

Ashuthosh Shridhar

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WORK EXPERIENCE

Institut für Partikeltechnik, TU-Braunschweig.

Oct 2023-Current

Research Assistant

- **ESA Lunar Islands:** Contributing to NASA and ESA's Lunar mission with the LUNAR In-Situ LANDING Structures project, a collaboration between ESA, TU-Braunschweig, TU-Berlin and ONERA. My role involves Turbulence modeling of Rocket propulsion during Lunar landing and take off phases to study and mitigate risks from turbulent regolith particles. (*current*)
- **Volume of Fluids (VOF) Solver Enhancement:** Advancing the capabilities of InterFOAM solver by integrating a Moving Reference Frame (MRF) technique. This innovation precisely tracks a water droplet in motion, optimizing the computational domain's focus. Thus eliminating the need for extensive mesh infrastructure, thereby streamlining simulations and conserving computational resources. (*current*)
- **Simulation of Hetero-agglomeration Mixers:** Carried out flow simulation and helped lay the numerical foundation to investigate various factors influencing the agglomeration process, which are difficult to capture experimentally.

Institut für Strömungsmechanik, TU-Braunschweig.

Jan 2023-Oct 2023

Research Assistant

MUSIC-haic: EU-Project led by ONERA in partnership with TU-Braunschweig, TU-Darmstadt, Rolls-Royce, Airbus and GE.

- **Experimental Work:** Conducted experimental investigations on heat transfer and accretion phenomena at the Braunschweig Icing Wind Tunnel. Aimed to provide essential data to enhance, calibrate, and validate ice crystal accretion models in the aerospace industry.
- **Solver Development:** Extended the capabilities of the in-house Lagrangian-Based Solver, originally designed for tracking supercooled droplets, to now accurately track ice crystals with varying sizes as they traverse the wind tunnel. This enhancement was achieved by integrating advanced Heat Transfer models, thus making it applicable to broader atmospheric conditions.

Indian Institute of Technology Bombay.

Mar 2022-Sep 2022

Research Assistant

FOSSEE (Free/Libre and Open Source Software for Education) project promotes the use of FLOSS tools in academia and research.

- **Workshops and Seminars:** Hosted a series of workshops on using OpenFOAM including a specialized seminar on Advanced Meshing techniques at the Fluid Mechanics and Fluid Power Conference (FMFP) hosted by IIT-Roorkee. My efforts focused on enhancing participants' understanding and skills in Open Source Computational Fluid Dynamics tools.
- **Mentorship Experience:** Actively mentored and led FOSSEE Summer fellows from diverse regions across the country, facilitating their collaboration with IIT-Bombay faculty on a range of Computational Fluid Dynamics (CFD) projects. My role involved guiding the fellows through their projects, from conceptualization to completion, ensuring educational growth and successful project outcomes.
- **Educational Content Creation:** Developed comprehensive OpenFOAM tutorials covering a wide array of topics, including Multi-block Meshing, Parallel Processing, Euler-Euler Simulations, Compressible Fluid Simulations etc. These resources were designed to enhance the learning curve for users at various levels, providing detailed guidance and practical insights into using OpenFOAM to a variety of CFD problems.

Indian Space Research Organisation (ISRO), Bangalore.

Jan 2020 - Mar 2020

Intern

- Acquired skills in designing antennas specifically tailored for space applications, focusing on the principles and technologies essential for successful satellite communication.
- Delved into the operational mechanisms of Deep Space Networks, gaining insights into their critical role in interplanetary communication.
- **Capstone Project:** Conducted a comprehensive modelling and analysis of the backup structure for a 2.4m Cassegrain Antenna, demonstrating proficiency in simulation tools and antenna design principles. This project underscored the practical applications of theoretical knowledge in addressing real-world challenges in aerospace technology.

EDUCATION

Technische Universität Braunschweig, Germany.

2022-Current

M.Sc. Computational Science, Majoring in Mathematics and Information Science

Visvesvaraya Technological University, India.

2017-2021

B.E. Mechanical Engineering, Graduated First Class with Distinction

- **Bachelor Thesis:** CFD Analysis of Blood flow through Stenosed Arteries.
Conducted a parametric study on flow fields through varying degrees of stenosis in the Carotid Bifurcation, comparing Newtonian and Non-Newtonian Rheology models. This thesis aimed to enhance the understanding of blood flow dynamics and contribute to more accurate predictive models for cardiovascular diseases.

COMPETENCIES

Soft Skills

- Problem-solving and analytical skills, with a keen ability to approach challenges methodically.
- Proclivity towards research and passionate about delving into scientific inquiries and effectively sharing findings.
- Comfortable conducting independent research and creating comprehensive documentation and presentations.

Language Skills

- **English:** Native Proficiency
- **German:** Working Proficiency

Hard Skills

- **Computer Aided Engineering:** OpenFOAM, Catia, Solid Edge, Gmsh.
- **Programming:** C, Python, Bash, Parallel Programming (OpenMP and MPI).
- **Other Tools:** L^AT_EX, Blender, Slurm Workload Manager, Linux.