp. A2494--A2523, 2013.

13. Bui-Thanh, T., Demkowicz, L., and Ghattas, O., "A Unified Discontinuous Petrov-Galerkin Method and its Analysis for Friedrichs' Systems", SIAM J. Numer. Anal., 51(4), pp. 1933–1958, 2013.
14. Bui-Thanh, T., and Ghattas, O., "Analysis of the Hessian for Inverse Scattering Problems. Part III: Inverse Medium Scattering of Electromagnetic Waves in Three Dimensions" Inverse Problems and Imaging, 7(4), pp. 1139–1155, 2013.

15. Chan, J., Heuer, N., Bui-Thanh, T., and Demkowicz, D., "Robust DPG Method for Convection- Dominated Diffusion Problems II: A Natural in Flow Condition", Computers & Mathematics with Applications, 67, pp. 771–795, 2014.

16. Roberts, N., Bui-Thanh, T., and Demkowicz, D., "The DPG Method for the Stokes Problem", Computers & Mathematics with Applications, 67, pp. 966–995, 2014.

17. Bui-Thanh, T., and Ghattas, O., "An Analysis of Infinite Dimensional Bayesian Inverse Shape Acoustic Scattering and its Numerical Approximation", SIAM Journal on Uncertainty Quantification, 2, pp. 203–222, 2014.
18. Bui-Thanh, T., and Ghattas, O., "A PDE-constrained Optimization Approach to the Discontinuous Petrov-Galerkin Method with a Trust Region Inexact Newton-CG Solver" Comput. Methods Appl. Mech. Engrg., 278, pp. 20–40, 2014.

19. Bui-Thanh, T., and Girolami, M., "Solving Large-scale PDE-Constrained Bayesian Inverse Problems with Riemann Manifold Hamiltonian Monte Carlo" Inverse Problems, special issue, 30, 114014, 2014.
20. Bui-Thanh, T., and Ghattas, O., "A Scalable MAP Solver for Bayesian Inverse Problems with Besov Priors ", Inverse Problems and Imaging, 9(1), pp. 27--53, 2015.

21. Wilcox, L., Stadler, G., Bui-Thanh, T., and Ghattas, O., "Discretely Exact Derivatives for Hyperbolic PDE-Constrained Optimization Problems Discretized by the Discontinuous Galerkin Method" Journal of Scientific Computing, 63, pp. 138--162, 2015.

22. Bui-Thanh, T., "From Godunov to A Unified Hybridized Discontinuous Galerkin Framework", Journal of Computational Physics, 295, pp. 114-146, 2015.

23. Lan, S., Bui-Thanh, T., Christie, M., and Girolami, M., "Emulation of higher-order tensors in manifold Monte Carlo methods for Bayesian Inverse Problems", Journal of Computational Physics, 308, 81--101, March, 2016
24. Constantine, P.G., Kent, C., and Bui-Thanh, T., "Accelerating MCMC with active subspaces", SIAM Journal on Scientific Computing, 38(5), pp. A2779--A2805, 01 September 2016.
25. Bui-Thanh, T., "Hybridized Discontinuous Galerkin Methods for Linearized Shallow Water Equations", SIAM Journal on Scientific Computing, 38(6), pp. A3696--A3719, November 2016.

26. Bui-Thanh, T., and Nguyen, Q. P., "FEM-Based Discretization-Invariant MCMC Methods for PDE-constrained Bayesian Inverse Problems", Inverse Problems and Imaging, 943 - 975, Volume 10, Issue 4, November 2016.
27. Le, E., Myers, A., Bui-Thanh, T., and Nguyen, Q. P., "A Randomized Misfit Approach for Data Reduction in Large-Scale Inverse Problems", Inverse Problems, 33(6), 065003, May, 2017.
28. Lin, Y., Le, E.B., O'Malley, D., Vesselinov, V.V., and Bui-Thanh, T., "Large-Scale Inverse Model Analyses Employing Fast Randomized Data Reduction", Water Resources Research, Pages 6784–6801, Volume 53, Issue 8, August 2017.

29. Muralikrishnan, S., Tran, M.-B., and Bui-Thanh, T., "iHDG: An iterative HDG Framework for Partial Differential Equations", SIAM Journal on Scientific Computing, 39(5), pp. S782--S808, 2017.
30. Alger, N., Villa, U., Bui-Thanh, T., and Ghattas, O., "A Data Scalable Augmented Lagrangian KKT Preconditioner for Large-scale Inverse Problems", SIAM Journal on Scientific Computing, 39(5), pp. A2365-A2393, 2017.

31. Wang, K., Bui-Thanh, T., and Ghattas, O., "A Randomized Maximum A Posteriori Method for Posterior Sampling of High Dimensional Nonlinear Bayesian Inverse Problems", SIAM Journal on Scientific Computing, 40(1), pp. A142—A171, January, 2018.

32. Muralikrishnan, S., Tran, M.B., and Bui-Thanh, T., "Scalable Matrix-Free Adaptive Product-Convolution Approximation for Locally Translation-Invariant Operators", Journal of Computational Physics, 367, pp. 295-321, August 15, 2018

33. Lee, J., Shannon, S., Bui-Thanh, T., and Shadid, J., "Analysis of an HDG method for linearized incompressible resistive MHD equations", SIAM Journal on Numerical Analysis, 57(4), 1697–1722, June 25, 2019.

34. Alger, N., Rao, V., Myers, A., Bui-Thanh, T., Ghattas, O., "Adaptive Grid Convolution-product approximation for large-scale matrix-free operator", SIAM Journal on Scientific Computing, 41(4), A2296–A2328, June 23, 2019.

35. Kang, S., Bui-Thanh, T., and Arbogast, T., "A Hybridized Discontinuous Galerkin Method for Linear Degenerate Elliptic Equation Arising from Two-Phase Mixtures", Comput. Methods Appl. Mech. Engrg, 350, pp. 315--336, March 15, 2019.

36. Wildey, T., Muralikrishnan, S., and Bui-Thanh, T., "Unified Geometric Multigrid Algorithm for Hybridized high-order finite element methods", SIAM Journal on Scientific Computing, 41(5), S172-S195, October 29, 2019.

37. Kang, S., Giraldo, F.X., and Bui-Thanh, T., "IMEX HDG-DG: a coupled implicit hybridized discontinuous Galerkin (HDG) and explicit discontinuous Galerkin (DG) approach for shallow water systems", Journal of Computational Physics, 401, 109010, October 10, 2019.

38. Muralikrishnan, S., Bui-Thanh, T., Shadid, J., "A Multilevel Approach for Trace System in HDG Discretizations", Journal of Computational Physics, 407(15), 109240, January, 2020.

39. Ilona Ambartsumyan, Wajih Boukaram, Tan Bui-Thanh, Omar Ghattas, David Keyes, Georg Stadler, George Turkiyyah, and Stefano Zampini, "Hierarchical Matrix Approximations of Hessians arising in Inverse Problems Governed by PDEs", SIAM Journal on Scientific Computing, 42(5), October 2020.

40. Myers, A. Thiery, A., Wang, K., and Bui-Thanh, T. "Sequential Ensemble transform for Bayesian inverse problems", Journal of Computational Physics, 427(15), 110055, December 2020.

41. Zhang W, Rossini G, Kamensky D, Bui-Thanh T, Sacks MS. "Isogeometric finite element-based simulation of the aortic heart valve: Integration of neural network structural material model and structural tensor fiber architecture representations". Int J Numer Meth Biomed Engng. 2021; 37:e3438. https://doi.org/10.1002/cnm.3438, January 2021.

42. Kang, S., and Bui-Thanh, T., "A scalable exponential-DG approach for nonlinear conservation laws: with application to Burger and Euler equations ", Computer Methods in Applied Mechanics and Engineering, Volume 385, 1 November 2021, 114031.
43. Bui-Thanh, T., Li, Q., and Zepeda-Nunez, L., "Bridging and Improving Theoretical and Computational Electric Impedance Tomography via Data Completion", SIAM Journal on Scientific Computing, 4(3), B668-B693, June 1, 2022.
44. Wenbo Zhang, David S. Li, Tan Bui-Thanh, and Michael S. Sacks, "Simulation of the 3D Hyperelastic Behavior of Ventricular Myocardium using a Finite-Element Based Neural-Network Approach", Computer Methods in Applied Mechanics and Engineering, Volume 294, 114871, May 2022.
45. Hai Nguyen, Jonathan Wittmer, and Tan Bui-Thanh, "DIAS: A Data-Informed Active Subspace regularization framework for inverse problems", MDPI Computation, Volume 10, number 3, 38, March 2022. https://doi.org/10.3390/computation10030038. This is an open-access article.
46. Steins, E, Bui-Thanh, T, Herty, M, Müller, S. "Probabilistic constrained Bayesian inversion for transpiration cooling". Int J Numer Meth Fluids. 94(12), 2020– 2039, August 2022. doi:10.1002/fld.5135
47. Lee, J., Bui-Thanh, T., Villa, U., Ghattas, O.,"Forward and inverse modelings of fault transmissibility in subsurface flows", Computers & Mathematics with Applications,128 , 354-367, December 15, 2022.
48. Muralikrishnan, S., Shannon, S., Bui-Thanh, T., and Shadid, J., "A Multilevel Block Preconditioner for the HDG Trace System Applied to Incompressible Resistive MHD", Computer Methods in Applied Mechanics and Engineering, Volume 404, 1 February 2023, 115775
49. Hai V. Nguyen, Tan Bui-Thanh, "A Model-Constrained Tangent Slope Learning Approach for Dynamical Systems", International Journal of Computational Fluid Dynamics, 36:7, 655-685, DOI: 10.1080/10618562.2022.2146677, Feb, 2023.

