Shriram Srinivasan

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RESEARCH INTERESTS AND EXPERTISE

Continuum Mechanics of Fluids, Solids, and Porous Media

Control, Optimization, and Simulation of Networked Flow Systems

I am interested in applied and inter-disciplinary problems where I can bring to bear my skills and training in fundamental mechanics and applied mathematics. I enjoy working in multi-disciplinary teams where I can interact with scientists and researchers with diverse and varied expertise.

CURRENT POSITION

08/2024 – now **Scientist 3**, Applied Mathematics & Plasma Physics Group (T-5)
Theoretical Division, Los Alamos National Laboratory, United States

PROFESSIONAL EXPERIENCE

02/2021 – 08/2024 **Scientist 2**, Applied Mathematics & Plasma Physics Group (T-5)
Theoretical Division, Los Alamos National Laboratory, United States

07/2017 – 02/2021 **Post-Doctoral Research Associate**, Centre for Nonlinear Studies (CNLS)
Los Alamos National Laboratory, United States

08/2016 – 07/2017 **Post-Doctoral Fellow**, Linné FLOW Centre, Department of Mathematics
KTH Royal Institute of Technology, Stockholm, Sweden

02/2014 – 03/2016 **Post-Doctoral Fellow**, Mathematical and Statistical Sciences
University of Alberta, Edmonton, Alberta, Canada

EDUCATION

12/2013 **Doctor of Philosophy** (Ph.D.) in **Mechanical Engineering**
Texas A&M University (TAMU), College Station, Texas

05/2013 **Master of Science** (M.S.) in **Mathematics**
Texas A&M University, College Station, Texas

12/2008 **Master of Science** (M.S.) in **Mechanical Engineering**
Texas A&M University, College Station, Texas

05/2006 **Bachelor of Technology** (B.Tech.) in **Mechanical Engineering**
National Institute of Technology (NIT), Tiruchirappalli, India

GRANTS & FUNDING

01/2025 – 01/2026	PI	$165K	LANL-LDRD Exploratory Research Seedling 20251024ER Nonlinear small-strain response in subsurface flow
10/2024 – 10/2027	Co-PI	$1.1M	LANL-LDRD Exploratory Research 20250530ER Prediction of Rare Event Likelihood in Dynamical Systems with Constraints using Flow Based AI
09/2023 – 09/2026	Co-PI	$0	TAMUS NLO LANL Collaborative Research Program 2023 Flow through deformable porous media under large pressure gradients : A reformulation of the underlying theory
03/2023 – 03/2025	PI	$480K	LANL-LDRD Early Career Research 20230480ECR Preconditioning, Partitioning and Variational Embedding : Solution strategies for very large scale, nonlinear network flow equations
11/2022 – 09/2023	Co-PI	$350K	LANL-LDRD Reserve 20230617ER Efficient multi-scale modeling of clean hydrogen blending in large natural gas pipelines to reduce carbon emissions
10/2021 – 10/2024	Co-PI	$975K	LANL-LDRD Exploratory Research 20220006ER Fast, linear programming-based algorithms with solution quality guarantees for nonlinear optimal control problems

AWARDS AND HONOURS

2022	LANL-LDRD Early Career Research Award
07/2017– 01/2021	Post-Doctoral Fellowship, Center for Nonlinear Studies (CNLS), Los Alamos
2019	Finalist, Science in 3', Los Alamos National Laboratory
08/2016 – 07/2017	Post-Doctoral Fellowship, Linné FLOW Centre, KTH Royal Institute of Technology 2 awardees from pool of 14 applicants
2013	Finalist, TAMU 3 Minute Thesis Competition 6 graduate students chosen after a campus-wide preliminary competition
06/2013 – 08/2013	Summer Teaching Fellowship, Department of Mechanical Engineering, TAMU 3 recipients selected for the $8000 award and teaching opportunity

MAIN CONTRIBUTIONS

I. Continuum Mechanics of Fluids, Solids, and Porous Media

Modelling diffusion in flow/transport through Discrete Fracture Networks (DFN). [J19]

