

Vishal Indivar Kandala

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EDUCATION

Ph.D, Mechanical Engineering, Texas A&M University **Aug 2021 - Present**
Advisor: **Dr. Iman Borazjani**

M.Eng, Aerospace Engineering, Texas A&M University **Aug 2019 - Aug 2021**
Magna Cum Laude, GPA: 3.9/4

B.Tech, Mechanical Engineering, VIT University **Jul 2014 - May 2018**
GPA: 7.98/10

RESEARCH INTERESTS

1. Numerical Analysis
 2. Computational Fluid Dynamics (Haemodynamics)
 3. High Performance Computing
 4. Simulation of Fluid Structure Interaction
 5. Scientific Machine Learning
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TEACHING EXPERIENCE

Graduate Teaching Assistant, Statistical Inference **Aug 2020 - Present**
Department of Statistics, Texas A&M University.

- Lectured and conducted lab sessions on Fundamentals of Statistics, Probability Distributions, Regression and Visualization.
- Assigned Projects, conducted examinations and duly graded.
- Mentored over 1000 students over the past two years.

Volunteer Tutor, VITeach **Feb 2015 - Jan 2018**
VIT University

- Tutored high school students from underprivileged communities on weekends at the local public school.
- Significantly improved the scores of these students in Mathematics, Physics and English.
- Some students were identified to have high potential and AP level coursework was taught, which led to impressive performance in the IIT JEE entrance test.

RESEARCH EXPERIENCE

Graduate Research Assistant

Aug 2021 - Present

Department of Mechanical Engineering, Texas A&M University

Advisor: Dr.Iman Borazjani

- Conducted Literature review, understanding the codebase involved with the CURVIB method through implementation of benchmark problems such as channel flow but with moving boundaries, this was further extended with complicated patient specific aorta models and mesh.
- Implemented basic incompressible flow solvers (Artificial compressibility) parallely using PETSC and deployed on supercomputing clusters.

Graduate Research Assistant

May 2021 - Present

Department of BioMedical Engineering, Texas A&M University

Advisor: Dr.Reza Avaz

- Through physical simulation and machine learning, a universal end-diastolic pressure volume relationship was found.
- The relationship between measurable parameters (such as the slope and area under the end-diastolic pressure volume relationship curve) and myocardial stiffness has been examined using in-silico measurements.

Graduate Research Trainee

Dec 2020 - Feb 2021

Department of Mechanical Engineering, Texas A&M University

Advisor: Dr.Zohaib Hasnain

- Using the NVIDIA Simnet architecture, wrote Physics Informed Neural Network (PINNs) models for some benchmark problems and further wrote proposals on development of interpretable scientific Machine learning surrogates.

Graduate Research Trainee

May 2020 - Dec 2020

Department of Aerospace Engineering, Texas A&M University

Advisor: Dr.Adonios Karpetsis

- Compiled the chemical kinetics solvers CANTERA 1.8 and RadCal on a Supercomputing Cluster, integrated higher order diffusion terms (Soret and Dufour Effects) in the package.

Undergraduate Research Associate

Aug 2017 - May 2018

Advisor: Dr.Harish Rajan, Department of Mechanical Engineering, VIT University

- Simulated the hypersonic re-entry of a bluff-body through computational fluid dynamics (using ANSYS Fluent). Using this platform, design optimization study was conducted for re-entry capsules in space craft.

PUBLICATIONS

ACADEMIC JOURNAL ARTICLES

Numerical Study of a modified double-spiked re-entry capsule. **Sep 2018**
Rajan, H, **Kandala, V**, Singh, R
International Journal of Aerospace Engineering (Volume 2018)

MANUSCRIPTS IN PREPARATION

In-silico-generated universal end-diastolic pressure-volume relationship for the right ventricle.
Kandala, V, Mukherjee, T, Borazjani, I, Choudhary, G, Avazmohammadi, R
In preparation for the journal-Computers in Biology and Medicine

POSTER PRESENTATIONS

High Performance Computing for Bio-Fluids and Flow Control. **May 2022**
Kandala, V
TAMU High Performance Research Computing Symposium (2022), College Station, TX

BLOG POSTS

Assembling a Dissertation committee doesn't have to be nerve-wracking **Nov 2021**
Kandala, V
Ingenium Blog, Texas A&M University.

