

CONTACT INFORMATION	Scientific Computing & Imaging Institute, 72 S Central Campus Dr, University of Utah, Salt Lake City, Utah, USA, 84112	+1 385 528 4611 siva.viknesh@sci.utah.edu sivaviknesh14@gmail.com
RESEARCH INTERESTS	Scientific Machine Learning, Computational Methods, Unsteady Aerodynamics, Wildfire Dynamics	
EDUCATION	University of Utah , Salt Lake City, Utah, USA Ph.D. , Mechanical Engineering, CPI: 3.88/4 08/2022 – 05/2026 (Expected) Advisor: Dr. Amirhossein Arzani <ul style="list-style-type: none"> <i>Towards Interpretable & Differentiable Machine Learning for Fluid Flows</i> Indian Institute of Technology Kanpur , India M.S. , Aerospace Engineering, CPI: 8.33/10 01/2018 – 07/2020 Advisor: Dr. Kamal Poddar <ul style="list-style-type: none"> <i>Control of Separated Flow on a Symmetric Airfoil by Pitching Oscillation</i> Anna University , Chennai, India B.E. , Aeronautical Engineering, CPI: 8.30/10 08/2012 – 05/2016 Advisor: Dr. Shanmugaraja M <ul style="list-style-type: none"> <i>Numerical Simulation of Fluid Flow over a Rectangular Wing – Wingtip Slots</i> 	
WORK EXPERIENCE	Graduate Student Researcher 05/2025 – Present CAI-2 Group, Los Alamos National Laboratory , New Mexico, USA <ul style="list-style-type: none"> Statistical Shape Modeling of DEM terrains for Wildfire simulations. Graduate Research Assistant 08/2022 – Present SCI Institute , University of Utah, Utah, USA <ul style="list-style-type: none"> Developed a Differentiable Autoencoding Neural Operator combining mesh-invariant dimensionality reduction with differentiable PDE solvers. Designed a Statistical Shape Modeling pipeline for DEM terrain extraction in wildfire simulations. Built a GPU-accelerated 2D Wildfire Transport PDE solver, leveraging CUDA and finite difference method. Proposed ADAM-SINDy, a global optimization method for nonlinear dynamical system identification. Aerodynamics Engineer 09/2021 – 08/2022 The ePlane Company , IIT Madras, Chennai, India <ul style="list-style-type: none"> CFD URANS simulations on full-scale 3D electric air vehicles to evaluate aerodynamic performance and static stability. Developed Custom UDF programs to generate unsteady freestream conditions for calculating dynamic stability derivatives. Senior Research Associate 01/2021 – 08/2021 Department of Aerospace Engineering, IIT Kanpur , India Associate – Content Development 08/2020 – 01/2021 BYJU'S , Bengaluru, India	

	Student Research Associate Department of Aerospace Engineering, IIT Kanpur, India <ul style="list-style-type: none"> • Developed a 2D DNS/LES compressible PDE solver using MPI-Fortran. • Built a Data-Driven Unsteady Aerodynamic Model based on Fourier basis. • Wrote MATLAB scripts to evaluate the spectral resolution of numerical derivative schemes. 	01/2018 – 07/2020
	CFD Engineer FlowXplore - CAE Associates, Coimbatore, India	05/2016 – 11/2017
PUBLICATIONS	<ol style="list-style-type: none"> 1. Differentiable Autoencoding Neural Operator for Interpretable and Integrable Latent Space, Siva Viknesh, Amirhossein Arzani, in preparation 2. ADAM-SINDy: An Efficient Optimization Framework for Parameterized Nonlinear Dynamical System Identification, Siva Viknesh, Younes Tatari, Amirhossein Arzani, Submitted, 2025. 3. Role of flow topology in wind-driven wildfire propagation, Siva Viknesh, Ali Tohidi, Fatemeh Afghah, Rob Stoll, Amirhossein Arzani, Physics of Fluids, May, 2025. 4. Active control of separated flow on a symmetric airfoil by pitching oscillation, Siva Viknesh and Kamal Poddar, Physics of Fluids, August, 2021. 5. Grid sensitivity and role of error in computing a lid-driven cavity problem, V. K. Suman, Siva Viknesh S., Mohit K. Tekriwal, Swagata Bhaumik and Tapan K. Sengupta, Phys. Rev. E, Jan 2019. 	
TECHNICAL SKILLS	<ul style="list-style-type: none"> • PyTorch • NumPy • GPU/CPU solvers • CuPy • MPI Fortran • MATLAB 	
TEACHING EXPERIENCE	Teaching Assistant ME EN 2450 – Numerical Methods for Engineering Systems Instructor: Prof. James Rob Stoll, University of Utah Fall 2024 Teaching Assistant AE 698A – Intro to Virtual Instrumentation Instructor: Prof. Kamal Poddar, IIT Kanpur Spring 2020 Teaching Assistant AE 351A – Experiments in Aerospace Engineering I Instructor: Prof. Dehobam Das, IIT Kanpur Fall 2019 Teaching Assistant AE 698A – Intro to Virtual Instrumentation Instructor: Prof. Kamal Poddar, IIT Kanpur Spring 2019	
ACTIVITIES & ACHIEVEMENTS	<ul style="list-style-type: none"> • Reviewed research papers for the Physics of Fluids journal. • President & Admin of Tamil Club at IIT Kanpur (Jan 2019 – Sep 2021). • Awarded a Full Scholarship for pursuing the M.S. program at IIT Kanpur. • Achieved All India Rank 141 in GATE AE 2017. • Achieved All India Rank 540 in GATE AE 2016. • Secured Undergraduate University Rank 38 in Tamil Nadu state. • Inter-department Chess Champion at Park College of Technology (2013). 	