Harihara Maharna

University of Notre Dame, IN, US

✉ hmaharna@nd.edu ✉ hariharamaharna1644@gmail.com ☐ (+1) 5742395684

Summary

I am a first-year PhD student in Applied Mathematics in the Applied Computational Mathematics and Statistics (ACMS) Department of the University of Notre Dame, IN, US. I am enthusiastic about learning numerical methods for solving differential equations.

Education

PhD Applied Mathematics

Department of Applied and Computational Mathematics and Statistics (ACMS), University of Notre Dame, IN, US. 2024-current

MSc. Mathematics CGPA-8.45/10 (grade cards)

School of Mathematics, IISER Thiruvananthapuram, India 2022-2024

BSc. Mathematics CGPA 9.09/10 (grade sheet)

Department of Mathematics, M. P. C. Autonomous College, Odisha, India 2019-2022

Higher Secondary (10+2) 80.33% (certificate)

Vijayanjai HS Res. School, Odisha, India 2017-2019

Secondary Examination (10th boards) 80.16% (certificate)

Budhabalanga High School, Odisha, India 2016-2017

Projects and Internships

Master's Project Jan-May 2024

Guide: Dr. K. R. Arun, School of Mathematics, IISER Thiruvananthapuram, India

Topic: An asymptotic preserving and energy stable finite volume scheme for the compressible Euler equations with congestion constraint.

- In this project, we designed and analyzed a finite volume scheme for the barotropic Euler equations with the congestion pressure law and performed the singular limit termed as the hard congestion limit at the discrete level.

- The developed scheme was an entropy stable and asymptotic preserving. We also obtained a-priori estimates on the relevant unknowns. We lastly, proved the efficiency of the numerical scheme by testing various numerical examples.

Summer Project Summer 2023

Guide: Dr. Anupam Pal Choudhury, School of Mathematics, NISER Bhubaneswar, India

Topic: Differential Equations.

- In this project, I studied scalar conservation laws and how they model physical phenomena with a particular emphasis on traffic dynamics.

- I learned about weak (or integral) solutions, Rankine-Hugoniot condition, and entropy conditions.

Scholastic Achievements and Fellowships

- National Board for Higher Mathematics (NBHM) Master's scholarship fellow, 2023-24.

- Graduate Aptitude Test in Engineering (GATE)-2022 qualified.

- Joint Admission test for Masters (JAM)-2022 qualified.

- BSc. Mathematics topper (2019-22 batch) in Maharaja Purna Chandra (MPC) Autonomous College.

Workshops and Online Courses

Mathematics Training and Talent Search Programme (MTTS) Level-1

IISER Thiruvananthapuram, India   Summer 2022

- In this 4-week summer school, I attended various lectures in analysis and algebra.

Mathematics Training and Talent Search Programme (MTTS) Level-O

Online (due to COVID)   Summer 2021

Real Analysis-I online course offered by NPTEL

Dr. Jaikrishnan J, Indian Institution of Technology (IIT), Palakkad   Sep - Dec 2020

Online Foundation Course in Mathematics (OFCM)

Online   October 2020

Technical skills

- C++, Python, Matlab, LaTeX.

Work Experience

- Chegg Subject Matter Expert in Calculus.   Feb 2022- July 2023