

VIDHAN KASHYAP

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Education

Osaka University, Osaka, Japan

Apr 2025 - Apr 2027

MSc. in Mechanical Engineering

Osaka University, Osaka, Japan

Oct 2023 - Mar 2025

Research Student at Micro Thermal Engineering Laboratory

Indian Institute of Technology, Kharagpur, India

2017 - 2021

B.Tech in Mechanical Engineering

7.5/10 CGPA

Academic Projects

Navier-Stokes equations solver using Gaussian neighbourhood C, Techplot

[Source Code](#)

- Implemented a sequential solver in C on an incompressible flow governed by equations using a finite difference scheme.
- Expanded it to compute circular domain to model irregular node for complex geometries as opposed to mesh generation.
- Improved the performance further to order second precision using Gaussian distribution for iteration for each kernel.

2D Heat Equation Solver Using Physics-Informed Neural Networks

- Implemented a PINN to solve the 2D heat equation by embedding PDE and boundary conditions into the loss function.
- Compared PINN results against classical finite difference schemes, demonstrating comparable accuracy.
- Analyzed convergence and computational cost trade-offs, highlighting PINNs' benefits for complex geometries.

Pneumatic Clamp Motion Control System

- Designed a smooth, impact-free 90° rotational motion using a pneumatic piston and proportional solenoid valve.
- Implemented programmable flow control to adapt clamp motion for various attachment heads.
- Developed a control strategy to decelerate clamp rotation near mechanical stopper, reducing mechanical shock and wear.

Work Experience

Addverb Technologies Pvt. Ltd.

Aug 2021 – Sep 2022

Graduate Engineer Trainee

Noida, India

- Streamlined issues handling and root cause analysis process map to capture decision features
- Commissioned a hybrid conveyor system at Addverb facility operating on Siemens controllers
- Optimized Flipkart's largest warehouse project schedule by implementing combinatorial problem of task assignments.

Technical Skills

Languages: Fortran, C++, Python, Julia, MATLAB

Tools: PyTorch, TensorFlow, MPI, Shell Scripting, SolidWorks, LAMMPS

Relevant Coursework

Coursework: Molecular Dynamics Simulation, Computational Modeling of Multiphase Flows, Two-phase Flows, CFD, Machine Learning, Statistical Mechanics, Optimization Methods, Nonlinear Dynamic Systems

Projects

Mathematics and Algorithms Visualization

- Executed **2D Reaction Diffusion Equation** and **Fourier Series** implementations, demonstrating proficiency in mathematical concepts and computational techniques.
- Implemented **A* search algorithm** and **fractal tree** visualization using P5.js creating dynamic visualizations that demonstrate algorithmic concepts effectively.

Achievements

- Recipient of the prestigious **MEXT 2023** Scholarship, on academic merit to foster global collaboration in education.
- Bronze-level** user in the WebSim platform for stock market simulation in **Worldquant Challenge 2019**
- Qualified to the state level Regional Mathematics Olympiad 2015 by Homi Bhabha Centre for Science Education
- Qualified to the pre-final round of International Youth Mathematics Challenge 2019
- 1799 LeetCode** rating and **Specialist** rank on Codeforces in competitive programming.