TEJAS D. PATEL

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EDUCATION

Doctor of Philosophy, Mechanical Engineering Dec 2022 (expected)
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

Research Assistant : *Computational Bio*mechanics *Lab, Complex Fluids Lab* May 2019 - **Present**
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 Fluid-Structure Interaction (FSI) code used for biophysical modelling of cardiovascular diseases using FEniCS; subsequently optimized scalability on HPC cluster and improved efficiency by 28%.
- **Conferences:** Summer Biomechanics, Bioengineering and Biotransport Conference (SB3C) - 2022; secured 2nd place in PhD podium competition.
- **Fellowships:** Graduate office fellowship - summer 2022; awarded by college of engineering.

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

- Leveraged subject matter knowledge and experience to guide 60 students in Computer Aided Design of Structures and Heat Transfer course.

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 four different bubble regimes in corrugated channels; investigated the influence of channel wall amplitude on trajectory, breakup, rise velocity and drag.

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 at BAJA SAE INDIA 2015 & 2017.

Summer Intern May 2016 - July 2016
Larsen & Toubro Heavy Engineering, Vadodara, India

PUBLICATIONS

"A numerical study on bubble dynamics in sinusoidal channels," Physics of Fluids, 2019.
"A dual grid, dual level set based cut cell immersed boundary approach for simulation of multi-phase flow," Chemical Engineering Science, 2018.

SKILLS PROFILE & INVOLVEMENT

Programming: C, C++, Python, FEniCS, MATLAB, High Performance Computing (HPC), MPI, Linux.
Software Applications: Solidworks, ANSYS, OpenFoam, Altair Inspire & Hypermesh, Gmsh, Paraview, Tecplot.
Additional: MS Powerpoint, Leadership, Secretary - MSU Swing Dancing Society (2 years).