Modelling pressure-dependent viscosity in subsurface processes [J10, J9, J7, J6, J5]

Efficient & scalable upscaling algorithms for use in reservoir simulators & geological flow simulations. [J12, J11]

Numerical methods for particulate flow and flow through porous media. [J14, J3]

Effect of pressure-dependent viscosity in idealized, classical problems. [J4, J2, J1]

II. Control, Optimization, and Simulation of Networked Flow Systems

Computation, Modelling, & Optimization of flows in pipeline networks [J32, P1, J30, J28, J27, J23]

Reduced-order model of demand response in gas heating [J25]

Reduced-order models of DFNs via graph representations & machine learning. [B1, J22, J21, J20, J18, J17, J16, J15]

III. Matrix Calculus

Identification & correction of long-standing errors in calculating the gradient of matrix functionals [J29, J26]

PEER-REVIEWED PUBLICATIONS (* DENOTES POST-DOC/STUDENT MENTEE)

Citations : 750 plus, h-index : 16, i10-index : 28, https://scholar.google.com/citations?user=Fnfr8hYAAAAJ

Preprints

[P1] (2023) S. K. K. Hari, K. Sundar, **S. Srinivasan** & R. Bent. Relaxations of the Steady Optimal Gas Flow Problem for a Non-Ideal Gas. arXiv: 2308.13009.

In Archival Journals

[J32] (2025) **S. Srinivasan** & K. Sundar. Hierarchical Network Partitioning for Solution of Potential-Driven, Steady-State, Nonlinear Network Flow Equations. *IEEE Control Systems Letters*. DOI: 10.1109/LCSYS.2025.3533383

[J31] (2024) S. K. K. Hari, A. Zlotnik, **S. Srinivasan**, K. Sundar & M. Ewers. Optimization of District Heating Network Parameters in Steady-State Operation. *Journal of Thermal Science and Engineering Applications*. DOI: 10.1115/1.4066908

[J30] (2024) **S. Srinivasan**, N. Panda & K. Sundar. On the Existence of Steady-State Solutions to the Equations Governing Fluid Flow in Networks. *IEEE Control Systems Letters*. DOI: 10.1109/LCSYS.2024.3394317

[J29] (2024) **S. Srinivasan** & N. Panda. What is the gradient of a scalar function defined on a subspace of square matrices ? *Indian Journal of Pure & Applied Mathematics*. DOI: 10.1007/s13226-024-00594-4

[J28] (2024) S. R. Kazi*, K. Sundar, **S. Srinivasan** & A. Zlotnik. Modeling and Optimization of Steady Flow of Natural Gas and Hydrogen Mixtures in Pipeline Networks. *International Journal of Hydrogen Energy*. DOI: 10.1016/j.ijhydene.2023.12.054

[J27] (2023) **S. Srinivasan**, K. Sundar, V. Gyrya & A. Zlotnik. Numerical Solution of the Steady-State Network Flow Equations for a Non-Ideal Gas. *IEEE Transactions on Control of Network Systems*. DOI: 10.1109/TCNS.2022.3232524

[J26] (2022) **S. Srinivasan** & N. Panda. What is the gradient of a scalar function of a symmetric matrix ? *Indian Journal of Pure & Applied Mathematics*. DOI: 10.1007/s13226-022-00313-x

[J25] (2021) F. Hu, K. Sundar, **S. Srinivasan** & R. Bent. Demand Response Analogues for Residential Loads in Natural Gas Networks. *IEEE Access*. DOI: 10.1109/ACCESS.2021.3132614

[J24] (2021) **S. Srinivasan**, D. O'Malley, M. K. Mudunuru, M. R. Sweeney, J. D. Hyman, S. Karra, L. Frash, J. W. Carey, M. R. Gross, G. D. Guthrie, T. Carr, L. Li & H. S. Viswanathan. A machine learning framework for rapid forecasting and history matching in unconventional reservoirs. *Scientific Reports*. DOI: 10.1038/s41598-021-01023-w

