



Devansh Tripathi

Roll No.: IMS22090

Integrated BS-MS Programme

IISER Thiruvananthapuram

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🐙 [GitHub Profile](#)

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EDUCATION

- **Indian Institute of Science Education and Research (IISER), Thiruvananthapuram** 2022 ~ Present
Integrated BS-MS Programme, Applied Mathematics major CGPA: 9.14
- **V.K.S Saraswati Vidya Niketan Inter College, Gola (Kheri)** 2008 ~ 2022
Secondary and Higher Secondary Schooling, PCM and Computer Science

INTERNSHIP EXPERIENCE

- **Distributed memory parallelization of Lax-Wendroff Flux Reconstruction** June ~ July, 2024
TIFR-CAM SSRP Program, Prof. Praveen Chandrashekar, TIFR-CAM, Bangalore
 - Performed parallelisation of the code for Lax-Wendroff Flux Reconstruction method for solving hyperbolic conservation laws for 1D and 2D cases using Message Passing Interface (MPI).
 - Improved execution time of code by 13 times on a multicore architecture with efficiency of 82 % on cartesian and curvilinear meshes.
 - Implemented Remote Memory Access (RMA) for parallelizing the code for numerically solving linear advection equation for 1D and 2D cases.
 - Link of the github issue for which I contributed can be found [here](#) and project report can be found on this [link](#).

SIDE-PROJECTS

- **MPI-based Finite Difference Method for Parallel Numerical Simulation of Linear ODEs in C++**
Dr. K.R. Arun, IISER Thiruvananthapuram
 - Applied master-worker parallel algorithm in solving linear boundary value problems with Dirichlet, Neumann, and mixed boundary conditions
 - Code for parallel implementation of ordinary differential equation solver can be accessed [here](#).
- **Serial Numerical Simulation of Linear ODEs using Finite Difference Method in C++**
Dr. K.R. Arun, IISER Thiruvananthapuram
 - Studied Finite difference method, derivative approximations for boundary value problems with Dirichlet, Neumann and mixed boundary conditions.
 - Code for serial implementation of ordinary differential equation solver can be accessed [here](#).
- **Reading Project on Advance C++ and Message Passing Interface (MPI)**
Dr. K.R. Arun, IISER Thiruvananthapuram
 - Studied point-to-point and collective communication as well as blocking and non-blocking communication routines in MPI.
 - Reading includes the book "**Guide to Scientific Computing in C++**" by Dr. Joe Pitt-Francis and Prof. Jonathan Whiteley and some online mpi-tutorial websites.
 - A parallel and serial implementation of Gauss Elimination using MPI can be found [here](#) and few other related codes can be found [here](#).

PRESENTATION

- **Distributed memory parallelization of Lax-Wendroff Flux Reconstruction**
 - Presented my summer project to Computational PDEs research group of Prof. Praveen Chandrashekar at TIFR-CAM, India on August 11, 2024
 - Slides for the presentation can be found on this [link](#).

RELEVANT COURSES

- **Classroom**
Single and Multivariable Calculus, Probability, Real Analysis, Theory of Groups and Rings, Numerical Analysis, Linear Algebra, Machine Learning, Mathematical Statistics, General Topology, Theory of ODE, Complex Analysis, Probability and Stochastic Processes, Mathematical Modelling, Scientific Computing

TECHNICAL SKILLS AND INTERESTS

Languages: C++, C, Julia, Python, Latex

Developer Tools: Command line, Linux, Windows, Git, VSCode, Valgrind.

Libraries: Python Libraries - Numpy, Pandas, Matplotlib
C++/C - OpenMPI

Solvers: MUMPS, Trixi.jl, TrixiLW.jl

Certifications: Advance MPI - UK National Supercomputing Service ([Pdf](#))

Human Languages: English, Hindi

Areas of Interest: Numerical solution of PDEs/ODEs, Mathematical Analysis of Deep Learning, Machine Learning

ROLES & EXTRA CURRICULARS

- **Secretary of Student Cooperative Mess (SCoM), IISER TVM**

- Leading the department such as finance, human resource, hygiene, maintenance, store and purchase for SCoM.
- SCoM is a dining service managed entirely by student volunteers in IISER Thiruvananthapuram, handling 2000 students daily for all three meals.

- **Head of Maintenance and Software, Student Cooperative Mess (SCoM), IISER TVM**

- Volunteered in Daily Activity Committee (DAC) from May to July, 2023.
- Promoted to Mess Supervision Committee (MSC) (Aug, 2023 ~ Dec, 2024).
- SCoM is a dining service managed entirely by student volunteers in IISER Thiruvananthapuram, handling 2000 students daily for all three meals.

- **Sports**

- Badminton and Cricket.

ACHIEVEMENTS

- **Awarded ETH For Developement (ETH4D) Fellowship, ETH Zurich, Switzerland.** 2025
- **Selected in Summer Student Research Programme (SSRP) 2024, TIFR-CAM, Bangalore.** 2024
- **Innovation in Science Pursuit for Inspired Research (INSPIRE) Fellowship, Government of India.** 2022
Given to top 1 % candidates in the state.
- **Awarded by Chief Minister, Government of Uttar Pradesh for academic excellence in higher secondary school.** 2022
- **Received academic scholarship for competitive exam preparation by Government of Uttar Pradesh.** 2021
Given to selected top performers of the examination conducted by *Government of UP*.
- **Awarded a monetary grant and a tablet by District Magistrate.** 2020
Secured 2nd position among hundred thousand (100K) candidates in secondary school board examination.

REFERENCES

- **Prof. Praveen Chandrashekar**, Professor of Mathematics
Centre for Applicable Mathematics, Tata Institute of Fundamental Research,
Bangalore, India
Email: praveen@tifrbng.res.in
- **Dr. K.R Arun**, Associate Professor of Mathematics
Indian Institute of Science Education and Research (IISER),
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