50. Jonathan Wittmer, Krishnanunni C.G, Hai V. Nguyen, and Tan Bui-Thanh. "On Unifying Randomized Methods for Inverse Problems", Inverse Problems, Volume 39, Number 7, 075010, June, 2023. DOI 10.1088/1361-6420/acd36e
51. Albert Orwa Akuno, L. Leticia Ramirez-Ramirez, Chahak Mehta, Krishnanunni C.G., Bui-Thanh, T., and Jose Arturo Montoya, "Multi-patch epidemic models with partial mobility, residency, and demography", Chaos, Solitons & Fractals, Volume 173, 113690, August 2023.
52. Jonathan Wittmer, Jacob Badger, Hari Sundar, and Tan Bui-Thanh. "An Autoencoder Compression Approach for Accelerating Large-scale Inverse Problems", Inverse Problems, 39 115009 , October, 2023. DOI 10.1088/1361-6420/acfbe1
53. Bui-Thanh, T., "A Unified and Constructive Framework for the Universality of Neural Networks", The IMA Journal of Applied Mathematics, hxad032, November, 2023.
54. Jau-Uei Chen, Shinhoo Kang, Tan Bui-Thanh, and John Shadid, "Unified hp-HDG Frameworks for Friedrichs' PDE systems", Computer & Mathematics with Applications, Volume 154, Pages 236-266, 15 January 2024
55. Hai V. Nguyen, Tan Bui-Thanh, "TNet: A Model-Constrained Tikhonov Network Approach for Inverse Problems", SIAM Journal of Scientific Computing, 41(1), C77-C100, January 2024.
56. Jau-Uei Chen, Tamas Horvath, and Tan Bui-Thanh, "A Divergence-Free and H(div)-Conforming Embedded-Hybridized DG Method for the Incompressible Resistive MHD equations", Computer Methods in Applied Mechanics and Engineering, 117415, volume 432, Part A, December 2024.
57. Tri Pham, Quoc Nguyen, and Tan Bui-Thanh. Microseismic events based characterization of fractal fracture network, MDPI Fuels, Spatial Information Research, 5, 839-856, November, 2024.
58. L. Leticia Ramirez-Ramirez, Jose A. Montoya, Jesus F. Espinoza, Chahak Mehta, Albert Orwa Akuno, Tan Bui-Thanh, "Use of mobile phone sensing data to estimate residence and mobility times in urban patches during the COVID-19 epidemic: The case of the 2020 outbreak in Hermosillo", Computational Urban Science, Accepted, 2025.
59. Krishanunni, C. G., and Tan Bui-Thanh, "An Adaptive and Stability-Promoting Layerwise Training Approach for Sparse Deep Neural Network Architecture", https://arxiv.org/abs/2211.06860, Computer Methods in Applied Mechanics and Engineering, Accepted, 2025.

Work-under review

1. John Breedis, and Tan Bui-Thanh, "Evaluating nAI and Quadrature Based Neural Networks", SIAM Undergraduate Research Online, Under Review, 2024.
2. Hoang Tran; Hao Li; Vinh Ngoc Tran; Tam V Nguyen; Manh-Hung Le; Thanh Duc Dang; Hong Xuan; Hung T. Pham; Tan Bui-Thanh; L. Ruby Leung, "Mid-range hourly weather forecasting using PredRNN with image preprocessing", Artificial Intelligence for the Earth Systems, Under Review, 2024.
3. Peiqi Zhao, and Tan Bui-Thanh, Conditional Sampling in Inverse Problems with Generative Flow, SIAM Undergraduate Research Online, *Under Review* , 2025.
4. Krishnanunni, C.G., Tan Bui-Thanh, and Clint Dawson, "Topological derivative approach for deep neural network architecture adaptation", Under review, 2024.

5. Hai V. Nguyen, Jau-Uei Chen, and Tan Bui-Thanh," A model-constrained Discontinuous Galerkin Network (DGNet) for Compressible Euler Equations with Out-of-Distribution Generalization", Under review, 2024.
6. Hai V. Nguyen, Tan Bui-Thanh, and Clint Dawson, TAEN: A mode-constrained Tikhonov Autoencoder Network for Forward and Inverse Problems, Computer Methods in Applied Mechanics and Engineering, under review, 2025.

Work-in-progress

7. Brad Marvin, Tim Wildey, Tan Bui-Thanh, and Troy Butler, "A Scalable Approach for Solving Finite and Infinite Dimensional Stochastic Inverse Problems", completed and in revision before submission, 2024.
8. Chahak Mehta, Hai V. Nguyen, Krishnanunni C. G., Albert Akuno, Leticia Ramirez-Ramirez, and Tan Bui-Thanh, "The Interdisciplinary Nature of the Reproduction Number in Epidemiology", In progress, 2024.
9. Jau-Uei Chen, and Tan Bui-Thanh, "Exponential DG for compressible magnetohydrodynamics", in progress, 2024
10. Russell Philley, Hai V. Nguyen, and Tan Bui-Thanh, "Model-constrained uncertainty quantification of SciML solutions for inverse Problems", in progress, 2024.

B. **Refereed Conference Proceedings**

1. Bui-Thanh, T., Damodaran , M. and Willcox , K., "Proper Orthogonal Decomposition Extensions for Parametric Applications in Transonic Aerodynamics", AIAA Paper 2003-4213, presented at 15th Computational Fluid Dynamics Conference, Orlando, FL, June 2003.
2. Bui-Thanh, T., and Willcox, K., "Model reduction for large-scale CFD applications using the balanced proper orthogonal decomposition", AIAA Paper 2005-4617, presented at the 16th AIAA Com- putational Fluid Dynamics Conference, Toronto, Canada, June 2005.
3. Bui-Thanh, T., Willcox, K., and Ghattas, O., "Parametric Reduced- Order Models for Probabilistic Analysis of Unsteady Aerodynamic Applications", AIAA Paper 2007-2049, presented at the 48th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, Honolulu, Hawaii, April 2007.
4. Hwan Goh, Sheroze Sheriffdeen, Jonathan Wittmer, and Tan Bui-Thanh, "Solving Forward and Inverse Problems Using Variational Autoencoders ", Refereed Proceeding of Machine Learning Research, 2nd Annual Conference on Mathematical and Scientific Machine Learning, Volume 145, August, 2021. Note that the reviewing process for this (or any prestigious AI/ML conference) is as rigorous as those from prestigious journals. This conference paper is the same level of a journal paper.
5. Russell Philley, Hai V. Nguyen, and Tan Bui-Thanh, Model-constrained uncertainty quantification for scientific deep learning of inverse solutions, the XLIV Iberto-Latin American Congress on Computational Mechanics in Engineering, Refereed proceeding, November, 2023.

C. **Other Publications**

1. Bui-Thanh, T., "The Optimality of Bayes' Theorem", SIAM News, Volume 54, Issue 6, July/August, 2021.

2. Bui-Thanh, T., "The true logic for this world is the calculus of probabilities", SIAM News Blog, December, 2021
3. Sheroze Sheriffdeen, Jean C. Ragusa, Jim E. Morel, Marvin L. Adams, and Tan Bui-Thanh, "Accelerating PDE-constrained Inverse Solutions with Deep Learning and Reduced Order Models ", https://arxiv.org/abs/1912.08864, 2019.
4. Hwan Goh, Sheroze Sheriffdeen, and Tan Bui-Thanh. "Solving forward and inverse problems using autoencoders", https://arxiv.org/abs/1912.04212v1, 2019.

D. **Books, Chapters of Books; Editor of Books**

1. Bui-Thanh, T., From Rankine-Hugoniot Condition to a Constructive Derivation of HDG Methods , in Lecture Notes in Computational Science and Engineering: Spectral and High Order Methods for Partial Differential Equations ICOSAHOM 2014, 2015
2. Wittmer, J., and Bui-Thanh, T., Data-Informed Regularization of Inverse and Imaging Problems, in Handbook of Mathematical Models and Algorithms in Computer Vision and Imaging, Springer International Publishing, 2021.
3. Wenbo Zhang, David S. Li, Tan Bui-Thanh, and Michael S. Sacks, High-Speed Simulation of the 3D Behavior of Myocardium Using a Neural Network PDE Approach , Functional Imaging and Modeling of the Heart, Lecture Notes in Computer Science, Issue 6 , Editor: Ennis, Daniel B. and Perotti, Luigi E. and Wang, Vicky Y., page: 416--424, June, 2021.

