TEJAS D. PATEL

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EDUCATION

Doctor of Philosophy, Mechanical Engineering Aug 2023
College of Engineering, Michigan State University, E. Lansing, MI *GPA*: 3.81/4.0

Bachelor of Technology, Mechanical Engineering, Minor in Design Engineering May 2017
Institute of Technology, Nirma University, Ahmedabad, India *GPA*: 8.48/10

EXPERIENCE

Senior Research Engineer : *Applications* Jun 2025 - **present**

Research Engineer : *Applications* Jan 2023 - May 2025
Convergent Science Inc. , Madison, WI

- Worked on both internal research focused and client support requests for bunsen burners, FSI for compressor plates and valves, liquid rocket combustors, spray modelling, biomedical segmentation + hemodynamics and turbulence modeling flow applications using CONVERGE CFD software.
- Presented CONVERGE user-training, Webinar (From CT to CFD) and attended BMES conference - 2023.

Research Assistant : *Computational Bio*mechanics *Lab, Complex Fluids Lab* May 2019 - May 2023
Michigan State University, E. Lansing, MI

- Designed a patient-specific computational framework using stabilized Finite Element Method (FEM) in FEniCS to simulate Cryoballoon-Ablation. Analyzed hemodynamics & temperature distribution in left atrium to predict lesion size and helped surgeons optimize cryoballoon positioning pre-surgery.
- Developed a thermal Fluid-Structure Interaction (FSI) code used for biophysical modelling of cardiovascular diseases using FEniCS + HPC; subsequently improved scalability by 28%. [github.com/patelte8/vanDANA].
- **Conferences:** Summer Biomechanics, Bioengineering and Biotransport Conference (SB3C) - 2022; 2nd place.

Teaching Assistant Sep 2018 - April 2019
Michigan State University, E. Lansing, MI

Graduate Engineer Trainee Aug 2017 - April 2018
Schaeffler India Limited, Vadodara, India

- Worked in the Spherical & Cylindrical roller bearing department; implemented Kaizen & improved logistics on the production line which accelerated manufacturing efficiency of industrial and railway bearings by 20%.

Undergraduate Research Assistant : *CFD-HT Lab* Aug 2015 - Aug 2017
Nirma University, Ahmedabad, India

- Developed a novel Dual-Grid Dual Level Set Method multiphase flow solver in C++ using Finite Volume and Finite Difference Method (FVM, FDM); tested the accuracy for complex Immersed Boundary flow problems.
- Analyzed single bubble dynamics and studied shapes for different bubble regimes in corrugated channels.

BAJA SAE INDIA : *Team Stallions* Feb 2014 - Feb 2017
Nirma University, Ahmedabad, India

- Served as the lead engineer of wheel assembly & braking team; supervised the optimization, FEA and manufacturing of indigenous wheel components for safe design of the ATV. The team won 2nd place in Sledge Pull, Acceleration & Go-green event.

SKILLS PROFILE

Programming: C, C++, Python, FEniCS, MATLAB, High Performance Computing (HPC), MPI, Linux.
Software: CONVERGE-CFD, ABAQUS, Solidworks, ANSYS-Fluent, Synopsys-Simpleware, OpenFoam, Paraview, Tecplot.

PUBLICATIONS

"A numerical study on bubble dynamics in sinusoidal channels," Phys. Fluids 2019.
"A dual grid, dual level set based cut cell immersed boundary approach for simulation of multi-phase flow," Chem. Eng. Sci. 2018.
"Coupled thermal-hemodynamics computational modeling of cryoballoon ablation for pulmonary vein isolation," Comput. Biol. Med. 2023.