Kamal Kishor Sharma

Hamburg, Germany kamalkishorsharma123@gmail.com 015201316795 sharma-kk

Profile

With a bachelor's in Aerospace Engineering and a PhD in Applied Mathematics, I offer a unique blend of engineering pragmatism and mathematical rigour. I bring four years of experience solving complex engineering problems at the Indian Space Research Organisation, along with another four years conducting research in computational physics.

Education

PhD, Applied Mathematics *March 2021 – Present*
University of Hamburg

- Thesis: Development of a structure-preserving idealized stochastic climate model
- Supervisor: Dr. Peter Korn (Max-Planck Institute for Meteorology, Germany)

MSc, Mathematical Modelling in Engineering *2018 – 2020*
University of Hamburg, Germany *Grade: 1.77*

- Coursework: Advanced topics in fluid dynamics, Applied partial differential equations (PDEs), Numerical methods for PDEs, Scientific computing, Advanced optimisation, Control systems

BTech, Aerospace Engineering *2010 – 2014*
Indian Institute of Space Science and Technology (IIST), India

- Coursework: Aerodynamics, Structural mechanics, Spaceflight mechanics, Gas dynamics, Aerospace vehicle design, Aerospace materials and processes, Rocket propulsion, Space mission design and optimization

Experience

Doctoral Researcher *Hamburg, Germany*
University of Hamburg *March 2021 – Present*

- Conducted the first numerical simulations of an idealized stochastic climate model [Github]
- Developed numerical solvers using Python for various geophysical fluid dynamics (GFD) models
- Performed tests to quantify the uncertainty due to unresolved small-scale processes in the GFD models
- Developed algorithms to evaluate model outputs using statistical techniques and time-series modeling
- Published research and presented results at 5 international conferences

Teaching Assistant *Hamburg, Germany*
Department of Mathematics, University of Hamburg *March 2024 – Sep 2024*

- Taught a Master's level course on Mathematical Machine Learning
- Supervised projects on Large Language Models (LLMs) and Physics-Informed Neural Networks (PINNs)

Structural engineer *India*
Indian Space Research Organisation (ISRO) *Sep 2014 – Sep 2018*

- Performed Finite Element Analysis (FEA) for key space systems, including:
  - Thermo-structural analysis and testing of the engine flow duct of a scramjet engine
  - Thermo-structural analysis of the wing of ISRO's first reusable launch vehicle
  - Payload adapter design for the Polar Satellite Launch Vehicle
  - Thermal screen development for the cryogenic stage of the Geosynchronous Satellite Launch Vehicle
- Conducted structural dynamics testing of various satellites and their sub-systems
- Used tools such as ANSYS and Abaqus for design validation and risk assessment

Skills

Technical Skills

- High-Performance Computing: Optimized simulations on multi-core systems with parallel execution
- Programming & Tools: Python (NumPy, SciPy, PyTorch, Matplotlib, Jupyter), MATLAB, Git, LaTeX

Soft Skills

- Strong analytical and problem-solving mindset grounded in both engineering and mathematics
- Independent researcher with a proactive, self-driven approach
- Skilled in scientific communication, both written (LaTeX, reports) and verbal (presentations, collaboration)

Languages

- English – C1 (Advanced), German – B1 (Intermediate)

Honors & Awards

- Erasmus Mundus Scholarship for Master's studies
- Government of India Scholarship covering tuition and accommodation for Bachelor's studies
- Represented my school at the 11th National Science Olympiad and 2nd International Mathematics Olympiad