Work-in-progress (close to submission)

1. Bui-Thanh, T., "Adjoints and their roles in Computational Sciences, Engineering, and Mathematics", book in progress, signed contract with the Society of Industrial and Applied Mathematics (SIAM) in January 2024. I plan to finish the book early summer 2024.

E. **Reviews**

1. Reviewer: SIAM Journal on Scientific Computing
2. Reviewer: Journal of Computational Physics
3. Reviewer: Journal of Computational and Applied Mathematics, Elsevier
4. Reviewer: Computer methods in applied Mechanics and Engineering
5. Reviewer: SIAM Journal of Uncertainty Quantification
6. Reviewer: Computer and Mathematics with Applications
7. Proposal panelists and ad-hoc reviewers: NSF and DOE

F. **Technical Reports**

1. Bui-Thanh, T., and Ghattas, O., "Analysis of the Hessian for Inverse Scattering Problems. Part II: Inverse Medium Scattering of Acoustic Waves", ICES report 11-21, 2011.
2. Bui-Thanh, T., and Ghattas, O., "Analysis of the Hessian for Inverse Scattering Problems. Part I: Inverse Shape Scattering of Acoustic Waves", ICES report 11-20, 2011.

3. Bui-Thanh, T., Demkowicz, L., and Ghattas, O., "Constructively Well-Posed Approximation Methods with Unity Inf--Sup and Continuity Constants for Partial Differential Equations", ICES report 11-10, 2011.
4. Bui-Thanh, T., and Ghattas, O., "Analysis of an hp-non-conforming Discontinuous Galerkin Spectral Element Method for Wave Propagation", ICES report 11-09, 2011.
5. Bui-Thanh, T., Demkowicz, L., and Ghattas, O., "A Relation between the Discontinuous Petrov--Galerkin Method and the Discontinuous Galerkin Method", ICES Report ICES 11-45, December, 2011.
6. Bui-Thanh, T., Ghattas, O., and Higdon, D., "Adaptive Hessian-based Non-stationary Gaussian Process Response Surface Method for Probability Density Approximation with Application to Bayesian Solution of Large-scale Inverse Problems", ICES report 11-32, 2011.
7. Bui-Thanh, T., "A Gentle Tutorial on Statistical Inversion using the Bayesian Paradigm", ICES Report 12-18, 2012.
8. Bui-Thanh, T., and Ghattas, O., "A Scalable MAP Solver for Bayesian Inverse Problems with Besov Priors", ICES report 12-41, 2012.
9. Bui-Thanh, T., and Ghattas, O., "Analysis of the Hessian for Inverse Scattering Problems. Part III: Inverse Medium Scattering of Electromagnetic Waves in Three Dimensions", ICES report 12-33, 2012.
10. Bui-Thanh, T., and Ghattas, O., "An Analysis of Bayesian Inverse Shape Acoustic Scatterings with Gaussian priors", ICES report 12-31, 2012.
11. Bui-Thanh, T., and Ghattas, O., "A Metropolized Adjusted Newton Algorithm for Markov Chain Monte Carlo Simulations", ICES report 12-25, 2012.
12. Bui-Thanh, T., and Ghattas, O., "A PDE-constrained Optimization Approach to the Discontinuous Petrov-Galerkin Method with a Trust Region Inexact Newton-CG Solver", ICES report 13-16, 2013.
13. Bui-Thanh, T., "From Godunov to A Unified Hybridized Discontinuous Galerkin Framework" ICES-Report, 2014.
14. Bui-Thanh, T., "On Finite Element Approximation of PDE-constrained Infinite Dimensional Bayesian Inverse Problems", ICES-Report, 2014.
15. Bui-Thanh, T., and Girolami, M., "Solving Large-Scale PDE-Constrained Bayesian Inverse Problems with Riemann Manifold Hamiltonian Monte Carlo", ICES report 14-05, 2014.
16. Bui-Thanh, T., "Discretization-Invariant MCMC Methods for PDE-constrained Bayesian Inverse Problems in Infinite Dimensional Parameter Spaces", ICES report 14-16, 2014.
17. Bui-Thanh, T., and Ghattas, O., "Bayes is Optimal", ICES report 15-04, 2015.
18. Wittmer, J., and Bui-Thanh, T., Data-Informed Regularization of Inverse and Imaging Problems, Oden Institute Report, 2020.
19. Bui-Thanh, T., Model-Constrained Deep Learning Approaches for Inverse Problems , Oden Institute Report 21-09, May 2021.
20. Jeonghun J. Lee, Tan Bui-Thanh, Umberto Villa, and Omar Ghattas, "Forward and inverse modelings of fault transmissibility in subsurface flows," Oden Institute REPORT 22-04, Oden Institute for Computational Engineering and Sciences, The University of Texas at Austin, July 2022.
21. Hai V. Nguyen and Tan Bui-Thanh, "A Model-Constrained Tangent Manifold Learning Approach for Dynamical Systems," Oden Institute REPORT 22-06, Oden Institute for Computational Engineering and Sciences, The University of Texas at Austin, August 2022.

22. Stephen Shannon and Tan Bui-Thanh, "New HDG Methods for the Stokes and Oseen Equations," Oden Institute REPORT 22-05, Oden Institute for Computational Engineering and Sciences, The University of Texas at Austin, July 2022.
23. Jonathan Wittmer, C G Krishnanunni, Hai V. Nguyen, and Tan Bui-Thanh, "On Unifying Randomized Methods for Inverse Problems", Oden Institute REPORT 23-01, Oden Institute for Computational Engineering and Sciences, The University of Texas at Austin, January 2023.
24. Tan Bui-Thanh, "Adjoint and Its roles in Sciences, Engineering, and Mathematics: A Tutorial", Oden Institute REPORT 23-04, Oden Institute for Computational Engineering and Sciences, The University of Texas at Austin, July 2023.

ORAL PRESENTATIONS: (Authors are added for last five years)

1. "Scalable Methods for Bayesian Statistical Inference", US National Congress on Computational Mechanics, Columbus, Ohio, July 19, 2009. (Invited)
2. "Large-Scale Bayesian Inversion for Inverse Wave Scattering", Informs 2010, Austin, TX, 2010.
3. "A Scalable Algorithm for Solutions of Large-scale Statistical Inversions", SIAM Conference on Computational Science and Engineering, Reno, NV, 2011. (Invited)
4. "Seismic Inversion Using Discontinuous Galerkin Methods", SIAM Conference on Mathematical and Computational Issues in Geosciences, Long Beach, CA, 2011. (Invited)
5. "Large-scale seismic inversion: Elastic-acoustic coupling, DG discretization, gradient consistency, adaptivity, uncertainty quantification, and parallel algorithms", Aerospace Computational Design Lab, Massachusetts Institute of Technology, 2011. (Invited)
6. "A Scalable Method for Large-Scale Statistical Inverse Problems with Uncertain Data", Conference on Data Analysis (CoDA), Santa Fe, New Mexico, February 29–March 2, 2012 (Invited)
7. "Large-scale seismic inversion: Elastic-acoustic coupling, DG discretization, and uncertainty quantification", SIAM conference on Uncertainty Quantification, Raleigh, North Carolina, April 2-5, 2012. (Invited)
8. "An Analysis of Infinite Dimensional Bayesian Inverse Shape Acoustic Scattering and its Numerical Approximation", SIAM conference on Computational Sciences and Engineering, Boston, Massachusetts, Feb 25–March 1, 2013. (Invited)
9. "Scalable approaches to large-scale statistical inverse problems", Workshop on large-scale statistical inverse problems, Santa Fe, New Mexico, May 22-24, 2013. (Invited)
10. "Scalable approaches to large-scale statistical inverse problems", Workshop on multiscale inverse problems, Mathematics Institute, University of Warwick, UK, June 17-19, 2013. (Invited)
11. Invited Talk: "A Unified Hybridized Discontinuous Galerkin Method", ICOSAHOM 14, Salt Lake City, Utah.
12. "Towards Large-scale Computational Engineering and Sciences with Quantifiable Uncertainty", Colorado School of Mines, Colorado, November, 2013. (Invited)
13. "Towards Large-scale Computational Engineering and Sciences with Quantifiable Uncertainty", National Center for Atmospheric Research, Colorado, November, 2013. (Invited)

