Abhijeet Sutar

Curriculum Vitae

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Personal Details

Date of Birth	27th November 1999
Nationality	Indian
Marital Status	Single

Education

09/2021 – Present **Postgraduate Diploma – Artificial Intelligence and Machine Learning**,
Dr. Vishwanath Karad MIT – World Peace University, Pune.
Relevant Courses: Artificial Neural Networks, Artificial Intelligence, Deep Learning, Machine Learning with R

07/2017 – 05/2021 **Bachelor of Technology – Mechanical Engineering**,
Indian Institute of Technology Jodhpur.
Relevant Courses: Computational Fluid Dynamics and Heat Transfer, Incompressible Fluid Flow, Compressible Fluid Flow

Academic Projects

Dr. Vishwanath Karad MIT – World Peace University

12/2021 – 04/2022 **Physics Informed Neural Network**, | Python, Tensorflow, Numpy, Matplotlib |.
- Created and trained ResNet style neural network for the 1D Burger's Equation
- Implemented Fourier Feature Mapping of network inputs for 10x better accuracy.
- Evaluated the networks' results against 1D Finite Difference Method solver for the Burger's equation.

Indian Institute of Technology Jodhpur

02/2021 – 05/2021 **Lattice Boltzmann Method 2D Solver**, GitHub, | Python, NumPy, Matplotlib |.
- Coded a Lattice Boltzmann Method solver for 2D channel flow and verified its results against known analytical solution for a Newtonian fluid.

02/2021 – 03/2021 **V-cycle Multigrid for 1D FVM**, GitHub, | Python, NumPy |.
- Applied two-stage V-cycle multigrid method to a 1D diffusion finite volume problem.
- Compared time to convergence vs. single grid solver, showing that multigrid method was 4x faster.

12/2020 – 02/2021 **Runge-Kutta 4th order Solver**, GitHub, | Python, NumPy, Matplotlib |.
- Used 4th order Runge-Kutta method to solve for the Blasius-Boundary Layer Equation.

09/2020 – 01/2021 **2D Finite Difference Method Simulation of Non-Newtonian Fluid**, GitHub, | Python, NumPy, Numba, Matplotlib |.
- Discretized the Cauchy Momentum equations and updated viscosity as per Truncated Power Law.
- Validated the Solver for 2D channel flow against analytical solution of a Truncated Power law fluid.
- Implemented GPU acceleration which reduced computation time by a factor of 7.

09/2020 – 11/2020 **Ice-Slurry Cooling**, | EES |.

- Designed an Ice-Slurry based cooling system for a high intensity but intermittent heat load.
- Performed numerical analysis for the required slurry flow rate and for the sizing of the heat-exchanger, slurry generator and condenser using Engineering Equation Solver.

06/2020 – 08/2020 **2D Implementation of Navier-Stokes Equations Using Python**, GitHub, | Python, NumPy, Numba, Matplotlib |.

- Coded an FDM solver for the basic Navier-Stokes equations.
- Implemented computation optimizations like just-in-time compilation and GPU acceleration.

08/2018 – 02/2019 **Human Powered Vehicle Challenge (Asia – Pacific)**, | SolidWorks, Composite Manufacturing |.

- Designed and built a recumbent bicycle for the ASME HPVC with a team of 9 students.
- Designed aerodynamic fairing in SolidWorks and fabricated it using Fiberglass and a Polyester resin, increasing the recumbent bike's top speed.
- Identified suitable vendors for parts and supplies. Negotiated to procure parts at competitive prices.

Technical skills

Programming Languages	Python, C, R, Matlab
Software	Ansys Fluent, Engineering Equation Solver, SolidWorks
Database	MySQL
Other Technologies	Tensorflow, PyTorch, Qiskit, LaTeX

Languages

Marathi – Mothertongue

English – Fluent

German – Intermediate

Hindi – Fluent

Extracurricular Activities

07/2018 – 04/2019 **Vice-Captain – Aeromodelling club**, *Indian Institute of Technology Jodhpur*.

- Managed the procurement of club supplies from local vendors.
- Guided new members in building Balsa wood gliders and organized RC plane building workshops.

02/2019 – 03/2019 **Student Volunter – Student Technical Society**, *Indian Institute of Technology Jodhpur*.

- Organized an institute-wide technical poster presentation event with a team of 5 student volunteers.

04/2018 – 11/2018 **Member – SAE Baja**, *Indian Institute of Technology Jodhpur*.

- Helped design the suspension geometry for the team's ATV.
- Communicated with vendors regarding part manufacturing.

03/2018 – 04/2018 **Student Volunteer – Nimble**, *Indian Institute of Technology Jodhpur*.

- Helped organize the Nimble technical festival.
- Co-hosted the opening ceremony for the festival.

12/2017 – 01/2018 **Social Work**.

- Volunteered for a donation drive and collected clothing for Smt. Patashibai Lunkad Blind School.

Pune, 1st May 2022 Abhijeet Sutar