[J23] (2021) S. K. K. Hari, K. Sundar, **S. Srinivasan**, A. Zlotnik & R. Bent. Operation of Natural Gas Pipeline Networks With Storage Under Transient Flow Conditions. *IEEE Transactions on Control Systems Technology*. DOI: 10.1109/TCST.2021.3071316

[J22] (2020) S. Dana, **S. Srinivasan**, S. Karra, N. Makedonska, J. Hyman, D. O'Malley, H. Viswanathan & G. Srinivasan. Towards real-time forecasting of natural gas production by harnessing graph theory for stochastic discrete fracture networks. *Journal of Petroleum Science & Engineering*. DOI: 10.1016/j.petrol.2020.107791

[J21] (2020) **S. Srinivasan**, D. O'Malley, J. D. Hyman, S. Karra, H. S. Viswanathan & G. Srinivasan. Transient flow modelling in fractured media using graphs. *Physical Review E: Statistical Physics, Plasmas, Fluids, and Related Interdisciplinary Topics*. DOI: 10.1103/PhysRevE.102.052310

[J20] (2020) **S. Srinivasan**, E. Cawi*, J. D. Hyman, D. Osthus, A. Hagberg, H. Viswanathan & G. Srinivasan. Physics-informed machine learning for backbone identification in discrete fracture networks. *Computational Geosciences*. DOI: 10.1007/s10596-020-09962-5

[J19] (2019) J. D. Hyman, H. Rajaram, **S. Srinivasan**, N. Makedonska, S. Karra, H. S. Viswanathan & G. Srinivasan. Matrix Diffusion in Fractured Media: New Insights Into Power-Law Scaling of Breakthrough Curves. *Geophysical Research Letters*. DOI: 10.1029/2019GL085454

[J18] (2019) **S. Srinivasan**, S. Karra, J. D. Hyman, H. S. Viswanathan & G. Srinivasan. Model reduction for fractured porous media: a machine learning approach for identifying main flow pathways. *Computational Geosciences*. DOI: 10.1007/s10596-019-9811-7

[J17] (2018) **S. Srinivasan**, J. D. Hyman, S. Karra, D. O'Malley, H. S. Viswanathan & G. Srinivasan. Robust system size reduction of discrete fracture networks: a multi-fidelity method that preserves transport characteristics. *Computational Geosciences*. DOI: 10.1007/s10596-018-9770-4

[J16] (2018) J. D. Hyman, A. Hagberg, D. Osthus, **S. Srinivasan**, G. Srinivasan & H. S. Viswanathan. Identifying Backbones in Three-Dimensional Discrete Fracture Networks: A Bipartite Graph-Based Approach. *Multiscale Modeling & Simulation*. DOI: 10.1137/18M1180207

[J15] (2018) H. S. Viswanathan, J. D. Hyman, S. Karra, D. O'Malley, **S. Srinivasan**, A. Hagberg & G. Srinivasan. Advancing Graph-Based Algorithms for Predicting Flow and Transport in Fractured Rock. *Water Resources Research*. DOI: 10.1029/2017WR022368

[J14] (2018) **S. Srinivasan** & A. K. Tornberg. Fast Ewald summation for Green's function of Stokes flow in a half-space. *Research in the Mathematical Sciences*. DOI: 10.1007/s40687-018-0153-1

[J13] (2018) A. E. Lovell, **S. Srinivasan**, S. Karra, D. O'Malley, N. Makedonska, H. S. Viswanathan, G. Srinivasan, J. W. Carey & L. P. Frash. Extracting Hydrocarbons From Shale: An Investigation of the Factors That Influence the Decline and the Tail of the Production Curve. *Water Resources Research*. DOI: 10.1029/2017WR022180

[J12] (2018) P. Minev, **S. Srinivasan** & P. Vabishchevich. Flux formulation of parabolic equations with highly heterogeneous coefficients. *Journal of Computational and Applied Mathematics*. DOI: 10.1016/j.cam.2017.12.003