14. “Towards Large-scale Computational Engineering and Sciences with Quantifiable Uncertainty”, University of Colorado at Boulder, Colorado, November, 2013. (Invited)
15. “Hybridized Discontinuous Galerkin Method for Non-Hydrostatic Atmosphere”, National Center for Atmospheric Research, Colorado, February, 2014. (Invited)
16. “A Unified Hybridized Discontinuous Galerkin method”, World Congress on Computational Mechanics, Spain, July, 2014. (Invited)
17. “Towards Large-scale Computational Engineering and Sciences with Quantifiable Uncertainty”, Vietnam Institute for Advanced Studies in Mathematics, August, 2014. (Invited)
18. “Towards Large-scale Computational Engineering and Sciences with Quantifiable Uncertainty”, Ho Chi Minh City University of Technology, August, 2014. (Invited)
19. “A Randomized Map Algorithm for Large-Scale Bayesian Inverse Problems”, SIAM conference on Uncertainty Quantification, Savannah, Georgia, 2014. (Invited)
20. “Towards Large-scale Computational Engineering and Sciences with Quantifiable Uncertainty”, University of California at Berkerley, CA, October, 2014. (Invited)
21. “Towards Large-scale Computational Engineering and Sciences with Quantifiable Uncertainty”, Southern Methodist University, January, TX, 2015. (Invited)
22. “Recent advances in solution of large-scale Bayesian inverse problems”, Finland, Applied Inverse Problem Conference, 2015. (Invited)
23. “Ensemble Methods for Large-Scale PDE-Constrained Bayesian Inverse Problems”, SIAM Conference on Computational Science and Engineering, Utah, 2015. (Invited)
24. “Some Recent Advances in Hybridized Discontinuous Galerkin Methods”, 1st Pan-American Congress on Computational Mechanics, Buenos Aires, 2015.
25. “A hybridized discontinuous Galerkin method for earth system models’ dynamical cores”, Galerkin methods with applications in weather and climate forecasting, Scotland, 2015
26. “DG for Large-Scale Inverse Problems in Time Domain: Opportunities and Challenges”, SIAM Conference on Mathematical and Computational Issues in Geosciences, Stanford, CA, 2015. (Invited)
27. “A Large-Scale Ensemble Transform Method for Bayesian Inverse Problems Governed by PDEs”, 13th US National Congress on Computational Mechanics, San Diego, 2015 (Invited)
28. “An Approach to Big-Data in Large-Scale PDE-Constrained Bayesian Inverse Problems in High-Dimensional Parameter Spaces”, 13th US National Congress on Computational Mechanics, San Diego, 2015 (Invited)
29. “Towards Large-scale Computational Engineering and Sciences with Quantifiable Uncertainty”, John Von Neumann Institute, Vietnam National Universities, 2015. (Invited)
30. “A randomized likelihood method for data reduction in large-scale inverse problems”, 8th International Congress on Industrial and Applied Mathematics, August, 2015, Beijing, China (Invited)
31. “Ensemble-based MCMC methods for exploring large-scale high dimensional Bayesian inverse problems”, 8th International Congress on Industrial and Applied Mathematics, August, Beijing, China (Invited)
32. “A Randomized likelihood approach for data reduction in large-scale inverse problems”, Texas Consortium for Computational Seismology, UT Austin, Fall 2015. (Invited)
33. “An Updated on Hybridized Discontinuous Galerkin Method for Non-Hydrostatic Atmosphere”, PDE on Spheres, Korea, October, 2015.

34. “Towards Large-scale Computational Engineering and Sciences with Quantifiable Uncertainty”, Petroleum and Geosystems Engineering Department, UT Austin, Spring 2016. (Invited)
35. “Particle-based Approximate Monte Carlo approaches for Large-Scale Bayesian Inverse Problems”, 12th International Conference on Monte Carlo and Quasi-Monte Carlo methods in Scientific Computing, Stanford, August, 2016. (Invited)
36. “Towards Large-scale Computational Engineering and Sciences with Quantifiable Uncertainty”, Sandia National Lab, New Mexico, August, 2016. (Invited)
37. “A Partial Domain Inversion Approach for Large-scale Baysian Inverse Problems in High Dimensional Parameter Spaces”, SIAM UQ conference, Lausanne, April, 2016. (Invited)
38. “A Randomized likelihood approach for data reduction in large-scale inverse problems”, SIAM UQ conference, Lausanne, April, 2016. (Invited)
39. “A Triple Model Reduction for Data-Driven Large-Scale Inverse Problems in High Dimensional Parameter Spaces”, SIAM UQ conference, Lausanne, April, 2016. (Invited)
40. “A fresh look at the Bayesian theorem from information theory”, ICES-Babuska series, seminar, Austin, September, 2016 (invited)
41. “A Randomized Misfit Approach for Data-Driven PDE-constrained Bayesian Inverse Problems”, Workshop on Uncertainty quantification and data-driven modeling, Austin, March 2017 (invited)
42. “Towards Large-Scale Computational Science and Engineering with Quantifiable Uncertainty”, Mini Workshop on Bayesian Inverse Problems and Imaging, May, 2017 (invited)
43. “The upwind hybridized discontinuous Galerkin (HDG) framework: Theory and application to magnetohydrodynamic and atmospheric applications”, Ninth Meeting on Numerical Analysis of Partial Differential Equations, Santiago, Chile, June 2017 (invited)
44. “The upwind hybridized discontinuous Galerkin (HDG) framework: Theory and application to magnetohydrodynamic and atmospheric applications”, VII International Congress on numerical methods, Guadalajara, Mexico, June, 2017 (Invited)
45. “Towards Large-Scale Computational Science and Engineering with Quantifiable Uncertainty”, workshop on Uncertainty Quantification, Guanajuato, Mexico, January, 2017 (Invited)
46. “Some advances in the upwind hybridized discontinuous Galerkin method for dynamical cores”, PDE on Spheres, France, April, 2017
47. “Model Reduction via Domain Truncation for Efficient Monte-Carlo Simulations of Large-Scale Bayesian Inverse Problems”, SIAM Conference on Computational Science and Engineering, Atlanta, March, 2017 (Invited)
48. “A data-scalable randomized misfit approach for solving large-scale PDE-constrained inverse problems”, Vietnam University of Science, Ha Noi, Vietnam, May, 2017 (Invited)
49. “A data-scalable randomized misfit approach for solving large-scale PDE-constrained inverse problems”, John von Neumann Institute, Ho Chi Minh City, Vietnam, June, 2017 (Invited)
50. “A data-scalable randomized misfit approach for solving large-scale PDE-constrained inverse problems”, SIAM conference on mathematical and computational issues in the Geosciences, Erlangen, Germany, September, 2017 (Invited)

51. "The upwind Hybridized discontinuous Galerkin method for dynamical cores", Mathematics of the Weather, Erquy, France, October, 2017 (Invited)
52. "Reduced-order modeling of parametrized large-scale systems", ICES-Babuska series, seminar, Austin, January, 2018 (invited)
53. "High-Order Hybridized Discontinuous Galerkin (HDG) Method and a Multigrid solver for Magnetohydrodynamic applications", the fifteenth copper mountain conference on iterative methods, Copper Mountain, Colorado, March 2018
54. "Multi-reduction MCMC Methods for Bayesian Inverse Problem", SIAM UQ conference, Garden Grove, California, April, 2018. (Invited)
55. "A Unifying Framework for Randomization Methods for Inverse Problems", SIAM UQ conference, Garden Grove, California, April, 2018. (Invited)
56. "Fast Methods for Bayesian Optimal Experimental Design", SIAM UQ conference, Garden Grove, California, April, 2018. (Invited)
57. "The upwind hybridized discontinuous Galerkin (HDG) framework: Theory and application to magnetohydrodynamic and atmospheric applications", Rutgers University, May, 2018 (Invited)
58. "Regularization for Bayesian Inverse problems using domain truncation and uncertainty quantification", SIAM Imaging Conference, Bologna, June, 2018 (Invited)
59. "High-Order Hybridized Discontinuous Galerkin (HDG) Method and a Multigrid solver for Magnetohydrodynamic applications", ECFD, Glasgow, June 2018 (Invited)
60. "An Efficient Sequential Discrete Optimal Transport method for Bayesian inverse problems", The AIMS conference on dynamical systems and differential equations, Taipei, July, 2018, (Invited)
61. "High-Order Hybridized Discontinuous Galerkin (HDG) Method and a Multigrid solver for Magnetohydrodynamic applications" WCCM conference, New York city, July 2018 (Invited)
62. "Analysis of an HDG method for linearized incompressible resistive MHD equations", ICOSAHOM conference, UK, July, 2018 (invited)
63. Brad Marvin, and Tan Bui-Thanh, "Fast Methods for Bayesian Optimal Experimental Design", AMS Sectional Meeting, the University of Arkansas, November 2018 (invited).
64. Ellen Le, Brad Marvin, Aaron Myers, and Tan Bui-Thanh, "Towards Large-Scale Computational Science and Engineering with Quantifiable Uncertainty", the University of Maryland, College Park, November, 2018 (invited).
65. Ellen Le, Aaron Myers, and Tan Bui-Thanh, "Scalable Approach for data-driven PDE-constrained Bayesian Inverse Problems", the University of Hong Kong, November 2018 (invited).
66. Shinhoo Kang, Frank Giraldo, and Tan Bui-Thanh, "IMEX HDG-DG: A coupled implicit hybridized discontinuous Galerkin and explicit discontinuous Galerkin approach for shallow water systems", Invited talk at the Tsinghua Sanya International Mathematical Forum, January 2019, China.
67. Brad Marvin, and Tan Bui-Thanh: "A Data-consistent Statistical Inversion Framework", invited talk at the "Guanajuato Uncertainty Quantification" on January 2019, Queretaro, Mexico.
68. Ellen Le, Brad Marvin, Aaron Myers, and Tan Bui-Thanh, "Scalable approaches for data-driven Bayesian inverse problems", University of Notre Dame, February, 2019 (invited)
69. Brad Marvin, and Tan Bui-Thanh, "Data-Informed Subspace Identification using a data-consistent Bayesian method", SIAM Conference on Computational Science and Engineering, Spokane, March, 2019 (Invited)

