

MRIDUL AGGARWAL

MSc Aerospace Computational Engineering

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<https://mridul8878.github.io/mridulaggarwal-portfolio/>

PERSONAL STATEMENT

Focused on using computational engineering software to analyze and solve engineering problems using advanced computational methods for solving industry related problems. Stronghold in developing modelling simulations using different commercial software and tools. Hands-on experience in distributed scientific computation creating simulation models for various engineering applications. Strong team player having worked with global teams on different projects related to engineering and project management.

KEY SKILLS & HIGHLIGHT

Computational Engineering: High Performance Computing, Computer Aided Engineering & Design, Finite Element / Volume Analysis, Computer Aided Modelling

Engineering Software: MATLAB Simulink, ParaView, Tecplot, Abaqus, Solidworks, ANSYS Workbench, Fluent, SpaceClaim, CFD-Post, CES Edu Pack, LaTeX, Overleaf, Microsoft Office, C++, C, Python, LINUX.

Language: English (Professional), Hindi (Native), Sanskrit (Beginner)

For more detailed information about my projects please look on my website: <https://mridul8878.github.io/mridulaggarwal-portfolio/>

KEY ACHIEVEMENTS

- Experienced in using UDF in ANSYS Fluent and parallel computing using HPC.
- Implemented discrete phase modelling to track sneeze particles using multiphase flows in ANSYS application.
- Coded Crank Nicolson finite difference method to solve partial differential equations using C++ programming.
- NASA Space School Certification for being part of the team to work on rover functioning and demo rocket launching at NASA in the USA.

WORK EXPERIENCE

Publication Work – Cranfield University, UK (October, 2022 – present)

Working on publication under the supervision of Dr. Laszlo Konozy in the field of Aerospace Computational simulating the different ventilation system to minimize the impact caused by an covid infected personal inside an aircraft.

INDUSTRIAL EXPERIENCE

RACL GEARTECH LTD: Gajraula, Uttar Pradesh, India - Internship (January 2021 - April 2021)

- Allocated as a Production process quality engineer to overlook process quality for gear manufacturing on daily basics and to solve issues faced by the machine operator
- Conducted 60 Internal Process Audits as well as a Process Capability Study to analyze machines' efficiency for better manufacturing productivity
- Prepared root causes analysis for 5 gear process on gear rejections resulted in a decrease in rejections in a 2-month time
- Co-ordinated with project head in the installation of new gear manufacturing machines

EDUCATION

MSc: Aerospace Computational Engineering, Cranfield University, Cranfield, UK (September 2021 – August 2022)

- **Modules:** Computational Methods & Engineering Structures, Numerical Modelling for Compressible Flows / Incompressible Flows, Analysis & Visualization of Big Data System & High-Performance Computing, Modelling Approaches / Validation & Verification for Aerospace Application.
- **Grade:** 79.55 % (distinction)
- Awarded £2,000 “Course Director scholarship” at the beginning of the course.

Bachelors of Engineering (Honours) (Mechanical): The University of Newcastle, Australia (August 2017 - May 2020)

- With strong grades in Engineering Mathematics I, II , dynamics, control systems, Thermodynamics fluids etc. with training in MATLAB, C, Solidworks and other engineering tools.
- **Grade:** Achieved 2:2 degree

ACADEMIC PROJECT EXPERIENCE

Numerical Investigation of the Airflow Ventilation system in the Interior of an Aircraft Cabin in Presence of an Infected Passenger

September, 2022

Completed successfully by placing a modified displacement ventilation system for the aircraft cabin and implementing the discrete phase modelling to track the virus particle movement inside the aircraft cabin. Additionally, learned the use of parallel computing by using High Performance Computing for my research project.

Jetstream 31 full aircraft simulation

May, 2022

Led a team of 5 to work on “Aircraft Simulation” focusing on the simulation of the Jetstream 31 full aircraft and/or a model aircraft simulation to gain transient data in terms of lift and drag coefficient for relative analysis with experimental data using different Unsteady Reynolds-Averaged Navier-Stokes (URANS) and Detached Eddy Simulation modelling approaches for better prediction of airflow.

Simulation of Air Distribution in an Office room Ventilation by an Air-Conditioner

April, 2020

Worked on office room ventilation to decrease energy consumption and increase the oxygen level inside the office room for the personnel present within the enclosed room. Designed the office room using ANSYS Workbench and then a pressure-based solver implemented with a SIMPLE algorithm to model the airflow and thermal comfort of the people inside the room.

Developing Bicycle Sharing Mobility System for University Students

November, 2019

Collaborated with 4 other university students to develop a mobility system for setting up a bicycle sharing system for university students. Cost and quality management was my sole responsibility in the group. This idea was suggested by myself to help students to cut down their travelling cost and time during their stay at university.

INTERESTS & EXTRACURRICULAR ACTIVITIES

- **Membership:** CRANSEDS & Engineers Australia
- **Sports:** Table Tennis played from Junior School (2009-present), Swimming, Cricket, Lawn Tennis
- **Leadership:** Appreciation Certificate for work on TEDx PSB Academy, Singapore in 2018 had an audience of 500.
- **Volunteered:** Award of excellence by Indian Development Foundation in Resource Mobilization for Humanitarian Causes arranged for helping 1000+ people suffering from cancer.

OTHER WORK EXPERIENCE

Warehouse Operative – John Lewis

Milton Keynes, UK

October, 2022 – present

Working in highly busy John Lewis warehouse in Milton Keynes under extreme situation to achieve daily targets in terms of packaging, sorting and loading the goods into the vehicle.