

# 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:** Participated in organizing workshops on OpenFOAM, including a seminar on Advanced Meshing techniques at the Fluid Mechanics and Fluid Power Conference (FMFP) at IIT-Roorkee. The sessions aimed to introduce participants to Open Source Computational Fluid Dynamics tools.
- **Mentorship:** Supported FOSSEE Summer fellows from various regions in their collaboration with IIT-Bombay faculty on Computational Fluid Dynamics (CFD) projects. Assisted fellows throughout their projects, from initial planning to completion.
- **Educational Content:** Contributed to the development of OpenFOAM tutorials covering topics such as Multi-block Meshing, Parallel Processing, Euler-Euler Simulations, and Compressible Fluid Simulations. These resources were created to support users at different skill levels in applying OpenFOAM to various CFD problems.

**Indian Space Research Organisation (ISRO), Bangalore.**

*Jan 2020 - Mar 2020*

*Intern*

- Learned about antenna design for space applications, studying principles and technologies used in satellite communication.
- Explored the operational aspects of Deep Space Networks and their role in interplanetary com-

munication.

- **Capstone Project:** Modelled and analyzed the backup structure for a 2.4m Cassegrain Antenna, applying simulation tools and antenna design principles. This project provided practical experience in addressing 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.  
Performed a parametric study examining flow fields in the Carotid Bifurcation with varying degrees of stenosis, comparing Newtonian and Non-Newtonian Rheology models.

## 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:** Python, Bash, Parallel Programming (OpenMP and MPI).
- **Other Tools:** L<sup>A</sup>T<sub>E</sub>X, Blender, Slurm, Linux.