70. Shinhoo Kang, Tan Bui-Thanh, and Todd Arbogast, "Construction and analysis of HDG methods for Two-phase flows", SIAM Conference on mathematical and computational issues in the Geosciences, Houston, March, 2019 (Invited)
71. Muralikrishnan, S., and Bui-Thanh, T., "Multigrid and multilevel HDG approaches for nonlinear single-phase flows", SIAM Conference on mathematical and computational issues in the Geosciences, Houston, March, 2019 (Invited)
72. Ellen Le, Brad Marvin, Aaron Myers, and Tan Bui-Thanh, "Towards Large-Scale Computational Science and Engineering with Quantifiable Uncertainty", the University of Utah, Salt Lake City, March, 2019 (invited)
73. Shannon, S., Lee, J., Bui-Thanh, T., and Shadid, J., "The upwind hybridized discontinuous Galerkin (HDG) framework: Theory and application to magnetohydrodynamic and atmospheric applications", European Workshop on High-order nonlinear numerical methods for evolution PDEs: theory and applications, April, 2019
74. Ellen Le, Brad Marvin, Aaron Myers, "Towards Large-Scale Computational Science and Engineering with Quantifiable Uncertainty", Rensselaer Polytechnic Institute, April, 2019 (invited)
75. Ellen Le, Aaron Myers, and Tan Bui-Thanh, "Scalable Approach to data-driven Bayesian Inverse problems", workshop on math challenges associated with failure of brittle materials, John Hopkins University, May 2019 (Invited).
76. Ellen Le, Aaron Myers, and Tan Bui-Thanh, "Scalable Approach to data-driven Bayesian Inverse problems", Ho Chi Minh City University of Science, June 2019 (Invited).
77. Ellen Le, Aaron Myers, and Tan Bui-Thanh, "Scalable Approach to data-driven Bayesian Inverse problems", Vietnam-German University, June 2019 (Invited).
78. Brad Marvin, and Bui-Thanh, T., "A Data-consistent Statistical Inversion Framework", Applied Inverse Problems Conference, Grenoble, France, July 2019. (Invited)
79. Ellen Le, Aaron Myers, and Tan Bui-Thanh, "Scalable algorithms for data-driven inverse and learning problems", The University of Utah, September, 2019. (Invited)
80. Brad Marvin, and Bui-Thanh, T., "A Data-consistent Statistical Inversion Framework", AMS sectional Meeting, Wisconsin, September, 2019. (Invited)
81. Ellen Le, Aaron Myers, and Tan Bui-Thanh, "Scalable algorithms for data-driven inverse and learning problems", The University of Utah, September, 2019. (Invited).
82. Ellen Le, Aaron Myers, and Tan Bui-Thanh, "Scalable algorithms for data-driven inverse and learning problems", The University of Lisbon, September, 2019. (Invited).
83. Ellen Le, Aaron Myers, and Tan Bui-Thanh, "Scalable algorithms for data-driven inverse and learning problems", Penn State University, October, 2019. (Invited).
84. Bui-Thanh, T., "The upwind hybridized discontinuous Galerkin (HDG) framework: Theory and application to magnetohydrodynamic and atmospheric applications", The University of Utah, October, 2020. (Invited).
85. Ellen Le, Aaron Myers, and Tan Bui-Thanh, "Scalable algorithms for data-driven inverse and learning problems", University of Wisconsin Madison, October, 2019. (Invited).
86. Ellen Le, Aaron Myers, and Tan Bui-Thanh, "Scalable algorithms for data-driven inverse and learning problems", University of Minnesota Twin Cities, November, 2019. (Invited).
87. Ellen Le, Aaron Myers, and Tan Bui-Thanh, "Scalable algorithms for data-driven inverse and learning problems", Institute of High Performance Computing, Singapore, January, 2020. (Invited).

88. Goh, H, Wittmer, J, and Bui-Thanh, T., "Model-Aware Deep Learning Approaches for Inverse Problems", Institute of High Performance Computing, Singapore, January, 2020. (Invited).
89. Ellen Le, Aaron Myers, and Tan Bui-Thanh, "Scalable algorithms for data-driven inverse and learning problems", Institute of Geophysics, UT Austin, February, 2020. (Invited).
90. Bui-Thanh, T., "The upwind hybridized discontinuous Galerkin (HDG) framework: Theory and application to magnetohydrodynamic and atmospheric applications", NYU, March, 2020. (Invited).
91. Kang, S., and Bui-Thanh, T., "A scalable exponential-DG approach for nonlinear conservation laws: with application to Burger and Euler equations", Modeling and Simulation of Transport phenomena, October 2020 (virtual invited talk)
92. Goh, H, Wittmer, J, and Bui-Thanh, T., "Data oriented and deep learning approaches for inverse problems", University of Houston, October 2020 (Invited)
93. Bui-Thanh, T., "The true logic for this world is the calculus of probabilities", Babuska forum, UT Austin, January 2021 (invited)
94. Ellen Le, Aaron Myers, and Tan Bui-Thanh, "Scalable algorithms for data-driven inverse and learning problems", Kansas State University, February 2021 (invited)
95. Nguyen, V. H., and Bui-Thanh, T., "Model-constrained deep learning approaches for inverse problems", Technical Thrust Area, USNCCM, May 2021 (Invited)
96. Nguyen, V. H., and Bui-Thanh, T., "Model-constrained deep learning approaches for inverse problems", VinAI Research, June 2021 (Invited)
97. Nguyen, V. H., and Bui-Thanh, T., "Model-constrained deep learning approaches for inverse problems", USNCCN Technical Thrust, May 2021 (Invited)
98. Nguyen, V. H., and Bui-Thanh, T., "Model-constrained deep learning approaches for inverse problems", LLNL, July 2021 (Invited)
99. Goh, H, Wittmer, J, Sheriffdeen, S., and Bui-Thanh, T., "Solving Bayesian Inverse Problems via Variational Autoencoders", USNCCM 16, July 2021 (Invited).
100. Nguyen, V. H., and Bui-Thanh, T., "Model-constrained deep learning approaches for inverse, control, and UQ", SIAM TX-LA annual meeting, Nov 5-7, 2021 (Invited)
101. Nguyen, V. H., and Bui-Thanh, T., Model-constrained deep learning approaches for inverse, control, and UQ", SIAM TX-LA annual meeting, Nov 5-7, 2021 (Invited), Workshop on data-driven ML for additive manufacturing, HUTECH, Jan 10, 2022, Vietnam.
102. Nguyen, V. H., and Bui-Thanh, T., "Model-constrained deep learning approaches for inverse, control, and UQ", LLNL, Jan 11, 2022 (Invited)
103. Nguyen, V. H., and Bui-Thanh, T., "Model-constrained deep learning approaches for inverse, control, and UQ", Workshop on computational mathematics and application, Jan 18, 2022 , Vietnam (Invited)
104. Nguyen, V. H., and Bui-Thanh, T., "Model-constrained deep learning approaches for inverse, control, and UQ", Oden Institute, Jan 18, 2022 (Invited)
105. Nguyen, V. H., and Bui-Thanh, T., "Model-constrained deep learning approaches for inverse, control, and UQ", MSU, Feb 11, 2022 (Invited)
106. Nguyen, V. H., and Bui-Thanh, T., "Model-constrained deep learning approaches for inverse, control, and UQ", UMass Amherst, March 1, 2022 (Invited)
107. Krishnanunni, C.G., Wittmer, J., Nguyen, V. H., and Bui-Thanh, T., "A new look at EnKF: duality and non-asymptotic analysis", EnKF Workshop, May 20 to June 2, 2022