[J11] (2016) **S. Srinivasan**, R. Lazarov & P. Minev. Multiscale direction-splitting algorithms for parabolic equations with highly heterogeneous coefficients. *Computers and Mathematics with Applications*. DOI: 10.1016/j.camwa.2016.07.032

[J10] (2016) **S. Srinivasan**. A Generalized Darcy-Dupuit-Forchheimer Model with Pressure-Dependent Drag Coefficient for Flow Through Porous Media Under Large Pressure Gradients. *Transport in Porous Media*. DOI: 10.1007/s11242-016-0625-y

[J9] (2016) **S. Srinivasan** & K. R. Rajagopal. On the flow of fluids through inhomogeneous porous media due to high pressure gradients. *International Journal of Non-Linear Mechanics*. DOI: 10.1016/j.ijnonlinmec.2015.09.003

[J8] (2015) **S. Srinivasan** & S. Karra. Flow of "stress power-law" fluids between parallel rotating discs with distinct axes. *International Journal of Non-Linear Mechanics*. DOI: 10.1016/j.ijnonlinmec.2015.04.004

[J7] (2014) K. R. Rajagopal & **S. Srinivasan**. Flow Of Fluids Through Porous Media Due To High Pressure Gradients: Part 2 - Unsteady Flows. *Journal of Porous Media*. DOI: 10.1615/JPorMedia.v17.i9.10

[J6] (2014) **S. Srinivasan** & K. R. Rajagopal. A thermodynamic basis for the derivation of the Darcy, Forchheimer and Brinkman models for flows through porous media and their generalizations. *International Journal of Non-Linear Mechanics*. DOI: 10.1016/j.ijnonlinmec.2013.09.004

[J5] (2013) **S. Srinivasan**, A. Bonito & K. R. Rajagopal. Flow Of A Fluid Through A Porous Solid Due To High Pressure Gradients. *Journal of Porous Media*. DOI: 10.1615/JPorMedia.v16.i3.20

[J4] (2012) V. Průša, **S. Srinivasan** & K. R. Rajagopal. Role of pressure dependent viscosity in measurements with falling cylinder viscometer. *International Journal of Non-Linear Mechanics*. DOI: 10.1016/j.ijnonlinmec.2012.02.001

[J3] (2012) **S. Srinivasan** & K. B. Nakshatrala. A stabilized mixed formulation for unsteady Brinkman equation based on the method of horizontal lines. *International Journal for Numerical Methods in Fluids*. DOI: 10.1002/fld.2544

[J2] (2010) **S. Srinivasan** & K. R. Rajagopal. A note on the flow of a fluid with pressure-dependent viscosity in the annulus of two infinitely long coaxial cylinders. *Applied Mathematical Modelling*. DOI: 10.1016/j.apm.2010.02.017

[J1] (2009) **S. Srinivasan** & K. R. Rajagopal. Study of a variant of Stokes' first and second problems for fluids with pressure dependent viscosities. *International Journal of Engineering Science*. DOI: 10.1016/j.ijengsci.2008.11.002

In Books

[B1] 2020, Elsevier. **S. Srinivasan**, J. D. Hyman, D. O'Malley, S. Karra, H. S. Viswanathan & G. Srinivasan. "Machine learning techniques for fractured media". In: *Machine Learning in Geociences*. Ed. by B. Moseley & L. Krischer. Advances in Geophysics. DOI: 10.1016/bs.agph.2020.08.001

In Conference Proceedings

[C7] May 7–10, 2024, Charleston, SC. **S. Srinivasan**, K. Sundar, S. K. K. Hari, A. Zlotnik, A. Pandey, M. Ewers, D. Fobes, A. Mate & R. Bent. Capabilities and advantages of the GasModels package. In: *54^{th} Annual Conference of Pipeline Simulation Interest Group (PSIG)*.