PROFESSIONAL EXPERIENCE

Summer Research Intern, Deep Learning **May 2020 - Aug 2020**
Sensagrate, Phoenix, AZ.

- Worked in the core developers group, working on a Low Memory, Efficient, Face Recognition (OpenCV) model to be deployed on a mobile device.
- Created datasets of face images that better reflect diversity in society.

Product Design Engineer **Jan 2018 - Feb 2019**
EPC Automation, Hyderabad, India.

- Lead a team of 2 on the end to end development of an economic CNC (Electromechanical) system by adhering to DFMEA principles.
- Established design specifications, modeled various components including sheet metal and weldments using CATIA with multiple configurations for version control.

HONORS AND AWARDS

Graduate Academic Excellence Fellowship <i>Department of Aerospace Engineering, Texas A&M University</i>	Jan 2020
Graduate Academic Excellence Fellowship <i>Department of Aerospace Engineering, Texas A&M University</i>	Aug 2020
Best Undergraduate Research Project Award <i>School of Mechanical and Building Sciences, VIT University</i>	May 2018
Silver Medal (with Team Aviators International) <i>TATA UAV Challenge, Pune, India</i>	Jun 2018
Silver Medal (with Team Saksham International) <i>Baja SAE India, Gurgaon, India</i>	May 2017

SKILLS

PROGRAMMING

Languages: C/C++;Python; MATLAB; bash scripting; LaTeX.

Version control: git;

Debugging: gdb; valgrind

Documentation: doxygen;

High Performance Computing: PETSC-TAO; OpenMP; OpenCL; CUDA; MPI.

Scientific Computing: NumPy; SciPy; SciKit-Learn; Pandas;

Machine Learning: Tensorflow; Keras; Pytorch.

Data Visualization: Paraview; TecPlot; Matplotlib.

DESIGN

Design Failure Mode and Effect Analysis.

Geometric Dimensioning and Tolerancing.

Computer Aided Design: SolidWorks; CATIA; Fusion 360; 3-Matic

Computer Aided Engineering: STAR CCM ; Abaqus; OpenFOAM; ANSYS Fluent

COMMUNICATION AND MANAGEMENT

Problem Solving: Solution Oriented; Analytical and Evidence based.

Communication: Professional proficiency in English, Active Listening, Amicable body language.

Administrative: Kanban, Lab Scrum, MS Office.

SERVICE AND LEADERSHIP EXPERIENCE

Mentor, Mechanical Engineering <i>Indian Graduate Student Association, Texas A&M University.</i>	Jun 2022
Judge, BioMedical Engineering Cohort <i>Texas Science and Engineering Fair</i>	Feb 2022
Columnist, Ingenium <i>Engineering Student-led Blog, Texas A&M University</i>	Oct 2021 - Present
Senator, Graduate and Professional Student Government <i>Department of Aerospace Engineering, Texas A&M University</i>	Aug 2020 - Aug 2021
Elected Officer, Aerospace Engineering Graduate Student Association <i>Department of Aerospace Engineering, Texas A&M University</i>	Aug 2020 - Aug 2021
Founder and Aerodynamics Head, Team Aviators International <i>SAE Aero Student Design Team, VIT University</i>	Nov 2017
Breaking Lead Engineer, Team Saksham International <i>SAE Baja Student Design Team, VIT University</i>	Oct 2016
Graphic Design Lead, TechnoVIT <i>Student Led Technical Exhibition, VIT University</i>	Mar 2016

REFERENCES

Iman Borazjani, Associate Professor

Department of Mechanical Engineering, Texas A&M University
979-458-5787, iman@tamu.edu

Reza Avazmohammadi, Assistant Professor

Department of Biomedical Engineering, Texas A&M University
979-862-6521, rezaavaz@tamu.edu

Alan Dabney, Associate Professor

Department of Statistics, Texas A&M University
979-845-3141, adabney@tamu.edu

Harish Rajan, Assistant Professor

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