108. Albert Orwa Akuno, L. Leticia Ramirez-Ramirez, Chahak Mehta, Krishnanunni C.G., Bui-Thanh, T., and Jose Arturo Montoya, "Multi-patch epidemics models with partial mobility, residency, and demography", ECCOMAS, 22, June 9, 2022 (Invited)
109. Nguyen, V. H., and Bui-Thanh, T., "TNet: A model-constrained deep learning approach to inverse problems": USACM Thematic Conference on Uncertainty Quantification for Machine Learning Integrated Physics Modeling (UQ-MLIP), August 18-19, 2022 (Invited)
110. Nguyen, V. H., and Bui-Thanh, T., "TNet: A model-constrained deep learning approach to inverse problems": Georgia Tech, Sep 15, 2022. (invited)
111. Nguyen, V. H., and Bui-Thanh, T., "TNet: A model-constrained deep learning approach to inverse problems": SIAM conference on mathematics of data sciences, San Diego, Sep 26-30, 2022. (invited)
112. Nguyen, V. H., and Bui-Thanh, T., "TNet: A model-constrained deep learning approach to inverse problems": SIAM TX-LA conference, Houston, Nov 4-6, 2022. (invited)
113. Krishnanunni, C.G., Wittmer, J., Nguyen, V. H., and Bui-Thanh, T., "Enabling approaches for real-time deployment, calibration, and UQ for digital twins", Auburn University, Nov 18, 2022 (Invited)
114. Krishnanunni, C.G., Wittmer, J., Nguyen, V. H., and Bui-Thanh, T., "Enabling approaches for real-time deployment, calibration, and UQ for digital twins", Space Systems Command (SSC)'s Space Domain Awareness (SDA) Data Science Working Group (DSWG) meeting, Austin, 15-16, November, 2022. (invited)
115. Nguyen, V. H., and Bui-Thanh, T., "TNet: A model-constrained deep learning approach to inverse problems": Joint Mathematical Meetings, January 4-7, 2023. (invited)
116. Nguyen, V. H., and Bui-Thanh, T., "TNet: A model-constrained deep learning approach to inverse problems": PSU-Purdue-UMD Joint Seminar on Mathematical Data Science, January 30, 2023. (invited)
117. Nguyen, V. H., and Bui-Thanh, T., TNet: A model-constrained deep learning approach to inverse problems": SIAM CSE 23, February 27, 2023. (invited)
118. Krishnanunni, C.G., Wittmer, J., Nguyen, V. H., and Bui-Thanh, T., "Enabling approaches for real-time deployment, calibration, and UQ for digital twins", University of Minnesota, March 21, 2023 (Invited)
119. Krishnanunni, C.G., Wittmer, J., Nguyen, V. H., and Bui-Thanh, T., "Enabling approaches for real-time deployment, calibration, and UQ for digital twins", Inaugural Workshop on Scientific Machine Learning, UT Austin, April 2-3, 2023
120. Bui-Thanh, T., "From finite element approximations to a constructive and unified framework for neural network universality", Workshop in Honor of Leszek Demkowicz's 70th birthday, April 11, 2023 (invited).
121. Nguyen, V. H., and Bui-Thanh, T., "mcTangent: A Model-Constrained Tangent Manifold Learning Approach for Dynamical Systems", Computational Fluids Conferences, Cannes, April 26, 2023.
122. Krishnanunni, C.G., Wittmer, J., Nguyen, V. H., and Bui-Thanh, T., "Enabling approaches for real-time deployment, calibration, and UQ for digital twins", University of New South Wales, June, 2023 (Invited)
123. Krishnanunni, C.G., Wittmer, J., Nguyen, V. H., and Bui-Thanh, T., "Enabling approaches for real-time deployment, calibration, and UQ for digital twins", Osaka University, June, 2023 (Invited)

124. Krishnanunni, C.G., Wittmer, J., Nguyen, V. H., and Bui-Thanh, T., "Enabling approaches for real-time deployment, calibration, and UQ for digital twins", National Taiwan University, July, 2023 (Invited)
125. Krishnanunni, C.G., Wittmer, J., Nguyen, V. H., and Bui-Thanh, T., "Enabling approaches for real-time deployment, calibration, and UQ for digital twins", Nanyang Technological University, July, 2023 (Invited)
126. Krishnanunni, C.G., Wittmer, J., Nguyen, V. H., and Bui-Thanh, T., "Enabling approaches for real-time deployment, calibration, and UQ for digital twins", Invited talk at RTX Physics Informed Machine Learning (PIML) Workshop 2023 on Nov 1, 2023.
127. Philley, R., Nguyen, V. H., and Bui-Thanh, T., "Model-constrained uncertainty quantification for scientific deep learning of inverse solutions", invited at the SIAM TX-LA annual meeting, University of Louisiana, Layafette, Nov 6, 2023
128. Bui-Thanh, T., "A Unified And Constructive Framework For The Universality Of Neural Networks", invited talk at the 7th Chilean workshop on numerical analysis, Concepcion, Chile, January 17, 2024.
129. Chen, J., Horvath, T., and Bui-Thanh, T., "A Divergence-Conforming E-HDG Method For The Linearized Incompressible Resistive MHD Equations", invited talk at the 7th Chilean workshop on numerical analysis, Concepcion, Chile, January 17, 2024.
130. Philley, R., Nguyen, V. H., Bui-Thanh, T., "Learn2Solve: A Deep Learning Framework for Real-Time Solutions of forward, inverse, and UQ Problems", invited talk at the National University of Singapore, Feb 7, 2024
131. Philley, R., Nguyen, V. H., Bui-Thanh, T., "Quantification of Uncertainty in Deep Learning Solutions via Inversion", invited talk at SIAM UQ, Feb 27, 2024, Trieste.
132. Philley, R., Nguyen, V. H., and Bui-Thanh, T., "Model-constrained uncertainty quantification for scientific deep learning of inverse solutions", invited at the SIAM UQ, Feb 24, 2024, Trieste.
133. Nguyen, V. H., and Bui-Thanh, T., "Learn2Solve: An mcTangent network approach for hyperbolic PDEs", FEM Rodeo, March 9, Rice University
134. Philley, R., Nguyen, V. H., and Bui-Thanh, T., "Model-constrained uncertainty quantification for scientific deep learning of inverse solutions", invited talk at the American Mathematical Society Spring Southeastern Sectional Meeting, March 23, 2024.
135. Philley, R., Nguyen, V. H., Bui-Thanh, T., "Learn2Solve: A Deep Learning Framework for Real-Time Solutions of forward, inverse, and UQ Problems", invited talk at the University of Vienna, Feb 10, 2024.
136. Seth, A., Bui-Thanh, T., "An efficient and accurate deep learning approach to weather prediction", European Geophysical Union, April 16, 2024, Vienna.
137. Wittmer, J., Nguyen, V.H., Philley, R., Bui-Thanh, T.," An autoencoder compression approach for accelerating large-scale inverse problems", invited talk at the Big Data in Inverse Problems Workshop, International Centre for Mathematical Sciences, Edinburgh, 05/21/2024.
138. Wittmer, J., Nguyen, V.H., Philley, R., Bui-Thanh, T., "Scientific Autoencoder Approaches for Accelerating and Solving Inverse Problems with UQ", invited talk at the 11th international conference in inverse problems, modeling, and simulations, May 30, 2024, Malta.
139. Philley, R., Nguyen, V. H., Bui-Thanh, T., "Learn2Solve: A Deep Learning Framework for Real-Time Solutions of forward, inverse, and UQ Problems", invited talk at Italian Aerospace Research Center, May 31, 2024

140. Philley, R., Nguyen, V. H., Bui-Thanh, T., "Learn2Solve: A Deep Learning Framework for Real-Time Solutions of forward, inverse, and UQ Problems", invited talk at Politecnico di Milan, Italy, June 10, 2024
141. Philley, R., Nguyen, V. H., Bui-Thanh, T., "Learn2Solve: A Deep Learning Framework for Real-Time Solutions of forward, inverse, and UQ Problems", invited talk at Politecnico di Torina, Italy, June 13, 2024
142. Philley, R., Nguyen, V. H., Bui-Thanh, T., "Learn2Solve: A Deep Learning Framework for Real-Time Solutions of forward, inverse, and UQ Problems", Invited talk at Universita degli Studi di Roma Tor Vergata, Italy, June 17, 2024.
143. Philley, R., Nguyen, V. H., Bui-Thanh, T., "Learn2Solve: A Deep Learning Framework for Real-Time Solutions of forward, inverse, and UQ Problems", Invited talk at Sapienza Universita di Roma, Italy, June 18, 2024.
144. Nguyen, V. H., Bui-Thanh, T., "Learn2Solve: Synergizing least squares and minimum residual methods for learning numerical methods of PDEs", Minimum residual and least squares finite element methods, June 24, 2024.
145. Philley, R., Nguyen, V. H., Bui-Thanh, T., "Learn2Solve: A Deep Learning Framework for Real-Time Solutions of forward, inverse, and UQ Problems", Invited talk at EPFL, Switzerland, July 3, 2024.
146. Nguyen, V.H., Bui-Thanh, T., "Learn2Solve: A model-constrained tangent approach for supersonic flows", Second USACM thematic conference on uncertainty quantification for machine learning integrated physics modeling (uq-mlip), Washington DC, August 2024,
147. Nguyen, V. H., Bui-Thanh, T., "Learn2Solve: Real-Time Uncertainty Quantification for Solutions of Dynamical Systems", SIAM Mathematical aspects of data sciences, Atlanta, October, 2024
148. Richard Tsai, Bui-Thanh, T., "Surveillance and Deterrence of Hypersonic Threats", US Space command, Fall Symposium, Colorado Springs, November 2024
149. Nguyen, V.H., Bui-Thanh, T., "*Deep-learning-assisted real-time algorithms for inverse problems governed by partial differential equations", Joint Mathematics Meeting, Seattle, January, 2025*
150. Nguyen, V.H., Chen, J.E., Philley, R., Scott, T., Bui-Thanh, T., "Learn2Solve: A Deep Learning Framework for Real-Time Solutions of forward, inverse, and UQ Problems" at the DTE & AICOMAS 2025, Paris 17-21, February, 2025.

