Vishal Srivastava

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Education

University of Michigan, Ann Arbor — May 2022
Ph.D. (Aerospace Engineering, Advisor: Prof. Karthik Duraisamy) — *GPA: 4.0/4.0*

Indian Institute of Technology, Kanpur — May 2016
B.Tech. (Aerospace Engineering) — *CPI: 9.5/10.0*

Awards

General Proficiency Medal (Convocation, 2016 - IIT Kanpur) for ranking first in Aerospace Engineering

Research Interests

- Computational Aerodynamics
- Data-driven modeling
- Multidisciplinary Design & Optimization
- Scientific Machine Learning
- Numerical Methods
- Reduced-order/Surrogate modeling

Experience

Analytical Mechanics Associates — Hampton VA, USA
Aerospace Engineer, Senior (Postdoctoral Researcher at NASA Langley) — *Jan 2024 – Present*
Engineer, Staff (Postdoctoral Researcher at NASA Langley) — *Jun 2023 – Dec 2023*

National Institute of Aerospace — Hampton VA, USA
Research Engineer I (Postdoctoral Researcher at NASA Langley) — *Jul 2022 – May 2023*

University of Michigan, Ann Arbor — Ann Arbor MI, USA
Postdoctoral Research Scholar (at Prof. Karthik Duraisamy's group) — *Jun 2022 – Jul 2022*

Journal Publications

1. Srivastava, V., Sulzer, V., Mohtat, P., Siegel, J. B., & Duraisamy, K. (2023). **A non-intrusive approach for physics-constrained learning with application to fuel cell modeling.** *Computational Mechanics, 72(2), 411-430.*
2. Srivastava, V., & Duraisamy, K. (2023). **Generalizable physics-constrained modeling using learning and inference assisted by feature-space engineering.** *Physical Review Fluids, 6(12), 124602.*

Conference Proceedings

1. Srivastava, V., Rumsey, C. L., Coleman, G. N., & Wang, L. (2024). **On generalizably improving RANS predictions of flow separation and reattachment.** In *AIAA SCITECH 2024 Forum (p. 2520).*
2. Hildebrand, N., Srivastava, V., Zaki, T. A., & Choudhari, M. M. (2023, September). **DeepONet-Assisted Optimization of Surface Topography for Transition Delay in a Mach 4.5 Boundary Layer.** In *14th International ERCOFTAC Symposium on Engineering Turbulence Modelling and Measurements (ETMM14) (No. 20230001917).*
3. Hildebrand, N., Venkatachari, B. S., Srivastava, V., & Choudhari, M. M. (2023, September). **Recent Progress on RANS-Based Transition Model Verification.** In *14th International ERCOFTAC Symposium on Engineering Turbulence Modelling and Measurements (ETMM14).*
4. Srivastava, V., & Duraisamy, K. (2022). **Towards a generalizable data-driven approach to predict separation-induced transition.** In *12th International Symposium on Turbulence and Shear Flow Phenomena (TSFP12).*
5. Srivastava, V., & Duraisamy, K. (2018). **Aerodynamic design of aircraft engine nozzles with consideration of model-form uncertainties.** In *2018 AIAA Non-Deterministic Approaches Conference (p. 2175).*

Book Chapters

1. Duraisamy, K. & Srivastava, V. (2025). **Machine learning augmented modeling of turbulence.** In *Data Driven Analysis and Modeling of Turbulent Flows (pp. 311-354). Academic Press.*

Technical Reports

1. Srivastava, V., Rumsey, C. L., Coleman, G. N., & Wang, L. (2024). **Augmenting RANS Turbulence Models Guided by Field Inversion and Machine Learning.** *(No. NASA/TM-20240012512).*

Invited Talks/Lectures

1. Srivastava, V., Rumsey, C. L., Coleman, G. N., & Wang, L. (2025). **Data-driven Improvements in RANS Predictions for Reattachment of Separated Flows.** *137th NIA CFD Seminar. National Institute of Aerospace.*
2. Srivastava, V. (2024). **An Introduction to Machine Learning for Turbulence Modeling.** *MAE298: Fundamentals of Turbulence Modeling (Course Instructor: Dr. Camli Badrya), UC Davis*
3. Srivastava, V., & Duraisamy, K. (2019). **Developing Data-Augmented Turbulence Models using Field Inversion and Machine Learning.** *120th NIA CFD Seminar. National Institute of Aerospace.*

Skills

Programming Languages:	C/C++, Python, FORTRAN, Julia, MATLAB
Machine Learning Packages:	PyTorch, Keras (Tensorflow)
Scientific Computing Libraries:	BLAS, LAPACK, PETSc, (Par)METIS, ADOL-C, CoDiPack
Parallel/Hybrid Computing Paradigms:	OpenMP, MPI, CUDA, Kokkos