[C6] July 26–28, 2021, Houston, Texas. M. R. Gross, J. D. Hyman, **S. Srinivasan**, D. O'Malley, S. Karra, M. K. Mudunuru, M. Sweeney, L. Frash, B. Carey, B. Guthrie, T. Carr, L. Li, D. Crandall & H. Viswanathan. A Physics-informed Machine Learning Workflow to Forecast Production in a Fractured Marcellus Shale Reservoir. In: *Proceedings of the SPE/AAPG/SEG Unconventional Resources Technology Conference*. DOI: 10.15530/urtec-2021-5644

[C5] March 23–25, 2020, Stanford, California. M. K. Mudunuru, D. O'Malley, **S. Srinivasan**, J. D. Hyman, M. R. Sweeney, L. Frash, B. Carey, M. R. Gross, N. J. Welch, S. Karra, G. D. Guthrie & H. S. Viswanathan. Physics-informed Machine Learning for Real-time Unconventional Reservoir Management. In: *Proceedings of the AAAI 2020 Spring Symposium on Combining Artificial Intelligence and Machine Learning with Physical Sciences*. Ed. by J. Lee, E. F. Darve, P. K. Kitanidis, M. W. Farthing & T. Hesser. URL: http://ceur-ws.org/Vol-2587/.

[C4] June 23–26, 2019, New York City, New York. **S. Srinivasan**, S. Karra, J. D. Hyman, H. S. Viswanathan & G. Srinivasan. System reduction for fractured media using machine-learning. In: *Proceedings of the 53rd US Rock Mechanics/Geomechanics Symposium*.

[C3] June 27–29, 2018, Milwaukee, Wisconsin. K. Sundar, **S. Srinivasan**, S. Misra, S. Rathinam & R. Sharma. Landmark Placement for Localization in a GPS-denied Environment. In: *American Control Conference*. DOI: 10.23919/ACC.2018.8431886

[C2] June 20–22, 2018, Seattle, Washington. **S. Srinivasan**, J. D. Hyman, S. Karra, G. Srinivasan & H. S. Viswanathan. Reduced-order models of Discrete Fracture Networks through flow-physics on graph representations. In: *Proceedings of the 2nd International Discrete Fracture Network Engineering Conference*.

[C1] June 27–July 2, 2010, University Park, Pennsylvania. **S. Srinivasan** & K. B. Nakshatrala. Stabilized formulations for Modified Brinkman equation. In: *Proceedings of the 16th US National Congress of Theoretical and Applied Mechanics*.

PRESENTATIONS & TALKS

Invited Talks & Seminars

[S9] October 25, 2024, Department of Mathematics, North Carolina State University, Raleigh. *Computational and Applied Mathematics Seminar*. Hierarchical network partitioning for solution of potential-driven, steady-state, nonlinear network flow equations.

[S8] July 22–26, 2024, Vancouver, Canada. *16th World Congress on Computational Mechanics (WCCM 2024)*. Modelling the flow of fluids through porous solids exhibiting nonlinear response in the small strain regime.

[S7] April 24, 2023, Department of Mathematics, University of North Texas, Denton. *Millican Colloquium*. Matrix calculus on structured spaces.

[S6] March 11, 2022, Department of Mathematics, Texas A&M University, Corpus Christi. Gas Transport Networks: Numerical Solution of Steady-State Flow Equations.

[S5] March 8, 2022, School of Mathematical and Statistical Sciences, University of Texas RGV. *Integrable Systems and Nonlinear Mechanics Seminar*. Why should you care about gradients of scalar functions of symmetric matrices?

[S4] May 13, 2021. *NETL-DOE Webinar*. A machine-learning inverse model framework for rapid forecasting and history matching in unconventional reservoirs.

[S3] June 24, 2019, Department of Civil Engineering, Columbia University, New York City, New York. A physics-informed machine-learning method for system reduction of fracture networks.

[S2] July 7–8, 2018, Newry, Maine. *Gordon Research Seminar (GRS) – Flow & Transport in Permeable Media*. System reduction techniques for Discrete Fracture Networks in Porous Media.