GRANTS AND CONTRACTS (During the Assistant Professor Rank):

Role of Candidate and Co-Investigators	Title	Agency	Project Total	Candidate 's Share	Grant Period
Co-PI Omar Ghattas (PI), GEO Georg Stadler (Co-PI), ICES	Scalable Algorithms For Large-Scale Uncertainty Quantification In Inverse Wave Propagation	DOD Air Force	$1,825,000	$76,837	09/30/2012 to 11/30/2015

Co-PI George Biros (PI), ME Omar Ghattas (Co-PI), ME Robert Moser (Co-PI), ME Tinsley Oden (Co-PI), EM	Extreme-Scale Bayesian Inference For Uncertainty Quantification Of Complex Simulations	DOE	$1,628,572	$340,868	09/01/2013 to 08/31/2016
Sole UT PI Paul Constantine (PI), Colorado School of Mines QiQi Wang (PI), MIT Youssef Marzouk (Co-PI), MIT	Active Subspace Methods For Data-Intensive Inverse Problems	DOE	$1,065,000	$309,000	01/01/2014 to 12/31/2016
Senior Personnel Omar Ghattas (PI), GEO + many other Co-PIs and PIs at UT, and other Universities	An Integrated Multifaceted Approach to Mathematics at the Interfaces of Data, Models, and Decisions	DOE	$5,425,000	$111,648	12/15/2012 to 2/14/2018
Co-PI Omar Ghattas (PI), GEO Georg Stadler (PI), NYU	Large-Scale Joint Seismic-Electromagnetic Inversion with Quantified Uncertainties	KAUST	$219,714	$99,274	04/01/2016 to 06/30/2017
Sole PI (subcontract) Quoc Nguyen (PI), PGE	Scalable Uncertainty Quantification Approaches for Big-Data-Driven Petroleum Reservoir Characterization and History Matching	Foundation CMG	$250,000	$102,065	06/01/2016 to 05/31/2017
Sole PI	Scalable hybridized discontinuous Galerkin (HDG) methods for MHD	SNL	$25,000	$25,000	06/20/2016 to 09/30/2016
Sole PI	A Scalable High-Order Discontinuous Finite Element Framework for PDEs: with Application to Geophysical Fluid Flows	NSF	$150,000	$150,000	09/01/2016 to 08/30/2019

Co-PI Omar Ghattas (PI), GEO Clint Dawson (Co-PI), ASE/EM George Biros (Co-PI), ME	Large-scale Inverse Problems and UQ for Reservoir Modeling	ExxonMobil-UTEI	$1,020,106	$218,158	07/01/2017 to 06/30/2020
Sole UT PI John Shadid (PI), SNL, Xianzhu Tang (PI), LANL	Tokamak Disruption Simulation	DOE	$15,000,000	$500,000	09/01/2017 to 08/30/2022
Co-PI Omar Ghattas (PI), GEO Georg Stadler (PI), NYU	Large-Scale Joint Seismic-Electromagnetic Inversion with Quantified Uncertainties	KAUST	$238,140	$113,287	04/01/2018 to 06/30/2019
Sole UT PI Jean Ragusa (PI), Texas A&M Marvin Adams (Co-PI), Texas A&M, Jim Morel (Co-PI), Texas A&M	Models with multiple levels of fidelity, tractability, and computational cost for nuclear weapon radiation effects	DTRA	$1,050,000	$210,000	04/01/2018 to 12/31/2020
Sole UT PI Susana Custodio (PI), University of Lisbon Graca Silveira (Co-PI) University of Lisbon	mOSaIc: Atmosphere-Ocean-Solid Earth Coupling: Exploring Innovative Tools to Monitor the Oceans	UT-Portugal Colab	$75,000	$75,000	06/01/2018 to 05/31/2019

External Grants and Contracts Awarded during Associate Professor Rank: Current

Role of Candidate	Names and Roles of Co-Investigators	Grant Title	Source of Funds/ Funding Agency	Project Total	Candidate's Share	Grant Period
Sole PI		CAREER: Scalable	NSF	$525,714	$525,714	01/01/2019

		Approaches for Large-Scale Data-driven Bayesian Inverse Problems in High Dimensional Parameter Spaces				to 12/31/2024
Co-PI	Anna Tenerari, Physics at UT (PI) François Waelbroeck, Physics at UT (CoPI)	Unified Framework for the study of Alfven wave resonances, magnetic reconnection and Kelvin-Helmholtz instabilities	NSF	$480,000	$240,000	08/01/2021 To 07/31/2024
Co-PI at UT	Clint Dawson, ASE/EM at UT (PI) Ruby Leung, Pacific Northwest National Laboratory (CoPI) Hartmut Kaiser, Computer Science at Louisiana State University (CoPI) Joannes Westerink, Aerospace and Mechanical at University of Notre Dame (CoPI)	MuSiKAL: Multiphysics Simulations and Knowledge discovery through AI/ML techonologies	DOE	$3,000,000	$472,925	10/01/2021 To 09/30/2024
Sole PI		OAC Core: Toward a Rigorous and Reliable Scientific Deep Learning Framework for Forward, Inverse, and UQ Problems	NSF	$600,000	$600,000	09/01/2022 To 08/31/2025

Sole PI		Deep Fusion	Subcontract from LANL	$100,000	$100,000	10/01/2023 To 09/30/2024
Sole PI		Applications of scientific machine learning to accelerate computational fluid dynamics calculation	Subcontract from ORNL	$360,000	$360,000	01/01/2023 To 12/31/25
Sole PI		Hybrid Analytics for hybrid electric propulsion control	Raytheon Technologies	$100,000	$100,000	09/2023 To 08/2024
Sole UT PI	Xianzhu Tang, LANL (PI) Romit Maulik, Information Sciences and Technologies at Pennsylvania State University (coPI) Chris McDevitt, Nuclear Engineering at University of Florida (CoPI) Qi Tang, LANL (CoPI) Yanzeng Zhang, LANL (CoPI) Oleksii Beznosov, LANL (CoPI) Zakariae Jorti, LANL (CoPI) Prashant Sharma, LANL (CoPI) Xuping Xie, LANL (CoPI) Qile Zhang, LANL (CoPI)	DeepFusion Accelerator for Fusion Energy Sciences in Disruption Mitigation	DOE	$3,300,000	$509,995	09/01/2023 To 08/31/2026
UT CoPI	Richard Tsai, Mathematics at UT (PI)	Surveillance and Deterrence of	Lockheed Martin	$150,000	$75,000	09/2023 To 08/2024

		Hypersonic Threats				
Co-PI	Raja Laxminarayan, ASE/EM at UT (CoPI) Sridhar Seetharaman, Engineer of Matter, Transport and Energy at Arizona State University (PI) Qijun Hong, Engineer of Matter, Transport and Energy at Arizona State University (CoPI) Christopher Muhich, Engineer of Matter, Transport and Energy at Arizona State University (CoPI) Kumar Ankit, Engineer of Matter, Transport and Energy at Arizona State University (CoPI) Peter Romine, Electrical Engineering at Navajo Technical University (CoPI) Hari Sitaraman, NREL (coPI) Noemi Leick, NREL (coPI) Susan Habas, NREL (coPI) Maria Nkansah-Curry, NREL (coPI)	Fundamental studies of hydrogen arc plasmas for high-efficiency and carbon-free steelmaking	DOE	$5,000,000	$360,000	11/01/2023 To 10/31/2026
UT CoPI	Richard Tsai, Mathematics at UT (PI)	Surveillance and Deterrence of Hypersonic Threats	Lockheed Martin	$150,000	$75,000	09/2024 To 08/2025
Sole PI		A Model-Constrained Neural Network Twinning Framework with Applications	Raytheon Technologies	$100,000	$100,000	02/2025 To 01/2026

		to Autonomous Safety-Critical Control of Aircraft				
TOTAL				$13,585,714	$4,193,634	