[S1] February 9, 2017, KTH Mathematics, Stockholm, Sweden. *Numerical Analysis Seminar*. Pressure-dependent viscosity and reduced-order modelling in flow through porous media.

Talks & Seminars at LANL

[L7] August 5, 2024, Los Alamos. *T-5 Seminar*. Don't say gradient when you mean derivative !

[L6] July 23, 2020, Los Alamos. *CNLS Seminar*. What, really, is the gradient of a scalar functional of a symmetric matrix ?

[L5] October 24, 2019, Los Alamos. *CNLS Seminar*. A physics-informed ML method that preserves network connectivity during system reduction of fracture networks.

[L4] June 11, 2019, Los Alamos. *Science in 3'*. Acceleration of simulations of flow and transport through fractured geological media via machine-learning.

[L3] October 4, 2018, Los Alamos. *CNLS Seminar*. A system-reduction technique based on machine-learning for Discrete Fracture Networks in porous media.

[L2] May 4, 2018, Los Alamos. *CNLS EAC Review*. System-reduction techniques for Discrete Fracture Networks in Porous Media.

[L1] April 5, 2018, Los Alamos. *CNLS Seminar*. System-reduction techniques for Discrete Fracture Networks in Porous Media.

Conference Talks & Posters

[T16] May 7–10, 2024, Charleston, SC. *54th Annual Conference of Pipeline Simulation Interest Group (PSIG)*. Capabilities and advantages of the GasModels package.

[T15] November 22–24, 2023, Paris-Saclay, France. *6th International Workshop on Model Reduction Techniques (MORTech)*. Reduced order models for the problem of optimal operation of natural gas flow networks.

[T14] August 21–23, 2023, Linköping, Sweden. *29th International Workshop on Matrices and Statistics (IWMS-2023)*. What is the gradient of a scalar function defined on a subspace of square matrices?

[T13] June 5–9, 2023, Cork, Ireland. *15th World Congress of Structural and Multidisciplinary Optimisation (WCSMO 15)*. LP/MILP relaxations for the problem of optimal operation of natural gas flow networks.

[T12] May 22–26, 2023, Edinburgh, UK. *15th InterPore Annual Meeting (InterPore 2023)*. Flow of a fluid with pressure-dependent viscosity through aging porous media.

[T11] October 16–19, 2022, Texas A&M University, College Station. *Society of Engineering Science Annual Technical Meeting (SES 2022)*. Gas Transport Networks: Numerical Solution of Steady-State Flow Equations.

[T10] September 23–25, 2019, Santa Fe, NM. *dfnWorkShop*. Reduced-order models of DFN through graphs and machine-learning.

[T9] March 11–14, 2019, Houston. *SIAM Conference on Mathematical & Computational Issues in the Geosciences (GS19)*. System reduction for fractured porous media through a machine-learning approach that identifies main flow pathways.

[T8] July 8–13, 2018, Newry, Maine. *Gordon Research Conference (GRC) - Flow & Transport in Permeable Media*. Construction of reduced-order models of Discrete Fracture Networks through physics on graph representations.

[T7] June 20–22, 2018, Seattle, Washington. *2nd International Discrete Fracture Network Engineering Conference*. Reduced-order models of Discrete Fracture Networks through flow-physics on graph representations.

[T6] June 3–7, 2018, Saint-Malo, France. *Computational Methods in Water Resources XXII*. Construction of reduced-order models of Discrete Fracture Networks through physics on graph representations.

[T5] February 20–22, 2018, Santa Fe, New Mexico. *Machine Learning in Solid Earth Geoscience*. Physics-informed ML to predict flux through Discrete Fracture Networks.

[T4] October 19–20, 2016, Uppsala, Sweden. *Scientific Computing in Sweden*. On multi-scale direction-splitting methods for unsteady diffusion equation with highly heterogeneous coefficients.

[T3] May 18–21, 2015, Padua, Italy. *7th International Conference on Porous Media & Annual Meeting, InterPore 2015*. A multi-scale direction-splitting algorithm for parabolic equations with highly heterogeneous coefficients.