External Grants and Contracts Awarded during Associate Professor Rank: Completed

Role of Candidate	Names and Roles of Co-Investigators	Grant Title	Source of Funds/ Funding Agency	Project Total	Candidate's Share	Grant Period
PI	Marcos Capistran (PI), CIMAT, Mexico	High-level Representation in Magnetic Resonance Elastography	ConTex	$96,000	$76,300	09/01/2018 to 08/31/2019
PI	Hari Sundar (Co-PI), Computer Science, University of Utah, Salt Lake	CDS&E:Collaborative Research: Strategies for Managing Data in Uncertainty Quantification at Extreme Scales	NSF	$409,830	$409,830	09/01/2018 to 05/31/2022
PI	Leticia Ramirez (Co-PI), CIMAT Arturo Montoya, Mathematcs at Universidad de Sonora (Co-PI)	Machine-Learning-Assisted Real-Time Simulations and Uncertainty Quantifications for Infectious Disease Outbreaks	ConTex	$91,869	$85,389	09/01/2020 to 08/31/2021
UT PI	Leonardo Azevedo (PI), Instituto Superior Técnico at University of Lisbon	Multi-source modelling of the ocean: coupling Earth observations with acoustic waves	UT-Portugal Colab	$50,000	$50,000	01/01/2022 To 02/01/2023

UT PI	PI John Shadid (PI), SNL, Xianzhu Tang (PI), LANL Allen Boozer, Physics at Columbia University (CoPI) Luis Chacon, LANL (CoPI) Gian Luca Delzanno, LANL (CoPI) Howard Elman, Computer Science at University of Maryland College Park (CoPI) Stephane Ethier, Princeton Plasma Physics Laboratory (CoPI) Zehua Guo, LANL (CoPI) Ilon Joseph, LLNL (CoPI) Chris McDevitt, Nuclear Engineering at University of Florida (CoPI) Edward Phillips, SNL Barry Smith, ANL Bhuvana Srinivasan, Aerospace Engineering at University of Washington, Seatle Edward Startsev, Princeton Plasma Physics Laboratory Weixing Wang, Princeton Plasma	Tokamak Disruption Simulation: Supplement award	DOE	$1,500,00	$100,000	09/01/2022 to 08/30/2023

	Physics Laboratory Tim Wildey, SNL Xueqiao Xu, LLNL					
TOTAL				$2,147,699	$721,519	

Industrial Affiliates Program and Gift Funding Awarded during Associate Professor Rank

Role of Candidate	Name(s) of IAP Director (if appropriate)	Project / Gift Title	Source of Funds	Candidate's Share	Performance Period
Sole PI		Gift funding	Raytheon Technologies	$50,000	08/2023--
TOTAL				$50,000	

Funding Summary

Research	Associate Professor[1]	Career
Number of Externally Funded Projects	15	29
External Funding Level – Total	16M	44M
External Funding Level – Candidate share	4M	7M

PH.D. SUPERVISIONS COMPLETED:

Ellen Le Main co-supervisor	Data-driven reduction strategies for Bayesian inverse problems	05/2018	CSEM, Oden Institute	UT Austin	Research Scientist Lawrence Livermore National Lab
Stephen Shannon	Hybridized discontinuous Galerkin methods for magnetohydrodynamics	11/2018	CSEM, Oden Institute	UT Austin	Research Scientist Schlumberger
Srirammurali Krishnanmurali	Fast and scalable solvers for high-order hybridized	08/2019	ASE/EM	UT Austin	Research Scientist

	discontinuous Galerkin methods with applications to fluid dynamics and magnetohydrodynamics				Juelich Research Center
Shinhoo Kang	High-order (hybridized) discontinuous Galerkin method for geophysical flows	08/2019	ASE/EM	UT Austin	Assistant Professor Korea University
Nick Alger co-supervisor	Data-scalable Hessian preconditioning for distributed parameter PDE-constrained inverse problems	06/2019	CSEM, Oden Institute	UT Austin	Research Scientist, Oden Institute
Aaron Myers	Particle methods for Bayesian inverse problems governed by partial differential equations (PDEs)	05/2020	CSEM, Oden Institute	UT Austin	CTO at Suited, Austin
Jonathan Wittmer	Accelerating inverse solutions with machine learning and randomization	04/2023	CSEM, Oden Institute	UT Austin	Research Scientist Facebook Research

M.S. SUPERVISIONS COMPLETED:

Aaron Myers	Course work	Spring 2015	CSEM, Oden Institute	UT Austin	CTO at Suited, Austin
Brad Marvin	Course work	12/18	CSEM, Oden Institute	UT Austin	Research Scientist, Federal Government
Russell Philley	Course work	Summer 2021	CSEM, Oden Institute	UT Austin	PhD Student in my group
Jonathan Wittmer	Course work	Fall 2021	CSEM, Oden Institute	UT Austin	Research Scientist Facebook Research

PH.D. IN PROGRESS:

A. **Students admitted to candidacy**

- Russell Philley and Jau-Uei Chen (passed PhD qualifying exam and PhD proposal defense): planned to defend their PhD dissertation in Fall 2024
- Hai Van Nguyen, and C.G. Krishnanunni passed PhD qualifying exams and planned to defend their PhD dissertations in Fall 2025.
- Wesley Lao and Arjit Seth passed the PhD qualifying exam and planned to defend in 2027

B. **Post M.S. students preparing to take Ph.D. qualifying exam**

Cole Nockholds, Thomas, Apiatan,Nirmal Patel, and Son Manh Tran (currently first year PhD students)

OTHER RESEARCH SUPERVISION:

1. Advised UT ASE student Brad Marvin for an honor thesis: finished Spring 2015
2. Advised UT ASE student Aadil Pappa, towards his computational engineering certificate June 2014-Sept 2015
3. Advising Moncrief internship undergrad student Jennifer Zheng (Emory University) from June to August 2021. Jennifer became a PhD student at Stanford University in 2022.
4. Advising undergraduate student Ziyu Wang (UT Math) for CSE 370, Fall 2021
5. Advising undergraduate student John Breedis (UT Math) for Moncrief summer internship, 2022. John continued his research with me since Fall 2022. John will be a master student at Havard from Fall 2024.
6. Advising undergraduate student William Nockolds (COE) on research since Fall 2022. William is currently my fulltime researcher and will be my PhD student under the CSEM program starting from Fall 2024.
7. Advising undergraduate student Ahkil Sadam (COE) on research since Fall 2022, also a Moncrief summer internship in summer 2022. Ahkil will be a PhD student at MIT starting from Fall 2024.
8. Advising undergraduate student Hieu Nguyen (COE) on research since Spring 2023.
9. Advising undergraduate student Vincent Cheng (UT Math) on research since Fall 2023.
10. Advising undergraduate student Jamie Mahowald (UT Math) for summer 2024 internship.
11. Advising undergraduate student Peiqi Zhao (UT Math) for summer 2024 internship.

POST-DOCTORAL FELLOW SUPERVISION:

1. Kainan Wang from June 2014--September 2014
2. Vishwas Rao from Sep 2015--June 2017
3. Hossein Aghakhani from June 2016—August 2018
4. John Lee from July 2017—August 2018
5. Li Dong from September 1, 2017—July 2018
6. Eldar Khattatov from May 2018—Summer 2018
7. Ilona Ambartsymyan from May 2018—Fall 2019
8. Qiwei Zhan, from June 2019—August 2020
9. Hwan Goh, from June 2019—May 2021

10. Hao, Li from July 2022---July 2023

MEMBERSHIPS IN PROFESSIONAL AND HONORARY SOCIETIES:
1. Member, Society for Industrial and Applied Mathematics (SIAM) 2005-present
2. Senior Member, American Institute of Aeronautics and Astronautics (AIAA) 2003-present
3. Member of US Association for Computational Mechanics: 2019—present
4. Member of American Mathematical Society: 2023-present

UNIVERSITY COMMITTEE ASSIGNMENTS:

Administrative Assignments

College

Cockrell School of Engineering - Ad Hoc Planning Committee for ON-LINE EDUCATION BEST PRACTICES: Summer 2020

Department
1. Graduate Studies Sub-committee: ASE and the Oden Institute, The University of Texas at Austin 2015—NOW
2. Admission committee: the Oden Institute, The University of Texas at Austin 2014, 2016, 2017, 2020
3. Member of the COE Curriculum committee since 2020
4. Undergraduate committee since 2021
5. Advisor for Associate of Computational Engineers, since Fall 2022
6. Graduate Applied Math Committee, since Fall 2023
7. Member, Info Technology, ASE/EM department since 2013
8. Establishing New Computational Engineering Program in Aerospace Engineering: founding member 2018
9. Computational engineering (COE) committee 2019
10. ASE Strategic Planning Committee since 2019
11. Making, proctoring, and grading Math I and Math II WQE exam 2018-2022
12. Machine Learning Cluster Faculty Search committee, Fall 2021-Spring 2022
13. Machine Learning Faculty Search committee, Fall 2022- May 2024
14. Chair of the integrated 5-year BS/MS COE-CSEM degree 2022-2023
15. Co-Director of the Center for Scientific Machine Learning, the Oden Institute, since Fall 2022

MAJOR CONSULTING PROJECTS:
Exxon Mobil, August 15-19, 2022