[T2] May 22–24, 2013, Houston, Texas. *13th Pan-American Congress of Applied Mechanics*. Flow of a fluid through an inhomogeneous porous solid due to high pressure gradients.

[T1] June 27–July 2, 2010, University Park, Pennsylvania. *16th US National Congress of Theoretical and Applied Mechanics*. Stabilized formulations for Modified Brinkman equation.

MENTORING/ADVISING (POST-DOCTORAL FELLOWS & DOCTORAL CANDIDATES)

10/2024 – now	Abhay Singh Bhadoriya (Post-Doctoral fellow, T-5)
10/2023 – now	Luke Silas Baker (Post-Doctoral fellow, T-5/CNLS) Numerical methods for solution of gas-flow equations on networks
09/2023 – now	Krishna Rajendra Kamdi (Ph.D. student, Mechanical Engineering, Texas A&M University) Flow through deformable porous media

MENTORING (GRADUATE STUDENTS & INTERNS)

2024	Abhay Singh Bhadoriya (Mechanical Engineering, Texas A&M University) Fairness in Multiple Travelling Salesmen Problem (MTSP)
2023	Abhay Singh Bhadoriya (Mechanical Engineering, Texas A&M University) Quantifying safety in automated highway systems
2023	Venkata Srimuvva Chirala (Industrial Engineering, Wayne State University) A reinforcement learning approach for container shipping supply chain problem
2022	Christopher Martin Montez (Mechanical Engineering, Texas A&M University) Global optimization for Nonlinear Programs (NLPs) with trigonometric functions
2019	Haoyu Tang (Petroleum Engineering, Stanford University) Reduced-order DAE model of reservoir-simulation for optimal control applications
2018	Eric Cawi (Electrical Engineering, Washington University in St. Louis) Applied Machine Learning (AML) Summer School, Los Alamos National Laboratory System reduction of DFNs by path-classification using machine-learning [J20]
2009	Teaching Assistant Training and Evaluation Program (TATEP) Center for Teaching Excellence (CTE), Texas A&M University

TEACHING EXPERIENCE

Stanford University, Free Online Course during COVID-19

04/2020 - 05/2020	Volunteer Section Leader, Code in Place (based on course CS106A), 11 students Introductory Programming Course using Python 900+ Volunteer Section Leaders from over 65 countries 9000+ students from the world over

University of Alberta, Department of Mechanical Engineering

2015	Lecturer (Particle Dynamics), Winter Semester, 130 students

Texas A&M University, Department of Mechanical Engineering

2013	Lecturer (Statics and Particle Dynamics), Summer Semester, 85 students
2009	Instructor (Fluid Mechanics Laboratory), Spring Semester, 18 students
2007 –2011	Teaching Assistant (Fluid Mech., Mech. of Matls., Thermo-Fluids Analysis)

PROFESSIONAL TRAINING/DEVELOPMENT

2024	Short Course: Geometric Mechanics Formulations & Structure Preserving Discretizations 16th World Congress on Computational Mechanics (WCCM 2024), Vancouver, Canada
2017	REGML 2017 Summer School (Regularization Methods for Machine Learning) Simula Research Laboratory, Oslo, Norway
2011	Fellow (GTA Fellows Certificate Program) Graduate Teaching Academy (GTA), Texas A&M University

ACADEMIC/PROFESSIONAL SERVICE

Symposium Chair	Fractures and Poroelasticity, SIAM Geosciences (GS19) 2019
Referee	Advances in Water Resources Water Resources Research Computers and Geotechnics Geophysical Research Letters International Journal on Geomathematics Mathematical Geosciences Chemical Engineering Communication International Journal of Engineering Science Geofluids Energies Applied Energy Journal of Porous Media Journal of Computational Physics Journal of Computational Science International Journal for Numerical Methods in Fluids International Journal of Applied and Computational Mathematics SIAM Journal on Applied Mathematics

REFERENCES

Available upon request